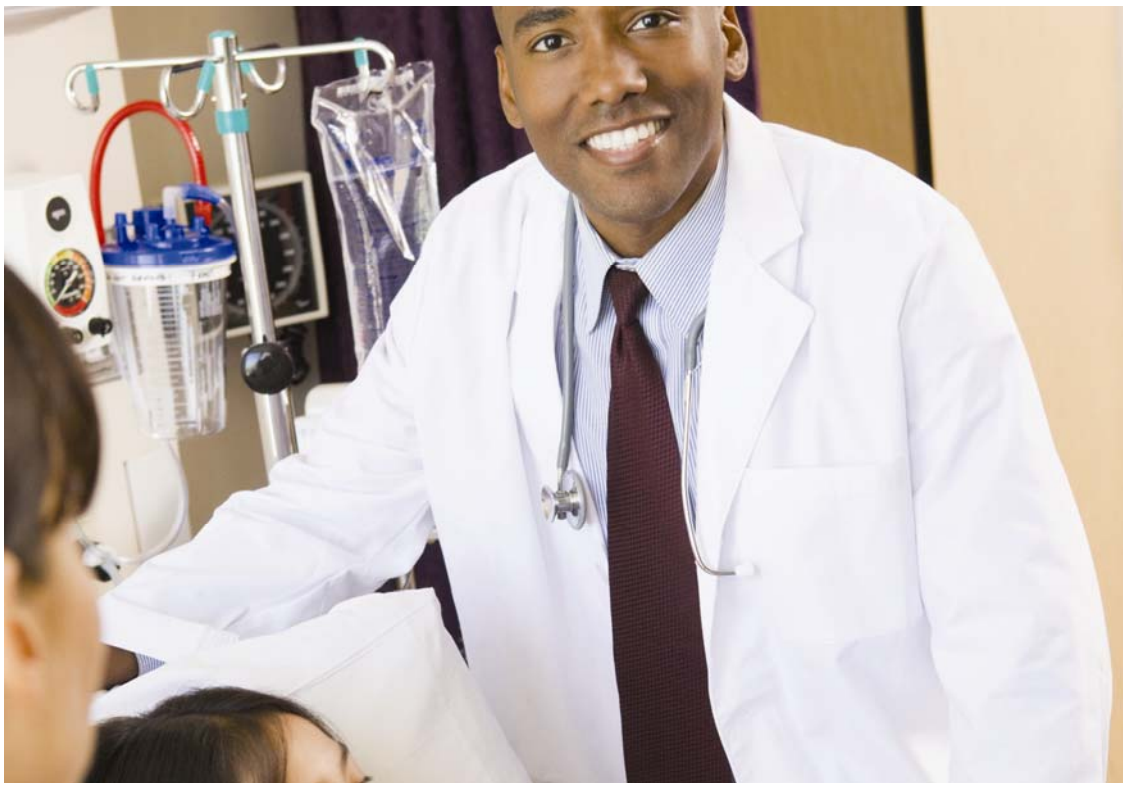
The LEWIN GROUP®



The Health Benefits Simulation Model (HBSM): Methodology and Assumptions

March 31, 2009

Table of Contents

I. INTRODUCTION

The purpose of this document is to describe the data and methods used to develop the Lewin Group Health Benefits Simulation Model (HBSM). HBSM is a micro-simulation model of the U.S. health care system designed to model the effect of policies designed to increase public and private health insurance coverage.

HBSM should be thought of as a platform for analyzing the impact of health reform proposals. The model includes a representative sample of households in the U.S. together with a database of "synthetic firms" based upon three databases. It also includes econometric models of individual and firm behavior which we use to simulate the impact of proposals affecting the cost of health insurance.

The greatest challenge in modeling health reform is simulating the effect of proposals with unique features that have never before been implemented. Because in these cases, there are no historical data for us to reference in modeling program effects, we often need to customize the model to apply suitable methods and assumptions. In many cases we use the model to simulate the cost to employers and/or individuals of new coverage alternatives and financial incentives created under the proposal. We then model the coverage choice for individuals and employers based upon econometric analyses of the price elasticity for coverage and/or studies of changes in the relative prices of coverage alternatives.

In addition, we model the impact of specific non-coverage proposals designed to reduce health spending such as funding for health information technology (HIT), comparative effectiveness research or malpractice reform. These ideas are modeled using the most recent research available on the impact these programs would have on health care costs. These effects are integrated into the HBSM model estimates of premiums reflecting these savings to estimate the resulting change in coverage.

Because each policy proposal tends to be unique, we typically provide a narrative discussion of how each proposal is modeled. This is essential to assuring to plan authors and policy makers that we have realistically modeled the unique features of each proposal. Thus, our approach to documentation is to have a single document presenting the key features of HBSM, as presented here. We than describe in each individual study how the model was adapted and used to simulate individual features unique to each proposal. An example of our approach is presented in our analyses of the presidential candidates' health reform proposals in 2008, which includes though technical appendices documenting how HBSM was used to model the unique approaches proposed by the candidates.[1]

In this document, also provide a detailed discussion of key components of the model that are most relevant to policy proposals that have emerged in recent years. These include:

- ***Attachment A:*** Estimating the participation function for the Medicaid Program;
- ***Attachment B:*** The impact of price on the purchase of insurance by individuals;

[1] "McCain and Obama Health Care Policies: Cost and Coverage Compared," The Lewin Group, October 8, 2008.

- ***Attachment C:*** The impact of price on the employer decision to provide coverage;
- ***Attachment D:*** Medicaid take-up equations for workers with and without access to employer coverage;
- ***Attachment E:*** An analysis of the impact of the FMAP on state Medicaid spending;
- ***Attachment F:*** A summary of literature research on the effects policies to prevent substitution of private coverage with public coverage in public subsidy/program expansion proposals; and
- ***Attachment G:*** Discussion of how the CPS is used to develop estimates of the number of uninsured that includes a correction for underreporting of Medicaid coverage.

We summarize the overall modeling approach used to simulate the cost and coverage impacts of programs to expand insurance coverage in the following sections:

- Introduction
- Modeling approach;
- Baseline database;
- Medicaid and SCHIP Expansions;
- Individual tax credits and other insurance subsidies;
- Employer premium subsidies;
- Employer contribution requirements
- Simulation of risk selection for new insurance pools;
- Iterative simulation of market effects;
- Single-payer plans;
- Health services utilization;
- Provider reimbursement;
- Simulation of administrative costs;
- Proposals to restructure consumer incentives; and
- Caveats.

II. MODELING APPROACH

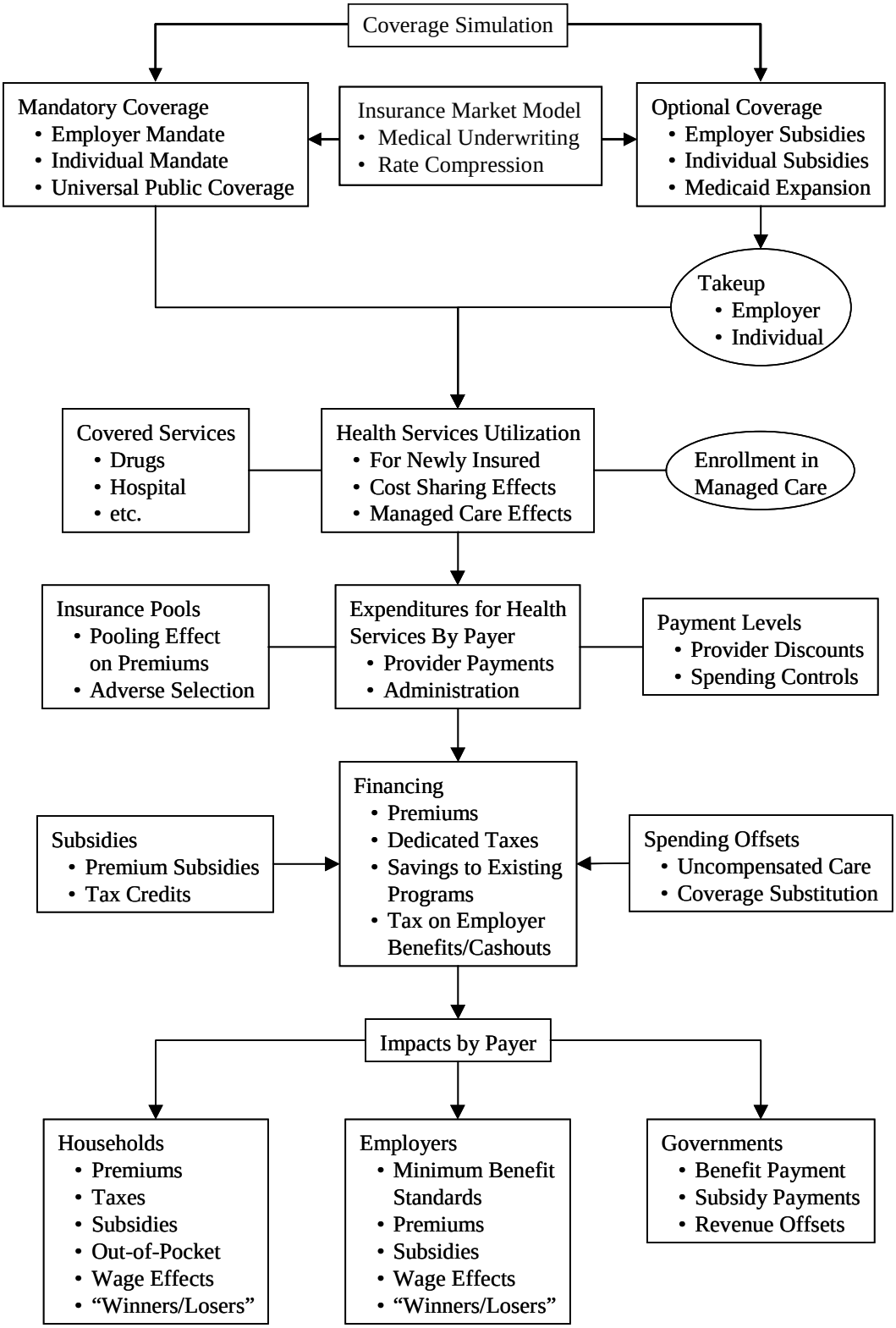
The Health Benefits Simulation Model (HBSM) is a micro-simulation model of the U.S. health care system. HBSM is a fully integrated platform for simulating policies ranging from narrowly defined Medicaid coverage expansions to broad-based reforms such as changes in the tax treatment of health benefits. The model is also designed to simulate the impact of numerous universal coverage proposals such as single-payer plans and employer mandates. The use of a single modeling system for these analyses helps assure that simulations of alternative proposals are executed with uniform and internally consistent methodologies.

HBSM was created to provide comparisons of the impact of alternative health reform models on coverage and expenditures for employers, governments and households. The key to its design is a "base case" scenario depicting the distribution of health coverage, and health services utilization and expenditures across a representative sample of households under current policy for a base year such as 2010. We developed this base case scenario using the recent household and employer data on coverage and expenditures that is available. We also "aged" these data to be representative of the population in 2010 based upon recent economic, demographic and health expenditure trends. The resulting database provides a detailed accounting of spending in the U.S. health care system for stakeholder groups. These base case data serve as the reference point for our simulations of alternative health reform proposals.

We estimate the impact of health reform initiatives using a series of methodologies that apply uniformly in all policy simulations. The model first simulates how these policies would affect sources of coverage, health services utilization and health expenditures by source of payment **(*Figure 1*)**. Mandatory coverage programs such as employer mandates or single-payer models can be simulated based upon the detailed employment and coverage data recorded in the database. The model also simulates enrollment in voluntary programs such as tax credits for employers and employees, based upon multivariate models of how coverage for these groups varies with the cost of coverage (i.e., modeled as the premium minus the tax credit). In addition, the model simulates enrollment in Medicaid and SCHIP expansions based upon a multivariate analysis of take-up rates under these programs, including a simulation of coverage substitution (i.e., "crowd out").

The model uses a series of uniform table shells for reporting the impacts of these policies on households, employers and governments. This approach assures that we can develop estimates of program impacts for very different policies using consistent assumptions and reporting formats. The use of uniform processes also enables us to simulate the impact of substantially different policy options in a short period of time. Additional tables are added to document the shifts in coverage and costs resulting from each unique proposal.

Figure 1
Flow Diagram of the Health Benefits Simulation Model (HBSM)



The model is designed to measure "adverse selection" resulting from the design of these policy options. (Adverse selection is the disproportionate accumulation of higher cost cases in a given insurance pool). Often, policies give employers or consumers a choice between different types of coverage along with financial incentives to select lower cost coverage alternatives. These include proposal that provide subsidize insurance pools and plans that modify the rating practices insurers are permitted to use in setting premiums for individual groups.

For example, some proposals would give employers the option of enrolling in a public insurance pool at a community-rated premium. This would tend to attract employers and individuals with high health care costs who find that the community-rated premium is less than the cost of an experience-rated plan for that group in the private market. HBSM simulates these incentives and estimates the cost impacts of these selection effects.

Once changes in sources of coverage are modeled, HBSM simulates the amount of covered health spending for each affected individual, given the covered services and cost sharing provisions of the health plan provided under the proposal. This includes simulating the increase in utilization among newly insured people and changes in utilization resulting from the cost sharing provisions of the plan. In general, we assume that utilization among newly insured people will increase to the level reported by insured people with similar characteristics. We also simulate the impact of changes in cost sharing provisions (i.e., co-payments, deductibles, etc.) on utilization.

HBSM is based upon a representative sample of households in the U.S., which includes information on the economic and demographic characteristics of these individuals as well as their health care utilization and expenditures. The HBSM household data are based upon the 2002-2005 Medical Expenditures Panel Survey (MEPS) used together with the March 2007 Current Population Survey (CPS). We also use the 2006 Kaiser/HRET survey of employers for policy scenarios involving employer level decisions.

In addition, we used the 1997 Robert Wood Johnson Foundation (RWJF) Employer Health Insurance Survey to identify the characteristics of workers at the employer level. We adjusted these data to show the amount of health spending by type of service and source of payment as estimated by the Office of the Actuary (OACT) of the Centers for Medicare and Medicaid Services (CMS) and various agencies. The methods used to develop these baseline data are discussed below.

We assume that changes in employer costs are passed on to workers in the form of changes in wage growth over time. For example, policies that increase employer costs would result in a corresponding reduction in wages for affected workers, with a corresponding reduction in income and payroll tax revenues. Similarly, reductions in employer costs are assumed to be passed on to workers as wage increases. HBSM includes a tax module that simulates tax effects due to these changes in wages as well. The model will simulate wage pass-through under varying assumptions of how long it would take for the labor markets to adjust.

III. BASELINE DATABASE

The key to simulating changes in the health care system is to develop a baseline data base that depicts the U.S. health care system in detail. Our HBSM baseline data is based upon the pooled Medical Expenditures Panel Survey (MEPS) data for 2002 through 2005. These data provide information on sources of coverage and health expenditures for a representative sample of the population. These data were adjusted to reflect the population and coverage levels reported in the 2007 Current Population Survey (CPS) data (with adjustments for under-reporting discussed below).

We used the worker characteristics in the RWJF employer survey as a source of information on the full time/part time, wage, age, and gender distribution of workers by firm size, region, and industry. We used the 2006 Kaiser/HRET data as a source of current employer sponsored insurance (ESI) data. We statistically matched the worker characteristic data in RWJF to the ESI data in Kaiser/HRET using the actuarial value of the firm, the region, firm size, and the insuring status of the firm.

We statistically matched workers in the pooled MEPS data to our RWJF/Kaiser/HRET matched file. In addition, we use the data on employers and households to create "synthetic firms" which provide detailed information on both employers and the people employed in each firm.

The creation of the baseline data for the model is presented in the following sections:

- Household database;
- Employer database;
- Synthetic firms;
- Employer insurance market premium model;
- Individual insurance market simulation;
- Benchmarking data; and
- Monthly simulation methodology.

A. Household Database

The HBSM baseline data is derived from a sample of households that is representative of the economic, demographic and health sector characteristics of the population. HBSM uses the 2002-2005 MEPS data to provide the underlying distribution of health care utilization and expenditures across individuals by age, sex, income, source of coverage, and employment status.[2] We then re-weighted this database to reflect population control totals reported in the 2007 March CPS data.

---

[2] For some applications, we pool the MEPS data for 2002 through 2005 to increase sample size. This is particularly useful in analyzing expenditures for people with high levels of health spending, which typically represents only a small proportion of the database.

These weight adjustments were done with an iterative proportional-fitting model, which adjusts the data to match approximately 250 separate classifications of individuals by socioeconomic status, sources of coverage, and job characteristics in the CPS.[3] Iterative proportional fitting is a process where the sample weights for each individual in the sample are repeatedly adjusted in a stepwise fashion until the database simultaneously replicates the distribution of people across each of these variables in the state.[4]

This approach permits us to simultaneously replicate the distribution of people across a large number of variables while preserving the underlying distribution of people by level of health services utilization and expenditures as reported in MEPS. These data can be "fine tuned" in the re-weighting process to reflect changes in health service utilization levels (e.g., hospitalizations).[5] This approach implicitly assumes that the distribution of utilization and expenditures within each of the population groups controlled for in these re-weighting processes are the same as reported in the MEPS data.

We also "aged" the health expenditure data reported in the MEPS database to reflect changes in the characteristics of the population through 2010. These data are adjusted to reflect projections of the health spending by type of service and source of payment in the base year (i.e., 2010). These spending estimates are based upon health spending data provided by CMS and detailed projections of expenditures for people in Medicare and Medicaid spending across various eligibility groups. The result is a database that is representative of the base year population by economic and demographic group, which also provides extensive information on the joint distribution of health expenditures and utilization across population groups.

B. Employer Database

The model includes a database of employers for use in simulating policies that affect employer decisions to offer health insurance. We used the 2006 survey of employers conducted by the Kaiser Family Foundation and the Health Research and Educational Trust (HRET). These data include about 3,000 randomly selected public and private employers with 3 or more workers, which provide information on whether they sponsor coverage, and the premiums and coverage characteristics of the plans that insuring employers offer. However, because the KFF/HRET data do not include information on the characteristics of their workforce, we matched the KFF/HRET data to the 1997 RWJF survey of employers.[6] While dated, the RWJF data provide a unique array of information on the demographic and economic profile of their workforce.

Thus, we rely upon the KFF/HRET data for information on health benefits, but rely upon the RWJF data for the distribution of each employer's workforce by the following characteristics:

---

[3] To bolster sample size for state level analyses, we have pooled the CPS data for 2006 through 2008. This is important when using the model to develop state-level analyses.

[4] The process used is similar to that used by the Bureau of the Census to establish final family weights in the March CPS.

[5] Feature not used for RWJF study.

[6] We controlled for worker wage levels, industry, firm size and decile ranking of health plans in both data files of firms by the actuarial value of the benefits they provide. Actuarial values were estimated for each firm in these data files based upon the health benefits information recorded in the two data sources.

- Full-time/part-time status;
- Age;
- Gender;
- Coverage status (eligible enrolled, eligible not enrolled and ineligible);
- Policy type for covered people (i.e., single/family); and
- Wage level;

While these data provide the number of workers for each of these variables, which we will call "marginals," it does not provide us with the joint distribution of workers in the firm by these characteristics. For example, it tells us how many workers there are in each of four age groups and the number of workers who are male and female, but it does not tell us how many of the people in each age group are males and how many are females. We estimate the joint distribution for each firm using a process called "iterative proportional fitting".

In this approach, we begin with the joint distribution of workers across these variables as reported nationally in the CPS. Next, we scaled the joint distribution matrix to replicate the number of workers in the firm by wage level. The matrix was then scaled in the same fashion for each of the marginals reported for the other worker characteristic variables. This process was repeated in an iterative process until the joint distribution matrix simultaneously matched the marginals reported for each variable.

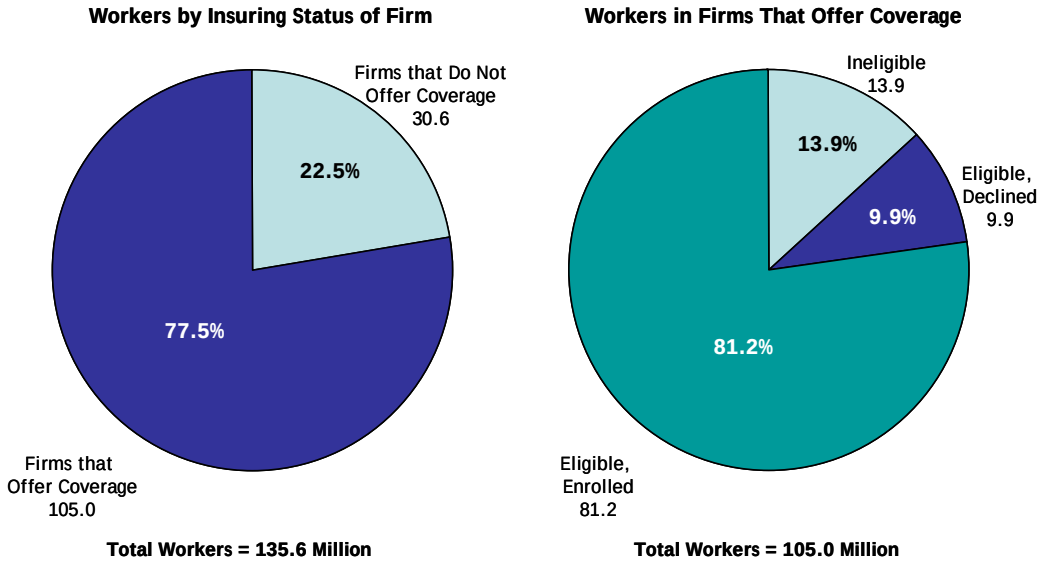
Each non-zero cell of the joint distribution matrix for each firm is treated as an individual worker weighted by the number of people estimated to be in each cell. This yields a database of "synthetic workers" which sums to the total number of workers in the labor force in each of these variables. Working individuals in the MEPS data are statistically matched to these synthetic workers using matching characteristics including: wage level, age, gender, full-time/part time status, coverage/eligibility status, policy type, firm size and industry. Each MEPS worker is assumed to have an employer with the characteristics of the firm attached to each synthetic worker.

Thus, if a firm reported that it employs mostly low-wage female workers, the firm tended to be matched to low-wage female workers in the MEPS data. This approach helps assure that RWJF/Kaiser/HRET firms are matched to workers with health expenditure patterns that are generally consistent with the premiums reported by the firm. This feature is crucial to simulating the effects of employer coverage decisions that impact the health spending profiles of workers going into various insurance pools.

The employer health plan eligibility data in the database is important to simulations of policies affecting employers. One important consideration is that many of those who do not have employer coverage work for a firm that offers coverage to at least some of their workers. About 77.5 percent of all workers are employed by a firm that covers at least some of their workers

(*Figure 2*). Of workers at firms that offer coverage and are eligible, 81.2 percent enrolled. About 13.2 percent are ineligible and about 9.5 percent are eligible but have declined coverage.[7]

Figure 2
Workers by Employer Insurance Status (in millions) [a/]



a/ Excludes self-employed
Source: Lewin Group estimates using the Medical Expenditures Panel Survey (MEPS) survey with the Health Benefits Simulation Model (HBSM).

Figure 3 presents baseline estimates of the distribution of workers and their dependents by firm size and industry. *Figure 4* presents the distribution of workers with employer coverage by selected employer and worker characteristics under the 2010 HBSM baseline simulation. We also present expenditures under employer plans for health benefits and administration.

C. Synthetic Firms

The ideal employer database would be one with a representative sample of employers showing detailed information on employer health plans, enrollment, premiums and detailed information on the characteristics of workers employed by the firm. This worker characteristics data would include income, employment status, health status (presence of chronic condition) and demographic characteristics for each worker and their dependents. However, no one data source provides all of this information.

We developed a database of employers and workers that includes these data elements, based upon a statistical match of MEPS workers to the RWJF/KFF/HRET employer data, which we refer to here as "synthetic firms." This information could be used to simulate the effects of changes in insurance rating practices on employers. These data provide the demographic and

[7] HBSM baseline data based upon Lewin Group Analysis of the March CPS data for 2007.

health status detail for workers and their dependents required to simulate the impact of changing the rules concerning health insurance rating practices by age, health status and other factors.

We also use these data to estimate the cost of coverage for workers in the non-group market, net of any subsidies or tax credits they would be eligible to receive under various health reform proposals. These data provide a basis for simulating the loss of employer coverage due to "crowd out." We present a flow diagram of the process for creating synthetic firms in ***Figure 5.***

Figure 3
Estimated Distribution of Uninsured Workers and Dependents by Firm Size and Industry in 2010 (in thousands) [a/, b/]

	All People	Number Uninsured in Base Case	Percent Uninsured
Firm Size			
< 10	19,167	5,181	27.0%
10-24	25,672	5,071	19.8%
25-99	27,297	3,984	14.6%
100-499	12,067	1,331	11.0%
500-999	22,294	4,019	18.0%
1,000-4,999	45,949	4,147	9.0%
5,000 +	45,821	13,992	30.5%
Industry			
Construction	19,328	5,963	30.9%
Manufacturing	32,045	3,486	10.9%
Transportation	11,234	1,997	17.8%
Wholesale	8,171	946	11.6%
Retail	23,211	4,573	19.7%
Services	80,069	16,411	20.5%
Finance	16,253	2,067	12.7%
Other	7,964	2,283	28.7%
Government	40,279	3,068	7.6%
Total Workers	**238,585**	**40,810**	**17.1%**
Total Non-workers	**68,469**	**8,105**	**11.8%**
All People	**307,096**	**48,917**	**15.9%**

a/ Average monthly estimates.
b/ Dependents of workers are tabulated by the firm size and industry of the worker.
Source: Lewin Group estimates using the Health Benefits Simulation Model (HBSM).

1. Formation of Synthetic Firms

We created one "synthetic firm" for each worker reported in MEPS. As discussed above, we statistically matched each MEPS worker, which we call the "primary worker", with one of the employer health plans in the 2006 RWJF/Kaiser/HRET data. We then created a synthetic firm for each worker by randomly assigning other workers in MEPS to the RWJF/Kaiser/HRET firm that the individual has been matched with.

Figure 4
Workers with Employer Coverage in 2010 Baseline and Selected Employee Health Benefits Cost Measures [a/]

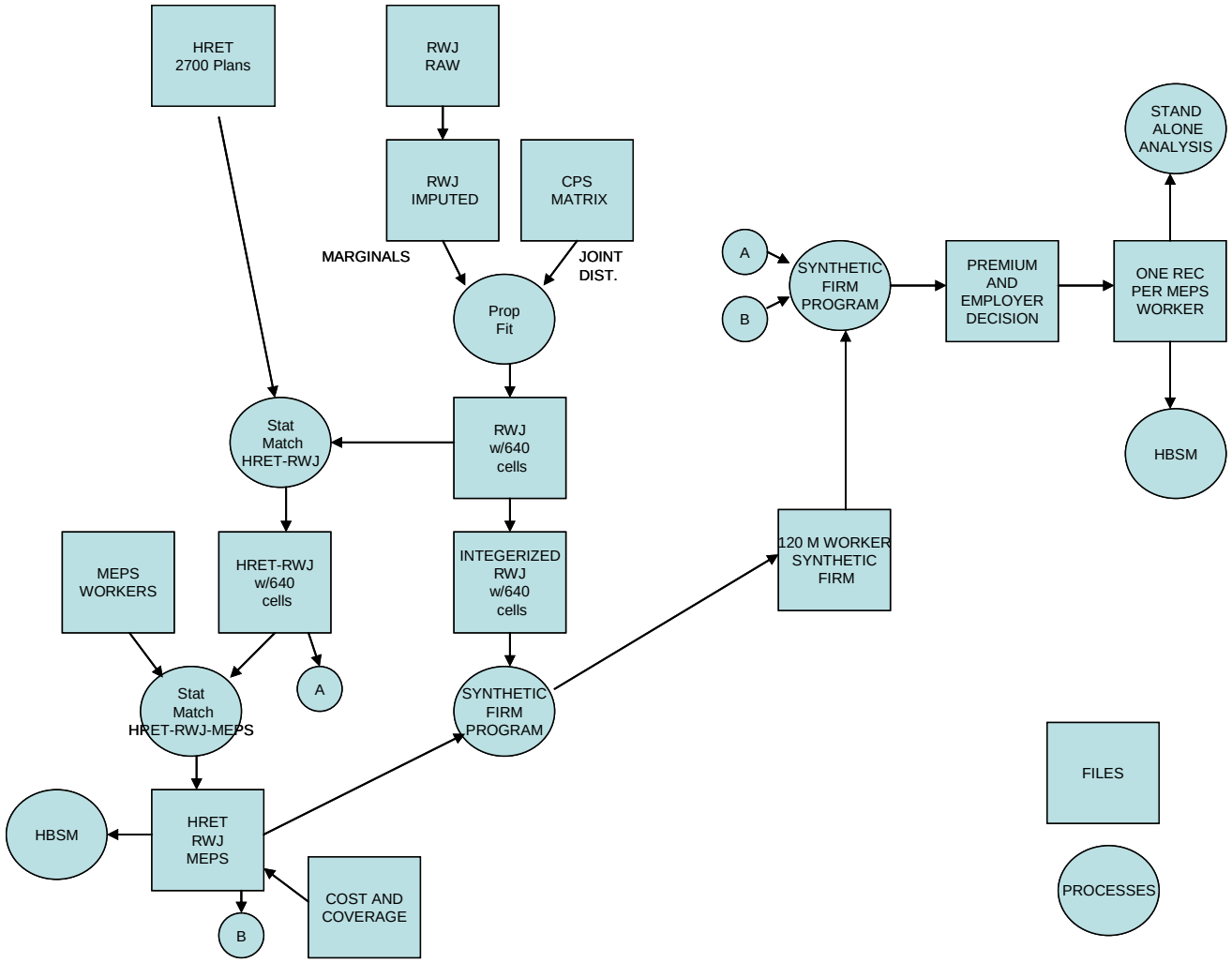
	COVERED WORKERS (THOUS)	PEOPLE DEPENDENTS (THOUS)	BENEFIT PAYMENTS (MILLION)	ADMIN EXPENSES (MILLION)	TAX PAYMENTS (MILLION)	EMPLOYER SHARE OF PREMIUM (MILLION)	EMPLOYEE SHARE OF PREMIUM (MILLION)	EMPLOYEE WAGES (MILLION)	AVERAGE HOURLY WAGE	TOTAL PREMIUM PER PERSON MONTH	EMPLOYER COSTS PER HOUR
FIRM SIZE											
1-9	7158.	6638.	49355.	17454.	0.	48604.	18205.	408208.	27.28	777.82	3.25
10-24	5764.	4385.	35177.	9927.	0.	33637.	11467.	327451.	27.01	652.15	2.77
25-99	9571.	6915.	59266.	12015.	0.	50755.	20527.	512465.	25.53	620.62	2.53
100-499	10833.	9601.	82532.	12454.	0.	65675.	29312.	637830.	27.92	730.65	2.87
500-999	4453.	5265.	38917.	4393.	0.	33478.	9832.	268591.	28.98	810.54	3.61
1000-4999	7559.	7248.	57714.	3656.	0.	46036.	15334.	438892.	29.11	676.59	3.05
5000+	19522.	19766.	167907.	10638.	0.	144992.	33552.	1316481.	31.83	762.16	3.51
GOVERNMENT	16378.	16920.	167437.	10608.	0.	138718.	39327.	953731.	28.55	905.92	4.15
INDUSTRY											
CONSTRUCTION	4456.	4326.	26820.	5078.	0.	23754.	8145.	260495.	26.89	596.58	2.45
MANUFACTURING	12275.	13739.	105259.	12251.	0.	91848.	25662.	831369.	32.02	797.76	3.54
TRANSPORTATION	3667.	4131.	39036.	4858.	0.	32024.	11870.	213116.	28.00	997.40	4.21
WHOLESALE	3130.	3099.	20945.	4093.	0.	17546.	7492.	178015.	27.06	666.57	2.67
RETAIL	7592.	6216.	53144.	7135.	0.	43634.	16645.	337698.	21.36	661.68	2.76
SERVICES	24793.	21528.	180266.	27417.	0.	157622.	50061.	1509022.	29.47	698.04	3.08
FINANCE	6574.	5385.	49308.	6802.	0.	42680.	13430.	462655.	33.52	711.29	3.09
FEDERAL	2913.	3607.	27311.	1730.	0.	21452.	7589.	196150.	32.18	830.71	3.52
STATE	4906.	4832.	45785.	2901.	0.	38665.	10021.	265627.	26.70	827.02	3.89
LOCAL	8559.	8480.	94341.	5977.	0.	78601.	21717.	491956.	28.34	976.76	4.53
OTHER	2372.	1394.	16089.	2903.	0.	14069.	4923.	117543.	23.22	667.15	2.78
TYPE OF COVERAGE											
SINGLE COVERAGE	39447.	0.	171324.	22216.	0.	162783.	30757.	2042683.	24.74	408.86	1.97
FAMILY COVERAGE	41790.	76737.	486980.	58929.	0.	399110.	146798.	2820959.	32.60	1088.59	4.61
WORKER	81237.	0.	359462.	45105.	0.	316213.	88354.	4863614.	28.76	415.01	1.87
NON EMP DEPENDENTS											
DEPENDANT SPOUSE	0.	12005.	112885.	13798.	0.	93659.	33024.	0.	0.00	0.00	0.00
PREGNANT SPOUSE	0.	843.	10691.	1484.	0.	8976.	3199.	0.	0.00	0.00	0.00
CHILDREN <18	0.	44608.	90819.	11049.	0.	73213.	28655.	0.	0.00	0.00	0.00
CHILDREN 18-21	0.	2005.	6951.	633.	0.	6083.	1501.	0.	0.00	0.00	0.00
EMPLOYED DEPENDENTS											
DEPENDENT SPOUSE	0.	13517.	58598.	6832.	0.	48820.	16610.	0.	0.00	0.00	0.00
PREGNANT SPOUSE	0.	715.	8574.	1148.	0.	6968.	2754.	0.	0.00	0.00	0.00
CHILDREN 18-21	0.	3045.	10324.	1096.	0.	7963.	3457.	0.	0.00	0.00	0.00
FORMERLY EXCLUDED											
DEPENDENTS	0.	0.	0.	0.	0.	0.	0.	0.	0.00	0.00	0.00

Figure 4 (continued)
Workers With Employer Coverage Under 2010 Baseline and Selected Employee Health Benefits Cost Measures [a/]

	COVERED WORKERS (THOUS)	PEOPLE DEPENDENTS (THOUS)	BENEFIT PAYMENTS (MILLION)	ADMIN EXPENSES (MILLION)	TAX PAYMENTS (MILLION)	EMPLOYER SHARE OF PREMIUM (MILLION)	EMPLOYEE SHARE OF PREMIUM (MILLION)	EMPLOYEE WAGES (MILLION)	AVERAGE HOURLY WAGE	PREMIUM PER PERSON MONTH	EMPLOYER COSTS PER HOUR
HOURS WORKED											
<20	1302.	944.	8926.	1610.	0.	7621.	2915.	30876.	39.99	674.21	9.87
20-34	3996.	4037.	29924.	4049.	0.	25524.	8450.	131291.	23.20	708.52	4.51
35+	75939.	71756.	619453.	75486.	0.	528748.	166190.	4701460.	28.90	762.61	3.25
WEEKS WORKED											
FULL YEAR	75465.	74165.	605585.	74824.	0.	517263.	163144.	4627437.	28.96	751.34	3.24
PART YEAR	5771.	2572.	52719.	6321.	0.	44630.	14410.	236187.	25.25	852.50	4.77
INCOME AS % OF POV											
BELOW POVERTY	2382.	2449.	19204.	2501.	0.	17011.	4694.	23852.	5.43	759.23	3.87
100-199%	6824.	7585.	54295.	8079.	0.	46567.	15807.	156428.	10.60	761.66	3.15
200-299%	11250.	12373.	93292.	11566.	0.	78279.	26579.	350669.	14.47	776.73	3.23
300-399%	12317.	12607.	98436.	13090.	0.	83606.	27920.	476956.	18.54	754.56	3.25
400-499%	11102.	10706.	84161.	10314.	0.	72854.	21621.	521606.	22.62	709.13	3.16
500% +	37361.	31018.	308916.	35596.	0.	263578.	80934.	3334135.	43.33	768.43	3.43
HOURLY WAGE											
< 4.25 PER HR	2284.	1304.	23088.	2926.	0.	20078.	5937.	12575.	2.77	949.35	4.42
4.25 - 6.00	1270.	862.	11378.	1904.	0.	10308.	2974.	15008.	5.35	871.75	3.67
6.00 - 10.00	6669.	4449.	38296.	5806.	0.	32489.	11613.	119280.	8.28	551.09	2.25
10.00 - 15.00	13592.	9227.	89161.	11537.	0.	75602.	25096.	364517.	12.60	617.40	2.61
15.00 +	57423.	60895.	496380.	58972.	0.	423416.	131935.	4352257.	36.75	805.93	3.57
REGION											
NORTHEAST	15403.	15788.	138837.	16154.	0.	123424.	31566.	980813.	31.45	838.53	3.96
MIDWEST	19300.	18964.	180708.	22453.	0.	161147.	42015.	1044370.	26.21	877.22	4.04
SOUTH	28354.	24975.	205307.	25790.	0.	164997.	66101.	1690260.	28.11	679.20	2.74
WEST	18180.	17010.	133453.	16748.	0.	112327.	37873.	1148198.	30.25	688.47	2.96
AGE OF WORKER											
< 25	7051.	1505.	18966.	2900.	0.	16778.	5088.	188419.	13.74	258.43	1.22
25-34	18308.	15787.	113267.	13915.	0.	94984.	32198.	994911.	25.14	578.91	2.40
35-44	19341.	28863.	143597.	18176.	0.	119458.	42315.	1245639.	30.41	697.02	2.92
45-54	21803.	21282.	217233.	24940.	0.	185807.	56366.	1522792.	33.62	925.61	4.10
55-64	13895.	8006.	151528.	19119.	0.	133345.	37302.	866813.	30.91	1023.46	4.75
65+	840.	1295.	13713.	2095.	0.	11522.	4286.	45071.	29.40	1568.44	7.52
TOTAL	81237.	76738.	658305.	81146.	0.	561895.	177555.	4863649.	28.76	758.53	3.32

a/ Includes all covered workers including workers with single coverage and workers with family policies.
Source: Health Benefits Simulation Model (HBSM) baseline estimates for 2010.

Figure 5
Flow Diagram Steps in Forming and Using Synthetic Firms of



Source: The Lewin Group

For example, a firm assigned to a given MEPS worker that has 5 employees would be populated by that worker plus another four MEPS workers chosen at random who also fit the employer's worker profile. If this individual is in a firm with 1,000 workers, he/she is assigned to a Kaiser/HRET employer of that size and the firm is populated with that individual plus another 999 MEPS workers.[8] This process is repeated for each worker in the HBSM data to produce one synthetic firm for each MEPS worker (about 63,000 synthetic firms). Synthetic firms are created for all workers including those who do not sponsor health insurance, and workers who do not take the coverage offered through work.

We developed this database by reversing the process described above to match MEPS workers to Kaiser/HRET firms. We matched MEPS workers with each of the synthetic people created from the joint distribution matrix described in the prior section. Thus, we controlled for wage level, part-time/full-time status, age, gender, medical policy type and the coverage/eligibility status of employees in selecting workers for each firm.

Controlling for eligibility and participant status of the workers in each firm is important to simulating the impact of policy proposals affecting employers. As shown in ***Figure 2*** above, 13.9 percent of workers are employed by a firm that offers coverage but are ineligible to participate. Also, about 9.9 percent of all workers who are offered coverage by their employer have declined to enroll. Thus, policies requiring employers to cover all of their workers would have a significant impact on employers with large numbers of non-covered workers.[9]

For each individual worker, health expenditures covered by their employer are estimated to be equal to spending for the worker and his or her dependents, plus health spending for the other workers and dependents assigned to the firm. Thus, the costs estimated for each worker's employer reflect that worker's own health care costs, as well as those of the other employees in the firm. This is particularly important for workers in small firms where high health care costs among one individual can have a huge impact on expected per-worker costs and premiums.

For example, take the case of a MEPS worker with $40,000 in medical expenses in a small firm. We would expect a large premium for this group relative to the experience rated premium for other firms where the workers have had little health spending. Thus, in simulating the effect of a policy that creates a voluntary community-rated insurance pool, we would expect the employer of the worker with the high health care costs to decide to cover their workers through the public plan while the firms with the lower health care costs would purchase private coverage. This means that the public plan would tend to accumulate higher cost workers, leaving the lower cost workers in private plans.

2. Actuarial Value of Health Plans

We estimated the "actuarial value" of each health plan reported in the KFF/HRET data. A plan's actuarial value is an estimate of the average cost per member of providing the services

---

[8] Individuals are often reused in populating synthetic firms.

[9] MEPS workers are classified based upon their eligibility and coverage status and matched with the synthetic workers created for each firm that have the same eligibility/coverage status including: covered, eligible but declined, ineligible and employer not offering coverage.

covered by the plan according to the specific cost sharing amounts for a given covered population. In each case, the population characteristics, provider charges and health services utilization used for each plan is identical. All that is varied are the specific coverage and cost-sharing provisions of each individual plan. Actuarial valuation provides a basis for comparing health plans with different levels of covered services with varying levels of cost-sharing.

We estimated the actuarial value of each of about 3,000 separate health plans included in the 2006 Kaiser Family Foundation (KFF) by the Health Research and Education Trust (KFF/HRET) survey assuming an identical typical population is enrolled in each plan. These data provide information on the characteristics of each health plan offered by employers including HMOs PPOs, POS and HDHPs and HSAs. Enrollment and detailed benefit characteristics are provided for each of up to four health plans offered by each employer.

For each plan, the database provides information on covered services including mental health, vision, prescription drugs and dental coverage. It also includes cost-sharing information including:

- Deductible amount single/family;
- Out-of-pocket stop-loss amount;
- Coinsurance/co-payments for physician care;
- Inpatient hospital deductible if separate;
- Outpatient hospital co-payment;
- Emergency room co-payment;
- Number of covered visits;
- Mental health covered visits and co-payments;
- Prescription drug deductible if separate;
- Co-payments for drugs including differences for generic and brand name;
- Dental co-payment; and
- Lifetime benefits limit.

We used the US worker and dependent population data in HBSM for the analysis, which is based upon the 2002 through 2006 Medical Expenditures Panel Survey (MEPS) data. These data provide information on health services utilization and costs for the population now covered under an employer health plan. We estimated the actuarial value of each plan by computing the average amount of services that would be covered under the plan's coverage and cost-sharing provisions.

Our estimate of the distribution of covered workers by actuarial value of their health plan is presented in ***Figure 6***. These data show the decile ranking of health plans weighted by number of workers for 2007. The median actuarial value of health plans is $4,120. By comparison, the actuarial value of the Blue Cross/Blue Shield standard option under the Federal Employees Health Benefits Program (FEHBP) is at roughly the 60th percentile among employer health plans. This means that the benefits provided by roughly 40 percent of health plans are on average greater than the benefits provided under FEHBP.

Figure 6
Estimated Decile Ranking of Employer Health Plans by Actuarial Value

Percentile Ranking	Actuarial Value
Lowest	$2,901
10th	$3,802
20th	$3,879
30th	$3,966
40th	$4,032
50th	$4,120
60th	$4,182
70th	$4,210
80th	$4,238
90th	$4,283
Highest	$5,952

FEHBP BCBS Standard option - $4,196

Source: Lewin Group analysis of 2006 KFF/HRET employer health plan survey data using HBSM.

These estimates include benefits costs only. They do not include overhead costs, which will differ by size of group. These actuarial values account only for differences in the benefits and point-of-service cost-sharing provisions that are provided for each health plan. It does not account for detailed differences in covered services. Also, the actuarial value does not vary with the type of plan such as HMOs, PPOs, and HDHPs, except to the extent that these plans have differing cost-sharing amounts.

D. Employer Insurance Market Premium Model

We model premiums for these synthetic firms in the insurance markets based upon the small group rating rules in each state and reported health expenditures for the workers assigned to each plan. This includes community rating, age rating, and rating bands. Experience rating based upon reported health expenditures for the workers assigned to each firm is also used for fully insured plans where permitted (usually for mid-sized firms). We also estimate premiums for self-funded plans based upon the health services utilization for people assigned to each firm. The data elements developed in this process include the following for each synthetic firm:

- Average benefits costs per worker for all of the covered workers (with dependents) in self-funded plans;
- Community-rated/modified community-rated premium for each worker's employer in small firms where these types of rating are required;
- Average "expected costs" per worker for the covered workers in the employer's plan in states where experience rating is permitted; and
- Economic and demographic profile of employer's workforce.

For comparison purposes, premiums are estimated for a common benefits package in both the public pool and individual firms. In this analysis, we assumed benefits comparable to those

provided to federal workers under the Blue Cross/Blue Shield standard plan offered to federal workers in FEHBP. These premiums can be adjusted to reflect the different benefits packages used in the various policy proposals where no minimum benefits package is sponsored. The methods used to estimate employer premiums are presented below:

1. *Premiums in Self-Funded Plans*

Larger employer health plans are typically self-funded. In self-funded plans, employer costs are equal to benefits costs for covered people plus the cost of administration. Thus, for self-funded plans, the employer's cost of insurance is simply equal to the sum of covered services reported by each covered worker and/or dependent assigned to the firm plus an additional amount for administration. For each firm, we compute an average cost per worker separately for workers by single and family coverage, as well as the number of people in the firm who have these types of coverage.

2. *Premiums in Fully Insured Groups – Where State Rating Laws Apply*

Smaller firms tend to be "fully insured". In a fully insured arrangement, a premium is paid to an insurer who accepts the risk of paying for all covered services for the people covered under the plan. Insurers typically set premiums based upon the perceived risk of covering the group. Premiums can vary by age, sex, firm size, industry, prior claims experience and the presence of a health condition for one or more group members.

Prior to the Health Insurance Accountability and Portability Act (HIPAA) of 1996, insurers could decline to cover a group or an individual in a group due to health status. Under HIPAA, insurers are now required to accept all applicant groups. They are also required to cover all group members without pre-existing condition limitations who have consistently maintained their coverage over-time as they move from one employer group to another (i.e., portability of benefits), or as they move from an employer group to a plan in the individual market. However, HIPAA does nothing to regulate the methods used to set premium levels.

Many states have enacted restrictions on the methods used to set premiums. In some states, such as New York and Vermont, insurers are required to sell insurance at a single community-rate to all applicants. Other states have adopted modified community-rating where the rates set by the plans are permitted to vary with age. Some states have adopted rating bands, which permit the insurer to vary the premium by a specified amount such as plus-or-minus 25 percent. These rating rules typically apply to firms with fewer than 50 workers, although this varies widely by state.

In this analysis, we estimated premiums for covered firms based upon a simplified simulation of the ways in which premiums are computed in each state.[10] We used community-rating and modified community-rating to set premiums for states with these practices. (Premiums in states where experience rating is permitted were computed for applicable groups as described below).

---

[10] HBSM randomly assigns individuals a state of residence based upon the distribution of people by age and income across states from the Bureau of Census Data.

Health expenditures reported in the MEPS data are used as the basis for calculating premium rates in the group market. Costs are accumulated for people in the employed population and grouped by age and gender. We compress premiums for these groups in states that use rating bands or place limits on age groupings. The model uses the rating classifications permitted in each state to assign premiums to each person within the firm. These rating rules typically apply to firms with under 50 workers, although this varies by state.

3. *Fully Insured Firms – States Where Rating Limits Do Not Apply*

Many employers purchase coverage in markets that are not subject to state rating regulations. This includes medium and large firms that are exempt from small group regulations in most states (the definition of "small group" market varies across states but is typically defined to include groups with fewer that 25 to 50 workers), and firms in states without rating regulations. For these employers, the premiums that they pay typically reflect the claims experience of the group or some other indication of worker health status. We simulated these premiums based upon estimates of the degree to which expenditures in one year predict expenditures for the following year for individual groups.

Data from the MEPS include a sub-sample of people who were interviewed in two consecutive years (2003 and 2004). These data show an overall "regression to the mean" in health spending from year to year. For example, individuals covered in the lowest tenth percentile of the population by health spending actually had no health care expenses in 2003. These same individuals had an average of $572 in spending in 2004 ***(Figure 7)***. Conversely, people in the highest percentile group had an average of $160,727 in spending in 2003 followed by average spending of only $23,708 in 2004. This reflects changing health status over time as healthy people become ill and sick people become well.

Figure 7
Average Cost Per Person in Two Consecutive Years by Percentile Ranking of First Year Spending

Percentile of Year 1 Cost per Person	(2003) Year 1	(2004) Year 2
10 Percent	$0	$572
20 Percent	$102	$660
30 Percent	$257	$807
40 Percent	$469	$1,162
50 Percent	$781	$1,525
60 Percent	$1,302	$2,229
70 Percent	$2,117	$2,800
80 Percent	$3,646	$3,466
90 Percent	$7,155	$5,435
95 Percent	$11,954	$8,685
97.5 Percent	$19,153	$9,548
98.75 Percent	$29,216	$14,188
100 Percent	$160,727	$23,708
Average	$2,939	$3,007
Median	$781	$610

Source: Lewin Group analysis of the Medical Expenditures Panel Survey (MEPS) data for 2003 and 2004.

The model includes a process that predicts health spending for individuals assigned to each group based upon their spending in the prior year. First, we used the 2003/2004 MEPS data for people included in the sample for both 12 month periods to estimate a matrix showing the distribution of people by percentile ranking of health spending in 2003 by percentile ranking of their spending in 2004 (***Figure 8***). This matrix was used to impute a decile ranking of spending during the prior year for each worker in the HBSM household database.

These simulated data enable us to estimate and compare average spending for each group in two consecutive years. ***Figure 9*** presents the model's estimates of changes in costs per worker in firms of various firm size groups. In this analysis, we assumed that premiums for each individual group would be equal to the estimate of expected costs presented in ***Figure 9***, given the level of group spending in the prior year. The premium also includes an estimate of administrative costs estimated as described below.

4. Non-Insuring Firms

As discussed above, we create synthetic firms for both insuring employers and non-insuring employers. For purposes of simulating various proposals, we estimate premiums for non-insuring firms as well. These premiums represent what the employer would have to pay to obtain insurance in today's market for a uniform benefits package based upon the Blue Cross/Blue Shield standard plan offered to federal workers in the FEHBP.

We estimate these premiums in two steps. First, we adjust the health services utilization and expenditures data for each uninsured member of the group assuming they become insured. As discussed below, we assume that health services utilization would adjust to the levels reported by insured people with similar age, sex, and self-reported health status characteristics. Premiums are then calculated as if they were in an insuring firm using the methods presented above.

5. Benefits Design Premiums Effects

As discussed above, the model simulates health insurance premiums for each synthetic firm based upon the rating rules that apply in the firm's state of residence for a single benefits package based upon the BCBS standard option under FEHBP. Because we use a uniform benefits package, this simulation of premiums shows how costs will vary by employer group based upon differences in member characteristics only.

In the next step, we calculate the premiums for the plan actually offered by the employer. This is calculated by multiplying the premium estimated for each employer under the BCBS FEHBP benefits package by the ratio of the actuarial value of the benefits offered by the employer and the actuarial value of the BCBS FEHBP package (***Figure 7*** above). We then compute the worker and employer premium shares based upon the employee contribution requirement reported for each KFF/HRET plan.

Figure 8
Distributions of People by Percentile Ranking of Spending in 2004 by Percentile Ranking of Spending in 2003

Y2004	10%	20%	30%	40%	50%	60%	70%	80%	90%	95%	97.50%	98.75%	100%	TOTAL
Y2003														
10%	44.34%	22.13%	18.52%	12.19%	7.47%	6.06%	2.64%	2.91%	2.80%	2.01%	1.72%	0.57%	3.97%	13.64%
20%	12.09%	15.21%	11.37%	9.88%	6.36%	3.84%	3.02%	1.54%	1.70%	0.97%	0.51%	0.63%	0.70%	6.37%
30%	14.25%	18.13%	18.74%	16.36%	14.09%	7.23%	5.49%	3.73%	2.28%	2.72%	2.58%	1.00%	1.24%	10.00%
40%	9.19%	12.21%	14.89%	17.41%	14.94%	11.48%	8.85%	5.71%	4.43%	4.28%	3.68%	3.25%	0.73%	10.06%
50%	6.65%	11.60%	12.40%	13.78%	16.59%	15.17%	10.25%	7.05%	5.53%	4.61%	3.63%	1.66%	3.91%	9.95%
60%	4.15%	6.05%	9.31%	11.93%	14.41%	17.04%	16.37%	9.30%	6.68%	7.30%	3.72%	7.81%	5.05%	10.01%
70%	2.64%	4.94%	5.60%	7.57%	9.20%	15.21%	18.70%	16.31%	12.46%	10.83%	7.25%	7.94%	4.12%	9.98%
80%	2.28%	3.79%	4.76%	3.74%	9.40%	11.33%	14.83%	23.03%	17.95%	11.60%	9.61%	8.21%	6.06%	10.00%
90%	2.83%	2.76%	2.58%	4.69%	4.84%	7.60%	12.49%	19.18%	23.27%	20.44%	22.21%	13.90%	17.83%	10.00%
95%	0.80%	1.94%	1.44%	1.89%	1.77%	2.75%	4.10%	7.13%	12.14%	16.64%	16.96%	16.45%	17.54%	5.00%
97.50%	0.55%	0.91%	0.26%	0.28%	0.66%	1.24%	2.04%	2.88%	6.28%	8.89%	10.99%	14.25%	9.64%	2.50%
98.75%	0.20%	0.21%	0.08%	0.23%	0.04%	0.59%	0.60%	0.64%	2.83%	5.28%	7.64%	13.24%	7.47%	1.25%
100%	0.05%	0.12%	0.06%	0.04%	0.23%	0.45%	0.61%	0.60%	1.64%	4.43%	9.50%	11.10%	21.73%	1.24%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

Source: Lewin Group analysis of the Medical Expenditures Panel Survey (MEPS) data for 2003 and 2004.

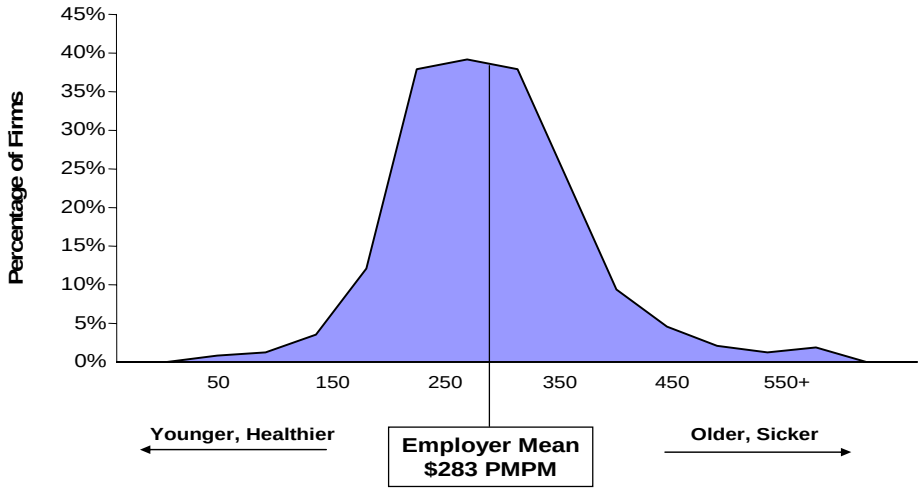
Figure 9
Average Costs Per Person in Two Consecutive Years for Synthetic Firms Groups by Percentile Ranking of First Year Group Costs by Firm Size in 2010

Average Costs Per Covered Individual										
	Under 10		10-24		25-99		100-199		1,000-5,000	
Percentile of Year 1 Costs	Year 1 Costs	Year 2 Costs	Year 1 Costs	Year 2 Costs	Year 1 Costs	Year 2 Costs	Year 1 Costs	Year 2 Costs	Year 1 Costs	Year 2 Costs
10 Percent	$142	$1,132	$684	$1,578	$1,250	$1,912	$2,003	$2,406	$2,547	$2,598
20 Percent	$397	$1,633	$1,114	$1,885	$1,688	$2,250	$2,390	$2,675	$2,752	$2,815
30 Percent	$658	$1,759	$1,443	$2,123	$1,981	$2,453	$2,616	$2,818	$2,870	$2,911
40 Percent	$961	$1,885	$1,755	$2,325	$2,245	$2,608	$2,799	$2,950	$2,968	$2,987
50 Percent	$1,372	$2,311	$2,093	$2,551	$2,510	$2,752	$2,970	$3,068	$3,068	$3,078
60 Percent	$1,960	$2,730	$2,476	$2,756	$2,795	$2,936	$3,141	$3,180	$3,172	$3,194
70 Percent	$2,646	$2,744	$2,932	$3,021	$3,129	$3,058	$3,331	$3,298	$3,290	$3,294
80 Percent	$3,402	$3,398	$3,571	$3,381	$3,571	$3,296	$3,569	$3,404	$3,434	$3,412
90 Percent	$5,631	$5,446	$4,703	$3,793	$4,236	$3,599	$3,919	$3,585	$3,638	$3,538
95 Percent	$7,897	$5,619	$6,392	$4,631	$5,189	$4,004	$4,403	$3,835	$3,917	$3,784
97.5 Percent	$13,123	$8,300	$8,396	$5,376	$6,201	$4,428	$4,925	$4,200	$4,220	$4,029
98.75 Percent	$20,262	$11,294	$10,849	$5,810	$7,357	$4,672	$5,452	$4,485	$4,599	$4,548
100 Percent	$40,825	$19,210	$16,406	$7,280	$9,823	$5,332	$6,421	$4,713	$5,262	$4,931
Total	$3,467	$3,467	$2,852	$2,852	$2,913	$2,913	$3,153	$3,153	$3,151	$3,151

Source: Lewin Group estimates using HBSM Synthetic firm data.

Figure 10 presents the distribution of employers in the Lewin model by average benefits costs per-member-per-month (PMPM) under a standard benefits package. We estimate average premiums of about $283 PMPM in 2006, which includes benefits and administrative costs for employer health plans over the number of covered workers and dependents. There is variability in health plan costs due to differences in administrative costs, claims experience, health status rating and variations in rating practices across states.

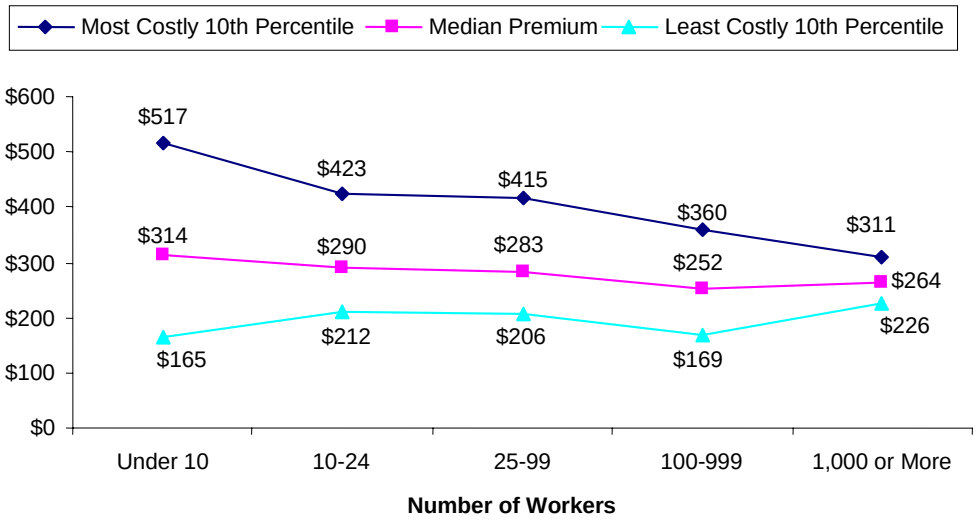
Figure 10
All Insuring Employers by Premium Cost PMPM in 2006:
Includes Benefits and Administration [a/]



a/ Estimates for a standard benefits package.
Source: Lewin Group estimates using the Health Benefits Simulation Model (HBSM).

Figure 11 illustrates that the variability in PMPM premium costs varies widely across employers by size of group. For example, among firms with fewer than 10 workers, PMPM premiums range from about $460 for firms in the 10th percentile of the most costly firms compared with average costs of $157 for firms in the 10th percentile of least costly firms. By comparison, PMPM premiums in firms with 1,000 or more workers vary from $372 for the 10 percent most costly groups to $215 for the least costly 10 percent of firms.

Figure 11
Estimated Average Health Insurance Costs (PMPM) for Most Costly and Least Costly 10 Percent of Employer Groups in 2006:
Includes Benefits and Administration [a/]



a/ Estimates for a standard benefits package.
Source: Lewin Group estimates using the Health Benefits Simulation Model (HBSM).

E. Individual Insurance Market Simulation Model

HBSM also includes a model of the individual insurance market. The model defines the non-group insurance markets to include all people who are not otherwise eligible for coverage under an employer plan, Medicare, Medicaid or TRICARE (i.e., military dependents and retirees). The non-group market includes people now purchasing health insurance and those who are uninsured. Our database for the individual market simulations includes all of the individuals meeting this description reported in the HBSM household data.

The model simulates premiums for individuals using the rules that prevail in each state. The model identifies people reporting one of several chronic health conditions that typically result in denial of coverage and referral to the high-risk pool. It also estimates premiums based upon health spending in the state and the rating practices that prevail in the state. Premiums can be varied by age, gender and health status. This is done by compiling a "rate book" based upon the HBSM health spending data for the state reflecting how costs vary with individual characteristics.

We simulate health status rating in the individual market in states where this is permitted. In these states, the premiums that individuals pay reflect the claims experience of the group or some other indication of worker health status. We simulated these premiums using a "tiered rating" process that classifies people into several risk levels based upon prior year health expenditures. We estimate costs for each of these individuals in the prior year using the imputation of prior year expenditures presented above in ***Figures*** **7** and **8**.

In most states, insures are permitted to deny coverage to people with health conditions. Thirty-three states have a high risk pool available to those who cannot obtain coverage due to their health condition.[11] These individuals are termed "uninsurable" because it is known that these people will incur substantial losses while enrolled due to their illness. People enrolling in high risk pools typically pay a premium equal to between 150 percent and 200 percent of average expected costs for individuals in their age group. Pool losses in excess of premium collections are paid by the state with funds collected through an assessment on insurance or other state revenues. There were about 190,000 people enrolled in these high risk pools nationwide.

We simulate this by selecting a portion of the population that reporting in MEPS that they had a chronic health condition and are also covered under a non-group plan. We did this using the health condition data reported in MEPS for each individual. The conditions and ICD9 codes used to identify "uninsurable" individuals is presented in ***Figure 12***. We assumed that premiums for these individuals would be equal to 150 percent of average costs for an individual of their reported age in the general population (i.e., a "standard risk").

We also identify uninsured people reporting these health conditions. This designation is used to identify high-cost cases potentially eligible for proposals that would create expanded high-risk pools.

F. Benchmarking Data

A key element in developing the baseline database for the simulations is to control the database to match all available data on the demographic and economic characteristics of the population as well as health services utilization and expenditures. Below, we describe the methods used to "benchmark" these data.

1. Population Data

As discussed above, the weights in the MEPS data are adjusted to simultaneously replicate the distribution of the population by source of coverage and over 250 other variables.[12] These variables include: demographic distributions by age, sex, marital status, race, and ethnicity; employment characteristics such as industry, firm size, wage level, and coverage at work; income data including total family income and earnings; and insurance coverage by each source including Medicare, Medicaid, employer-sponsored insurance (ESI), retiree coverage, other sources, and the uninsured. We then "age" these data to a future year through additional sample weight adjustments based upon the Bureau of the Census population projections.

In this analysis, we corrected both the MEPS and the CPS data for under-reporting of Medicaid coverage by assigning people who appear to be eligible for the program to Medicaid covered status, using the income eligibility levels actually used in each state by class of eligibility (e.g.,

---

[11] http://www.statehealthfacts.org/comparetable.jsp?ind=602&cat=7

[12] This iterative weighting process is based upon the iterative proportional fitting methodology. It is generally similar to the methods used by the Bureau of the Census to develop family weights while maintaining key demographic distributions.

children, parents etc.).[13] We also calibrated these data to reflect coverage expansions that have occurred since these data were collected. We then created comparable definitions of covered status in the two databases, which enable us to use the 2007 CPS data as control totals for the pooled 2002-2005 MEPS. The MEPS reports sources of coverage by month for 12 months while the CPS reports sources of coverage in the prior year. However, both databases permit us to identify the "primary source" of coverage for individuals in the prior year, where uninsured is treated as a "coverage" category.

Figure 12
Health Conditions used to Identify "Uninsurable" Individuals

ICD9 Code	Description
042	HIV Infection
140-149	Malignant Neoplasm of Lip, Oral Cavity and Pharynx
150-159	Malignant Neoplasm of Digestive Organs and Peritoneum
160-165	Malignant Neoplasm of Respiratory and Intrathoracic Organs
170-176	Malignant Neoplasm of Bone, Connective Tissue, Skin and Breast
179-189	Malignant Neoplasm of Genitourinary Organs
190-199	Malignant Neoplasms of Other and Unspecified Sites
200-208	Malignant Neoplasms of Lymphatic and Hematopoietic Tissue
210-229	Benign Neoplasms
230-234	Carcinoma In Situ
235-238	Neoplasms of Uncertain Behavior
239	Neoplasms of Unspecified Nature
250	Diabetes Mellitis
278	Overweight, Obesity and Other Hyperalimentation
295	Schizophrenic Disorders
303	Alcohol Dependence Syndrome
345	Epilepsy and Recurrent Seizures
401	Essential Hypertension
413	Angina Pectoris
436	Acute Cerebrovascular Disease
440	Atherosclerosis
492	Emphysema
556	Ulcerative Colitis
571	Chronic Liver Disease and Cirrhosis
710	Diffuse Diseases of Connective Tissue

[13] The model replicates the average monthly enrollment levels reported in the CMS reports by class of eligibility, which corresponds to CMS person-years enrollment summaries. The imputation process is also calibrated so that it matches CMS data on the number of people enrolled some time during the year. Thus, the model controls for estimates of enrollment for both person years enrollment and ever enrolled.

2. Health Expenditures

Once the MEPS data were re-weighted for population and coverage, we adjusted the health spending data in the file to match projections of aggregate health spending by type of service and source of payment. These data are available from the National Health Accounts as developed by the Office of the Actuary of the CMS. We then controlled the model to use estimated trends in health spending in future years developed by CMS.[14] This task involves matching the service and coverage definitions in MEPS to the CMS data, which involved different classifications of expenditures.

Figures 13 through ***15*** present our estimates of spending for personal health services in 2010 for the non-institutionalized population. These estimates exclude care provided to people in institutions including nursing homes and prisons. They also include a valuation of free care. Estimates exclude spending for nursing home care, home health care and Medicaid disproportionate share hospital (DSH) payments. In addition, the hospital revenues data exclude non-patient revenues.

3. Income "Aging" Data:

The model was used to age the household and employer data to reflect projected growth in earnings and income from other sources. This was done in a two-step process. The first step simulates the widening gap in income between the highest and lowest income groups in the U.S. In this step, income for individuals in the MEPS is increased by the average change in total family income for people by decile ranking of the population between 2002 and 2007, as reported in the 2003 and 2008 CPS data. Thus, incomes for the lowest income decile of the population in the 2003 MEPS data are increased by the increase in average income levels for the lowest income decile of the population between 2003 and 2008.

Total income for people in other decile groups is adjusted in the same way. This approach is intended to improve upon the practice of simply increasing income for all people in the data by a uniform percentage that does not reflect factors affecting differences in income growth across the population. In the second step, we adjusted total income by source to match estimates of total income data that is available from various federal agencies.

[14] We generally prefer to use CBO health spending projections to assure consistency with CBO's economic assumptions, which we also use in the model.

Figure 13
Estimated Health Spending by Type of Service and Source of Payment: All Non-Institutionalized in 2010
(In millions) [a/]

										SUB GROUP		
	TOTAL	HOSP INPAT[b/]	PHYSICAN	DENTIST	OTHER PROF	DRUGS & MED[c/]	MED EQUIP	NURSING HOME	OTHER HEALTH[d/]	HOSP ER/OUT	WELL CHILD	MENTAL HEALTH
OUT OF POCKT	239492.8	13178.8	59858.1	50745.9	18705.1	63713.6	15163.7	0.0	0.0	18127.7	5211.0	4732.2
EMP WORKERS	658331.8	141202.3	233989.7	52353.9	21518.0	90063.0	2498.4	0.0	0.0	116706.5	36382.4	6858.8
EMP NONWRKRS	81696.4	17966.5	26040.0	3136.1	3047.1	18479.2	375.6	0.0	0.0	12651.9	6.3	948.2
NON GROUP	50247.9	11138.0	18361.3	2569.6	1371.5	7994.9	360.5	0.0	0.0	8452.3	1418.7	520.1
FREE FROM Pr[e/]	58437.5	24321.6	4374.1	4754.3	3085.3	0.7	1454.8	0.0	0.0	20446.7	755.4	1255.0
MEDICARE	445953.2	162798.4	113684.7	0.0	15460.0	65235.5	8583.1	0.0	0.0	80191.6	520.9	4920.7
MEDICAID[f/]	232890.2	94219.0	44563.2	6721.3	5504.5	26560.3	88.0	0.0	0.0	55233.9	16825.2	13092.7
CHAMPUS/VET	64200.6	24431.4	10380.0	0.0	0.0	11005.0	0.0	0.0	0.0	18384.3	950.7	1509.7
OTHER PUBLIC	35445.8	14332.1	8384.4	257.8	284.8	462.7	183.9	0.0	0.0	11540.1	1007.8	1990.0
WORKERS COMP	27252.0	4536.8	16029.6	0.0	3427.0	155.3	344.9	0.0	0.0	2758.5	122.4	210.7
MediGap	21787.8	4509.1	10167.6	464.2	2145.3	0.0	0.0	0.0	0.0	4501.6	0.8	72.7
TOTAL	1915736.2	512634.0	545832.5	121003.2	74548.7	283670.1	29052.8	0.0	0.0	348994.9	63201.7	36110.8

a/ Includes all spending for acute care services, but excludes home health and nursing home care.
b/ Excludes non-patient revenues.
c/ Excludes non-prescription drugs.
d/ Excludes items related to home health.
e/ Based upon valuation of these services in the Medical Expenditures Panel Survey data (MEPS).
f/ Excludes Medicaid Disproportionate Share Hospital (DSH) payments.
Source: Lewin Group estimates based upon health spending projections prepared by the Centers for Medicare and Medicaid Services (CMS), see: "National Health Care Expenditures Projections: 2003 – 2012," CMS, Office of the Actuary.

Figure 14
Estimated Health Spending by Type of Service and Source of Payment: All Non-Institutionalized
Under age 65 in 2010
(In millions) [a/]

											SUB GROUP	
	TOTAL	HOSP INPAT[b/]	PHYSICAN	DENTIST	OTHER PROF	DRUGS & MED[c/]	MED EQUIP	NURSING HOME	OTHER HEALTH[d/]	HOSP ER/OUT	WELL CHILD	MENTAL HEALTH
OUT OF POCKT	192306.8	11628.2	52679.5	39553.7	14715.2	47143.1	10294.7	0.0	0.0	16292.3	5208.4	4591.6
EMP WORKERS	643153.0	137829.9	228972.0	51561.6	21188.6	87103.6	2433.7	0.0	0.0	114063.6	36382.4	6813.8
EMP NONWRKRS	45645.6	12564.5	14272.5	1588.1	1672.8	7841.0	100.3	0.0	0.0	7606.5	5.1	672.9
NON GROUP	48662.7	11138.0	18339.5	2569.6	1369.4	6607.2	205.4	0.0	0.0	8433.6	1418.7	520.1
FREE FROM Pr[e/]	51437.4	22105.1	3895.4	3919.6	2446.1	0.0	852.6	0.0	0.0	18218.6	755.4	1230.4
MEDICARE	86827.0	27037.0	19988.2	0.0	3020.8	18562.3	1690.9	0.0	0.0	16527.8	501.5	2817.9
MEDICAID[f/]	212437.1	84921.9	41187.9	5841.4	4647.5	25257.8	59.5	0.0	0.0	50521.2	16824.1	9788.4
CHAMPUS/VET	41670.4	15022.3	7049.9	0.0	0.0	6314.4	0.0	0.0	0.0	13283.8	950.7	1355.5
OTHER PUBLIC	31297.5	12222.6	7625.4	243.9	235.1	421.6	145.6	0.0	0.0	10403.1	1007.8	1691.3
WORKERS COMP	25673.3	3980.0	15292.4	0.0	3319.6	155.0	334.1	0.0	0.0	2592.1	122.4	187.8
MediGap	940.0	178.2	462.4	25.8	66.0	0.0	0.0	0.0	0.0	207.6	0.0	33.0
TOTAL	1380050.8	338627.6	409765.2	105303.7	52681.2	199406.0	16116.9	0.0	0.0	258150.2	63176.6	29702.7

a/ Includes all spending for acute care services but excludes home health and nursing home care.
b/ Excludes non-patient revenues.
c/ Excludes non-prescription drugs.
d/ Excludes items related to home health.
e/ Based upon valuation of these services in the Medical Expenditures Panel Survey data (MEPS).
f/ Excludes Medicaid Disproportionate Share Hospital (DSH) payments.
Source: Lewin Group estimates based upon health spending projections prepared by the Centers for Medicare and Medicaid Services (CMS), see: "National Health Care Expenditures Projections: 2007 – 2017," CMS, Office of the Actuary.

Figure 15
Estimated Health Spending by Type of Service and Source of Payment: All Non-Institutionalized Age 65 and older in 2010 [a/]
(In millions)

											SUB GROUP	
	TOTAL	HOSP INPAT[b/]	PHYSICAN	DENTIST	OTHER PROF	DRUGS & MED[c/]	MED EQUIP	NURSING HOME	OTHER HEALTH[d/]	HOSP ER/OUT	WELL CHILD	MENTAL HEALTH
OUT OF POCKT	47186.0	1550.5	7178.6	11192.2	3989.9	16570.5	4869.0	0.0	0.0	1835.3	2.6	140.6
EMP WORKERS	15178.8	3372.5	5017.6	792.3	329.4	2959.4	64.7	0.0	0.0	2642.9	0.0	45.0
EMP NONWRKRS	36050.8	5402.0	11767.4	1548.1	1374.4	10638.2	275.3	0.0	0.0	5045.4	1.2	275.3
NON GROUP	1585.3	0.0	21.7	0.0	2.1	1387.7	155.1	0.0	0.0	18.7	0.0	0.0
FREE FROM Pr[e/]	7000.2	2216.5	478.6	834.8	639.2	0.7	602.2	0.0	0.0	2228.1	0.0	24.6
MEDICARE	359126.2	135761.4	93696.4	0.0	12439.2	46673.2	6892.2	0.0	0.0	63663.8	19.4	2102.8
MEDICAID[f/]	20453.1	9297.2	3375.4	880.0	857.0	1302.5	28.5	0.0	0.0	4712.7	1.1	3304.2
CHAMPUS/VET	22530.2	9409.1	3330.1	0.0	0.0	4690.6	0.0	0.0	0.0	5100.4	0.0	154.2
OTHER PUBLIC	4148.4	2109.5	759.0	13.9	49.7	41.1	38.3	0.0	0.0	1137.0	0.0	298.7
WORKERS COMP	1578.7	556.8	737.2	0.0	107.4	0.3	10.7	0.0	0.0	166.3	0.0	22.9
MediGap	20847.8	4330.9	9705.2	438.4	2079.3	0.0	0.0	0.0	0.0	4294.0	0.8	39.7
TOTAL	535685.5	174006.4	136067.2	15699.6	21867.5	84264.2	12935.9	0.0	0.0	90844.7	25.1	6408.0

a/ Includes all spending for acute care services. Excludes home health and nursing home care.
b/ Excludes non-patient revenues.
c/ Excludes non-prescription drugs.
d/ Excludes items related to home health.
e/ Based upon valuation of these services in the Medical Expenditures Panel Survey data (MEPS).
f/ Excludes Medicaid Disproportionate Share Hospital (DSH) payments.
Source: Lewin Group estimates based upon health spending projections prepared by the Centers for Medicare and Medicaid Services (CMS), see: "National Health Care Expenditures Projections: 2007 – 2017," CMS, Office of the Actuary.

1. Economic Data

In this analysis, we developed ten year projections of the impact of each health reform proposal on health spending and the federal budget for the 2010 through 2017 period. In developing these projections, we used assumptions developed by the Office of the Actuary of CMS on the growth in Gross National Product (GDP), population growth and the growth in health spending for various health services for various payer groups. These assumptions are summarized in ***Figure 16***.

Figure 16
Summary of Annual Percentage Change Assumptions used to Develop Health Spending Projections for 2010 through 2017

	2010	2011	2012	2013	2014	2015	2016	2017
Gross Domestic Product (GDP)	5.0%	5.0%	4.8%	4.6%	4.5%	4.6%	4.6%	4.6%
Population Growth	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%
National Health Spending	6.7%	6.6%	6.6%	6.7%	6.6%	6.6%	6.7%	6.7%
Acute Care Costs	6.3%	6.3%	6.4%	6.4%	6.3%	6.3%	6.4%	6.4%
Medicaid	7.7%	7.9%	7.9%	7.9%	8.0%	8.1%	8.2%	8.3%
Medicaid Acute Care	7.5%	7.6%	7.7%	7.7%	7.8%	7.9%	7.9%	8.0%
Medicaid Long-term Care	6.4%	6.5%	6.4%	6.4%	6.4%	6.5%	6.6%	6.9%
Per-capita Health Spending	5.8%	5.7%	5.8%	5.9%	5.8%	5.8%	5.9%	5.9%
Per-capita Gross Domestic Product Growth	4.2%	4.2%	4.0%	3.8%	3.7%	3.8%	3.8%	3.8%

Source: Lewin Group estimates based upon "National Projections: 2007-2017," by the Centers for Medicare and Medicaid Services (CMS), Office of the Actuary.

The product of these benchmarked data is a representation of health coverage and spending in the U.S. health care system in the form of a household database linked with employers. Estimates of average health spending per family are presented in ***Figure 17*** for 2010 Family health spending includes premium payments and out-of-pocket payments for health services. Premium payments include: employee contributions for employer-sponsored coverage, non-group premium payments, Medicare Part B premium payments, premiums for employer-sponsored retiree coverage and payments for Medigap supplemental coverage for Medicare recipients. Out-of-pocket spending includes payments for deductibles, co-insurance and services not covered by insurance.

Figure 17
Estimated Family Spending for Health Insurance and Health Services in 2010

	All Families				Family Head Under 65				Family Head 65 or Older			
	Total Families	Average Premium Payment [a/]	Average Out-of-Pocket [b/]	Average Total Cost Per Family	Total Families	Average Premium Payment [a/]	Average Out-of-Pocket [b/]	Average Total Per Family	Total Families	Average Premium Payment [a/]	Average Out-of-Pocket [b/]	Total Cost Per Family
Family Income												
< $10,000	14,029	358	628	986	10,652	258	526	784	3,377	672	949	1,622
$10K-$19,999	17,106	866	1,012	1,878	10,878	525	645	1,171	6,228	1,460	1,653	3,113
$20K-$29,999	14,633	1,089	1,047	2,136	11,084	878	835	1,713	3,550	1,746	1,711	3,457
$30K-$39,999	14,427	1,313	1,212	2,525	11,980	1,144	1,035	2,179	2,447	2,142	2,075	4,217
$40K-$49,999	9,814	1,517	1,359	2,876	8,300	1,392	1,133	2,524	1,514	2,207	2,601	4,807
$50K-$74,999	19,460	1,837	1,546	3,382	17,347	1,811	1,461	3,272	2,113	2,045	2,242	4,287
$75K-$99,999	11,441	1,826	1,504	3,330	10,425	1,796	1,443	3,240	1,016	2,136	2,124	4,260
$100K-$149,9	9,269	2,133	1,781	3,914	7,933	2,146	1,725	3,871	1,336	2,054	2,118	4,172
$150,000 +	8,971	2,045	2,263	4,308	8,562	2,012	2,225	4,237	409	2,732	3,065	5,797
Percent of Poverty												
Below Poverty	15,939	356	647	1,003	12,834	288	530	817	3,106	637	1,132	1,769
100%-149%	11,230	1,082	1,098	2,181	7,128	817	844	1,662	4,103	1,543	1,540	3,083
150%-199%	11,269	1,214	1,133	2,347	7,660	1,013	832	1,844	3,609	1,641	1,772	3,413
200%-249%	10,146	1,275	1,217	2,492	8,293	1,174	1,118	2,292	1,853	1,730	1,661	3,391
250%-299%	9,115	1,514	1,287	2,801	7,167	1,375	1,063	2,438	1,948	2,027	2,109	4,136
300% +	61,449	1,727	1,576	3,303	54,078	1,683	1,493	3,175	7,371	2,050	2,191	4,241
Marital Status												
Married	57,290	1,967	1,778	3,746	47,726	1,890	1,653	3,543	9,564	2,350	2,405	4,754
Single Total	61,859	835	881	1,715	49,434	761	767	1,528	12,425	1,129	1,333	2,462
Single Male	19,733	549	618	1,167	17,096	483	549	1,032	2,637	976	1,063	2,039
Single Femail	42,126	969	1,003	1,973	32,338	908	882	1,790	9,788	1,170	1,406	2,576

Figure 17 (continued)
Estimated Family Spending for Health Insurance and Health Services in 2010

	All Families				Family Head Under 65				Family Head 65 or Older			
	Total Families	Average Premium Payment [a/]	Average Out-of-Pocket [b/]	Average Total Cost Per Family	Total Families	Average Premium Payment [a/]	Average Out-of-Pocket [b/]	Average Total Per Family	Total Families	Average Premium Payment [a/]	Average Out-of-Pocket [b/]	Total Cost Per Family
Age of Head of Household												
< 18	-	-	-	-	-	-	-	-	-	-	-	-
18 - 24	10,089	531	521	1,052	10,089	531	521	1,052	-	-	-	-
25 - 34	22,155	1,112	769	1,881	22,155	1,112	769	1,881	-	-	-	-
35 - 44	26,782	1,379	1,218	2,597	26,782	1,379	1,218	2,597	-	-	-	-
45 - 54	23,084	1,650	1,589	3,239	23,084	1,650	1,589	3,239	-	-	-	-
55 - 64	15,051	1,517	1,675	3,191	15,051	1,517	1,675	3,191	-	-	-	-
65 +	21,989	1,660	1,799	3,459	-	-	-	-	21,989	1,660	1,799	3,459
Race of Head of House												
White	85,929	1,491	1,512	3,003	68,073	1,418	1,406	2,824	17,856	1,769	1,916	3,685
Non-White	33,220	1,092	796	1,887	29,087	1,078	725	1,803	4,133	1,188	1,293	2,481
Out of Pocket Expenses												
< $500	53,455	937	143	1,080	46,607	906	143	1,049	6,848	1,150	144	1,294
$500 - $999	20,340	1,523	720	2,243	16,762	1,484	718	2,202	3,578	1,704	732	2,436
$1K - $2500	26,535	1,768	1,604	3,373	20,221	1,738	1,589	3,328	6,314	1,863	1,653	3,516
2.5K - $5000	13,387	1,885	3,468	5,354	9,786	1,837	3,461	5,298	3,601	2,016	3,490	5,506
$5K - $9999	4,429	2,045	6,802	8,847	3,066	2,041	6,824	8,864	1,363	2,055	6,753	8,808
> $10000	1,002	2,059	14,885	16,944	718	1,907	15,556	17,464	284	2,444	13,190	15,633
Base Case Out-of-Pocket as a % of Income												
< 5 percent	96,887	1,342	786	2,128	84,125	1,306	787	2,093	12,763	1,577	778	2,356
5% - 10%	11,574	1,661	2,704	4,365	7,349	1,525	3,019	4,544	4,226	1,898	2,157	4,054
10% - 20%	5,995	1,532	3,879	5,411	3,263	1,338	4,439	5,777	2,732	1,763	3,211	4,974
20% - 30%	2,060	1,402	4,757	6,159	1,053	1,126	5,280	6,406	1,007	1,691	4,210	5,901
30% or more	2,633	1,169	6,014	7,183	1,371	913	6,075	6,989	1,262	1,447	5,947	7,395

Figure 17 (continued)
Estimated Family Spending for Health Insurance and Health Services in 2010

	All Families				Family Head Under 65				Family Head 65 or Older			
	Total Families	Average Premium Payment [a/]	Average Out-of-Pocket [b/]	Average Total Cost Per Family	Total Families	Average Premium Payment [a/]	Average Out-of-Pocket [b/]	Average Total Per Family	Total Families	Average Premium Payment [a/]	Average Out-of-Pocket [b/]	Total Cost Per Family
Region												
Northeast	22,539	1,407	1,338	2,745	18,032	1,377	1,262	2,639	4,507	1,524	1,642	3,166
Midwest	27,064	1,477	1,318	2,795	21,833	1,389	1,182	2,571	5,230	1,843	1,886	3,728
South	42,354	1,347	1,422	2,768	34,355	1,282	1,333	2,615	7,999	1,624	1,803	3,427
West	27,193	1,310	1,115	2,425	22,940	1,248	978	2,226	4,253	1,645	1,853	3,498
CL INS STAT												
Uninsured	7,817	-	959	959	7,795	-	959	959	22	-	680	680
All Insured	111,332	1,476	1,337	2,813	89,366	1,431	1,223	2,654	21,967	1,661	1,800	3,462
Family Type												
1 Worker	56,245	1,510	1,304	2,814	53,324	1,476	1,266	2,742	2,921	2,139	1,993	4,132
2 Workers	12,087	2,371	1,520	3,891	11,802	2,362	1,504	3,866	285	2,712	2,217	4,929
Other	50,818	999	1,272	2,271	32,035	664	984	1,648	18,783	1,569	1,763	3,332
All Families												
Total	**119,149**	**1,379**	**1,312**	**2,692**	**97,160**	**1,316**	**1,202**	**2,518**	**21,989**	**1,660**	**1,799**	**3,459**

a/ Includes family health insurance payments including employee contribution amount for employer coverage, Medicare Part B premiums, employer coverage, non-group insurance premiums, premiums for private Medigap coverage, (supplemental coverage for Medicare recipients), and family premium contributions for employer sponsored retiree coverage.
b/ Includes direct payments for health services not reimbursed by insurance including deductibles, co-insurance and payments for services that are not covered by insurance.
Source: Lewin Group estimates using the Health Benefits Simulation Model.

G. Monthly Simulation Methodology

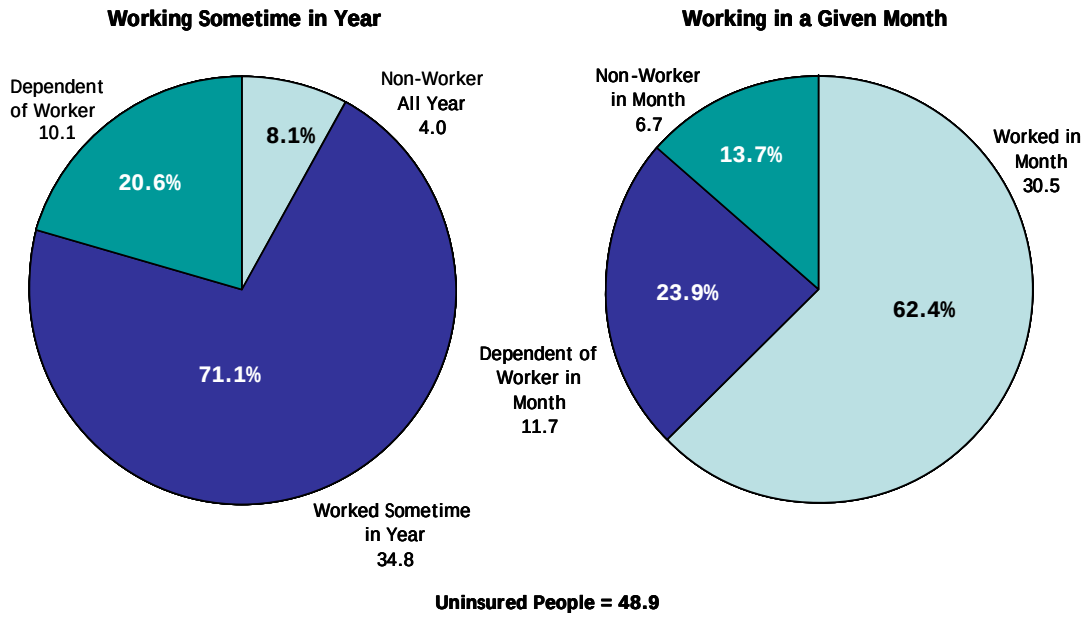
HBSM simulates coverage on a month-by-month basis. This is necessary because economic conditions and coverage vary over the course of the year. These changes can lead to changes in eligibility for public programs and can greatly affect the cost of proposals to expand coverage. Moreover, eligibility for Medicaid and SCHIP is determined on a monthly income basis. Failure to account for these transitions over the course of the year can lead to errors in estimating program impacts by omitting periods of part-year eligibility.

The household database used in HBSM is organized into 12 separate months. The MEPS data identify sources of insurance coverage by month for each individual in the survey. Thus, for example, an individual could be uninsured for five months and covered under Medicaid for the next seven months. These data also include information on employment status at certain times of the year which can be used to approximate the months in which each person is employed, particularly for people reporting employer coverage (which is reported by month). Earnings income, which is reported on an annual basis, is allocated across these months of employment. The individual health events data provided in MEPS also enables us to identify health services utilization in each month, which is important in allocating health spending to months of coverage by source.

HBSM uses these data to simulate the impact of health reform proposals on a month-by-month basis. The model simulates eligibility for public coverage and/or subsidies based upon each family's monthly income. People who meet the eligibility criteria are simulated to enroll and are then certified for an assumed number of months (i.e., six months to a year). Similarly, working individuals and dependents become covered under employer coverage under proposals that would encourage or require employers to sponsor coverage during the months of the year when they are employed. In fact, some individuals could be eligible for two different programs in a single year as they move from employed to unemployed status.

The impact of the monthly simulation methodology is illustrated in ***Figure 18***. These data show that in 2010 about 71.1 percent of all uninsured people either worked some time during the year or were the dependents of someone who worked during the year. However, in any given month, we estimate that only about 65 percent are associated with employment while about 35 percent are non-workers. Thus, for example, if we were to use the "worked sometime in year" definition in an analysis of an employer mandate proposal, we would overstate the cost to employers by about 14 percent and understate the cost of any program created to cover non-workers by about 23 percent.

Figure 18
Uninsured People by Relationship to Employment in 2010 (in millions) [a/]



a/ Monthly employment was simulated in the CPS based upon the reported number of weeks workers reported for each worker.
Source: Lewin Group HBSM.

Figure 19 presents the distribution of people in the HBSM baseline database by primary source of coverage on an average monthly basis. The primary source of coverage is defined in terms of the payer source that would be the primary payer for claims incurred during the month. For example, the Medicaid dual eligible population (i.e., people covered by both Medicaid and Medicare) are counted as people whose primary payer is Medicare. Similarly, people with Medicare and employer-sponsored retiree coverage are classified under Medicare coverage because the retiree benefit is a supplement to Medicare coverage. Only early retirees with no other source of coverage are classified as retirees in ***Figure 19***.

Figure 20 presents the number of people with selected types of coverage under three measures including: (1) average monthly enrollment; (2) covered anytime in year; and (3) covered all year.

Figure 19
Average Monthly Coverage by Primary Source of Coverage in 2010 Baseline[a/]

	TOTAL PEOPLE	EMPLOYER COVERAGE	NON-GROUP COVERAGE	CHAMPUS/ MILITARY	MEDICARE	MEDICAID	NON-GROUP COVERAGE	INSURANCE FUND	UNINSURED	UNITARY PLAN	RETIREE COVERAGE
FAMILY INCOME											
<10000	21904.	2407.	636.	297.	3449.	9521.	0.	0.	5539.	0.	56.
10000-19999	27104.	3738.	754.	487.	6838.	8213.	0.	0.	6974.	0.	101.
20000-29999	28184.	7216.	868.	574.	6362.	6110.	0.	0.	6881.	0.	173.
30000-39999	28199.	10220.	1090.	736.	5317.	4404.	0.	0.	6176.	0.	256.
40000-49999	26405.	12242.	1289.	580.	3746.	3069.	0.	0.	5138.	0.	342.
50000-74999	50907.	29439.	2399.	1132.	6010.	3318.	0.	0.	7775.	0.	835.
75000-99999	40467.	28097.	2207.	756.	3281.	1315.	0.	0.	4042.	0.	769.
100K-149999	46075.	34953.	2320.	840.	2454.	1002.	0.	0.	3889.	0.	618.
150000+	37811.	29679.	2690.	642.	1473.	325.	0.	0.	2505.	0.	498.
INCOME AS % POVERTY											
BELOW POV	40611.	4834.	924.	533.	5056.	18777.	0.	0.	10412.	0.	75.
100-199	52478.	14410.	1621.	978.	10603.	11349.	0.	0.	13296.	0.	220.
200-299	49321.	23624.	2261.	1261.	8130.	4199.	0.	0.	9490.	0.	356.
300-399	40771.	24929.	2100.	774.	5092.	1401.	0.	0.	5849.	0.	627.
400-499	32770.	21809.	1801.	729.	3467.	748.	0.	0.	3537.	0.	677.
500+	91105.	68384.	5544.	1768.	6580.	804.	0.	0.	6334.	0.	1692.
ELIG GROUP											
PREG WMN	6546.	3760.	178.	99.	42.	1702.	0.	0.	765.	0.	0.
KIDS	83149.	46040.	2695.	1213.	1022.	23206.	0.	0.	8973.	0.	0.
AFDC ADULTS	65235.	42256.	3336.	720.	782.	5947.	0.	0.	11864.	0.	331.
OTHER	152126.	65934.	8043.	4013.	37083.	6422.	0.	0.	27316.	0.	3317.
AGE											
< 19	83149.	46040.	2695.	1213.	1022.	23206.	0.	0.	8973.	0.	0.
19-24	26024.	11396.	1641.	504.	160.	3372.	0.	0.	8949.	0.	2.
25-34	41110.	23486.	2050.	228.	310.	3741.	0.	0.	11293.	0.	4.
35-44	40447.	26166.	1919.	428.	811.	2950.	0.	0.	8124.	0.	50.
45-54	43874.	29251.	2695.	715.	1592.	2314.	0.	0.	6799.	0.	509.
55-64	35460.	19673.	3223.	887.	2374.	1607.	0.	0.	4654.	0.	3042.
65 +	36990.	1979.	27.	2070.	32658.	88.	0.	0.	126.	0.	42.
RACE											
WHITE	209142.	118767.	11784.	4463.	30563.	15283.	0.	0.	25165.	0.	3116.
NON-WHITE	97914.	39223.	2466.	1580.	8366.	21994.	0.	0.	23752.	0.	531.
HEALTH Status											
Excel	243960.	135771.	12485.	4536.	21767.	28711.	0.	0.	38029.	0.	2659.
Good	46620.	18196.	1443.	1018.	10387.	6257.	0.	0.	8633.	0.	686.
Fair	13034.	3355.	269.	393.	5102.	1857.	0.	0.	1853.	0.	208.
Poor	3442.	669.	55.	96.	1672.	453.	0.	0.	403.	0.	94.

Figure 19 (continued)
Average Monthly Coverage by Primary Source of Coverage in 2010 Baseline[a/]

	TOTAL PEOPLE	EMPLOYER COVERAGE	NON-GROUP COVERAGE	CHAMPUS/ MILITARY	MEDICARE	MEDICAID	NON-GROUP COVERAGE	INSURANCE FUND	UNINSURED	UNITARY PLAN	RETIREE COVERAGE
Medicaid Elig											
ENE parent/	17454.	9825.	1045.	502.	115.	0.	0.	0.	5950.	0.	16.
ENE other	4578.	1672.	494.	120.	1004.	0.	0.	0.	1273.	0.	15.
all other	285023.	146493.	12711.	5421.	37809.	37277.	0.	0.	41695.	0.	3617.
TOTAL	307056.	157990.	14251.	6044.	38929.	37277.	0.	0.	48918.	0.	3647.

a/ Medicaid recipients in this table include only those who do not have coverage from other sources such as Medicare.
Source: Health Benefits Simulation Model (HBSM) baseline estimates for 2010.

Figure 20
Coverage Status by Type of Plan Any Time in Year, All Year, and Average Monthly Enrollment in 2010

	EMPLOYER HEALTH COVERAGE			MEDICAID COVERAGE			UNINSURED			Non-Group		
	ON ANYTIME IN YEAR	ON ALL YEAR	AVERAGE MONTHLY ENROLLMENT	ON ANYTIME IN YEAR	ON ALL YEAR	AVERAGE MONTHLY ENROLLMENT	ON ANYTIME IN YEAR	ON ALL YEAR	AVERAGE MONTHLY ENROLLMENT	ON ANYTIME IN YEAR	ON ALL YEAR	AVERAGE MONTHLY ENROLLMENT
FAMILY INCOME												
<10000	3132.	1720.	2407.	13170.	11004.	12115.	6847.	4356.	5539.	1091.	652.	870.
10000-19999	4943.	2620.	3738.	12275.	9259.	10796.	8815.	5296.	6974.	2162.	1450.	1817.
20000-29999	8663.	5593.	7216.	8848.	6208.	7550.	9049.	5122.	6881.	2866.	1885.	2391.
30000-39999	11468.	8436.	10220.	6524.	4542.	5563.	8177.	4712.	6176.	2929.	2096.	2504.
40000-49999	13567.	10599.	12242.	4775.	3077.	3945.	7048.	3684.	5138.	2663.	1816.	2258.
50000-74999	31521.	26666.	29439.	5486.	3377.	4406.	10720.	5618.	7775.	4527.	3325.	3894.
75000-99999	29189.	26548.	28097.	2271.	1464.	1863.	5668.	2947.	4042.	3425.	2558.	2993.
100K-149999	36082.	33371.	34953.	1829.	1124.	1414.	5493.	2766.	3889.	3426.	2409.	2936.
150000+	30530.	28607.	29679.	734.	431.	563.	3606.	1726.	2505.	3600.	2886.	3264.
INCOME AS % POVERTY												
BELOW POV	6319.	3353.	4834.	24980.	20353.	22777.	13168.	8064.	10412.	1624.	966.	1271.
100-199	17077.	11419.	14410.	17860.	12408.	15159.	17116.	10084.	13296.	4313.	2801.	3579.
200-299	26042.	20537.	23624.	7018.	4294.	5689.	12946.	6886.	9490.	5228.	3801.	4543.
300-399	26420.	22852.	24929.	2668.	1485.	2043.	8087.	4241.	5849.	3862.	2755.	3278.
400-499	22744.	20597.	21809.	1570.	921.	1200.	4818.	2610.	3537.	3178.	2280.	2742.
500+	70492.	65401.	68384.	1817.	1024.	1349.	9286.	4340.	6334.	8484.	6475.	7515.
ELIG GROUP												
PREG WMN	4087.	3293.	3760.	2458.	1265.	1903.	1468.	302.	765.	273.	124.	192.
KIDS	49243.	41916.	46040.	28949.	23192.	26246.	13235.	6111.	8973.	3574.	2320.	2908.
AFDC ADULTS	44613.	39216.	42256.	8132.	5111.	6599.	15742.	8846.	11864.	4137.	2902.	3488.
OTHER	71152.	59734.	65934.	16374.	10918.	13468.	34977.	20966.	27316.	18706.	13731.	16339.
AGE												
< 19	49243.	41916.	46040.	28949.	23192.	26246.	13235.	6111.	8973.	3574.	2320.	2908.
19-24	13234.	9190.	11396.	5085.	2625.	3801.	11917.	6556.	8949.	2202.	1212.	1714.
25-34	25743.	20639.	23486.	5276.	3104.	4194.	14842.	8502.	11293.	2670.	1513.	2082.
35-44	27737.	24231.	26166.	4373.	2713.	3536.	10567.	6130.	8124.	2461.	1710.	2037.
45-54	30455.	27754.	29251.	3669.	2486.	3078.	8700.	5351.	6799.	3255.	2413.	2845.
55-64	20536.	18624.	19673.	2981.	2005.	2416.	6020.	3468.	4654.	3889.	2950.	3448.
65 +	2146.	1806.	1979.	5581.	4362.	4945.	139.	108.	126.	8640.	6958.	7891.
RACE												
WHITE	125853.	109693.	118767.	24963.	17183.	21018.	35247.	17655.	25165.	22754.	16607.	19726.
NON-WHITE	43242.	34467.	39223.	30951.	23303.	27198.	30174.	18571.	23752.	3936.	2470.	3200.

Figure 20 (continued)
Coverage Status by Type of Plan Any Time in Year, All Year, and Average Monthly Enrollment in 2010

	EMPLOYER HEALTH COVERAGE			MEDICAID COVERAGE			UNINSURED			Non-Group		
	ON ANYTIME IN YEAR	ON ALL YEAR	AVERAGE MONTHLY ENROLLMENT	ON ANYTIME IN YEAR	ON ALL YEAR	AVERAGE MONTHLY ENROLLMENT	ON ANYTIME IN YEAR	ON ALL YEAR	AVERAGE MONTHLY ENROLLMENT	ON ANYTIME IN YEAR	ON ALL YEAR	AVERAGE MONTHLY ENROLLMENT
HEALTH Status												
Excel	144778.	124241.	135771.	40274.	29035.	34681.	51364.	28110.	38029.	21364.	15382.	18412.
Good	19844.	16391.	18196.	10316.	7535.	8922.	11049.	6539.	8633.	3915.	2743.	3333.
Fair	3718.	2949.	3355.	4106.	3023.	3551.	2456.	1302.	1853.	1124.	807.	970.
Poor	754.	580.	669.	1218.	893.	1061.	552.	275.	403.	287.	145.	212.
	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.	0.
Medicaid Elig												
ENE parent/	10760.	8716.	9825.	0.	0.	0.	7171.	4975.	5950.	1243.	860.	1057.
ENE other	2033.	1298.	1672.	0.	0.	0.	1692.	907.	1273.	867.	593.	742.
all other	156302.	134147.	146493.	55914.	40486.	48216.	56559.	30344.	41695.	24580.	17623.	21127.
TOTAL	169094.	144160.	157990.	55914.	40486.	48216.	65421.	36226.	48918.	26690.	19077.	22927.

Source: Health Benefits Simulation Model (HBSM) baseline estimates for 2010

IV. MEDICAID AND SCHIP EXPANSIONS

HBSM simulates a wide variety of changes in Medicaid and the State Children's Health Insurance Programs (SCHIP) eligibility levels for children, parents, two-parent families, and childless adults. The model simulates certification period rules, deprivation standards (i.e., hours worked limit for two-parent families), "deeming" of income from people outside the immediate family unit and other refinements in eligibility. As under the program, the model simulates eligibility on a month-by-month basis to capture part-year eligibility.

HBSM estimates the number of people eligible for the current Medicaid program and various eligibility expansions using the actual income eligibility rules used in each state for Medicaid and SCHIP. The model simulates enrollment among newly eligible people based upon estimates of the percentage of people who are eligible for the current program who actually enroll. In addition, it simulates the lags in enrollment during the early years of the program as newly eligible groups learn of their eligibility and enroll. The model estimates program costs based upon the per-member per-month (PMPM) costs in the existing program in each state by eligibility group, which we adjust to reflect the unique age and sex composition of the newly eligible population (see ***Attachment A***).

The data and methods used to model changes in eligibility for Medicaid are presented below in the following sections:

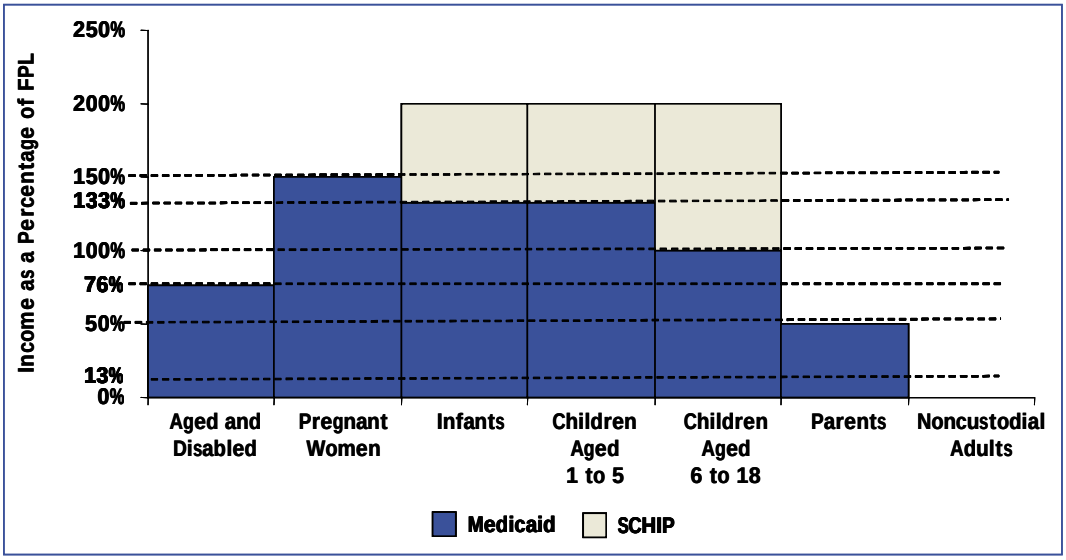
- The Current Medicaid and SCHIP Programs;
- Simulating Medicaid Eligibility using the CPS;
- Enrollment Behavior;
- Integration of Medicaid Simulation into HBSM;
- Estimation of Benefits Costs;
- Crowd-out; and
- Impact of Anti-Crowd-Out Provisions

A. The Current Medicaid and SCHIP Programs

Medicaid and SCHIP are state-operated insurance programs covering low-income people that are funded with state revenues and federal matching funds. The income eligibility levels for these programs vary widely across states. ***Figure 21*** presents an illustration of eligibility under a typical Medicaid program that is based upon the average income eligibility levels across all states.

Aged and disabled people are typically covered through 76 percent of the FPL (92 percent for couples). States are required to cover pregnant women through 133 percent of the FPL, but are permitted to set the eligibility level as high as 185 percent of the FPL. Federal law also requires states to cover children under age six years up to 133 percent of the FPL and children over age five years through the FPL. The SCHIP program covers children between the Medicaid income eligibility level and an average of about 200 percent of the FPL across the states.

Figure 21
Medicaid and SCHIP Eligibility for a "Typical State" Under Current Law



a/ Figures roughly based upon average income eligibility levels across states by eligibility group.
Source: CMS program data.

States also are required to cover adults with custodial responsibilities for children through the income eligibility level for Temporary Assistance for Needy Families (TANF) and are permitted to cover parents with incomes as high as the SCHIP income eligibility level in each state. The income eligibility level for parents averages about 50 percent of FPL, but is as low as 13 percent of FPL in some states.[15] States do not receive federal matching funds to cover nondisabled, non-custodial adults at any income level, except in six states that have been granted a waiver to do so.

The federal medical assistance percentage (FMAP), which is the portion the federal government contributes towards the cost of Medicaid or SCHIP coverage, varies by state according to a formula that reflects differences in economic conditions. For the Medicaid program, the matching rate varies from 50 percent in some states to as high as 76 percent. The federal matching percentage for SCHIP is "enhanced" to between 65 percent and 83 percent across states.

The Congressional Budget Office (CBO) estimates that by 2010, federal spending will reach $250.3 billion for Medicaid and $5.0 billion for SCHIP. The Medicaid and SCHIP programs will cover 67 million people in 2010, of whom about half will be children.

[15] This is the income eligibility level for parents under the Aid to Families with Dependent Children program that was replaced under Temporary Assistance for Needy Families (TANF) Act.

B. Simulating Medicaid Eligibility using CPS data

We simulate the number of people eligible for expansions in coverage using the 2008 Current Population Survey (CPS) data compiled by the Bureau of the Census. We use the CPS because in these data they include the detailed data required to simulate eligibility for the program including income by source, employment, family characteristics and state of residence. State of residence is important to these simulations because the income eligibility rules vary substantially across states. These results are integrated into HBSM in a later step described below. This assures that we can model the effects of proposals that include a Medicaid expansion combined with other programs affecting employers and families purchasing private insurance.

We use these data to simulate eligibility on a month-by-month basis. We do this by allocating reported weeks of employment across the 52 weeks of the year according to the number of jobs reported for the year. Reported weeks of unemployment and non-participation in the labor force are also allocated over the year. We then distribute wages across the weeks employed, and distribute unemployment compensation over weeks unemployed. We distribute workers compensation income over weeks not in labor force and we allocate other sources of income across all 12 months of the year. We discuss these methods in greater detail in ***Attachment G***.

The first step in developing these estimates is to correct the CPS data for under-reporting of Medicaid coverage. As in most household surveys, some individuals fail to report whether they were enrolled in Medicaid and/or the various public assistance programs. In fact, the CPS reports up to 40 percent fewer Medicaid enrollees than program data show actually participate in the program. To correct for this problem, we identified people who appear to be eligible for Medicaid in these data and assigned a portion of them to Medicaid covered status. The resulting data replicate program control totals on enrollment by class of eligibility (see ***Attachment A***).[16]

Using these data, we can estimate the number of program filing units (single individuals and related families living together) who meet the income eligibility requirements under the current program in their state of residence. The model also simulates the number of people who would be eligible under proposed increases in income eligibility. In particular, the model can estimate the number of non-custodial adults who are eligible under expansions affecting these groups.

The model will simulate a wide variety of Medicaid policy changes including changes in income eligibility levels for selected population groups such as children, parents, two-parent families, and childless adults. It also models changes in certification period rules, changes in the deprivation standard (i.e., hours worked limit) for two-parent families, "deeming" of income from people outside the immediate family unit, and other refinements in eligibility. It uses the actual income eligibility levels in each state. The model is also designed to simulate the unique features of the Medicaid program including month-by-month simulations of income eligibility and the unique family unit definitions used in the program.

---

[16] The model replicates average monthly enrollment data by class eligibility. The resulting data closely replicates duplicated counts of beneficiaries in that year (i.e., number of people enrolled sometime in year).

C. Enrollment Behavior

Not all eligible people are expected to enroll in Medicaid when they become eligible. We estimate that only about 72 percent of those who are eligible for the existing Medicaid program nationally are enrolled (includes cash- and non-cash eligible beneficiaries), although enrollment varies widely by eligibility group (e.g., children, parents, aged etc.).[17] Thus, not all eligible people are expected to enroll in Medicaid when they become eligible. We estimated the number of eligible people who enroll under these coverage expansions based upon a multivariate model of enrollment among people across the country (i.e., national data) who are currently eligible under the existing Medicaid program, developed by The Lewin Group.

1. Participation among Newly Eligible People

In general, our approach was to estimate the number of people who meet the income and family structure requirements (e.g., families with children, etc.) of these programs in each state using the CPS data. We then developed a multivariate model of how the percentage of eligible people who enroll varies with age, income, work status and other factors affecting enrollment. These multivariate models are then used to estimate the number of newly eligible people who would enroll. Thus, our approach is to extrapolate from the enrollment behavior of the currently eligible people to those newly eligible for the program.

This participation model reflects differences in the percentage of eligible people who participate in Medicaid by age, income, self-reported health status, race/ethnicity, employment status and coverage from other sources of insurance. This approach results in an average participation rate of about 70 percent among people who are currently uninsured and about 39 percent among eligible people who have coverage from some other source. Thus, the model simulates the number of privately insured people who would shift to public coverage. As discussed below, the process where individuals substitute public for private coverage is called "crowd-out". A more detailed discussion of this enrollment model is presented in ***Attachment A***.

2. Impact of Premium Contribution Requirement on Participation

The model also reflects changes in the percentage of people who participate based upon the premium contribution amount (if any) required under the program. Based upon a multivariate model of participation rates in programs requiring a premium, we estimate that premiums reduce participation by 37 percent or more, depending upon the amount of the premium (***Figure 22***).

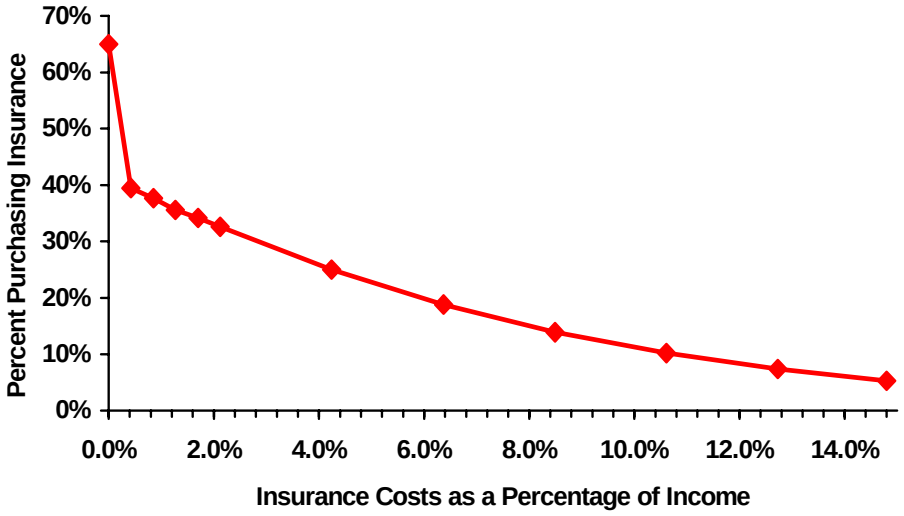
In this analysis, we developed an equation which measures how participation varies with the amount of the premium contribution using data on people eligible for the programs covering adults under the Washington Basic Health Plan (BHP) and the MinnesotaCare program. The Washington program covers adults through 200 percent of the FPL under their basic health plan

---

[17] This estimate may overstate the program enrollment rate because it predates some of the decline in Medicaid enrollment due to welfare reform. See: Sheils, J., Haught, R., "The Insurance Status of Medicaid Eligible People Not Participating in the Program: Estimates for Children and Other Eligibility Groups", (Report to the Office of the Assistant Secretary for Planning and Evaluation, Department of Human Services), The Lewin Group, December 2, 1997.

program where enrollees are required to pay a premium. Minnesota has a similar program, which covers adults through 275 percent of the FPL, also with a premium requirement.

Figure 22
Estimated Percentage of People Who Will Take Subsidized Coverage by Premium Cost as a Percentage of Family Income [a/, b/]



a/ Based upon percentage of people eligible to participate in Medicaid who enroll.
b/ Probabilities of enrollment initially based upon the percentage of people without insurance who purchased non-group coverage by family income as a percentage of income.
Source: Lewin Group Estimates.

We estimated a participation function for these two programs using CPS data. The CPS identifies people who are covered under public programs other than Medicaid in these two states. We used HBSM to estimate the number of people who meet the income eligibility levels for these programs in these states and the amount of the premium they would be required to pay given their income. Using these data, we developed a multivariate model measuring how the likelihood of taking coverage is affected by the amount of the premium required to participate (this is also described in ***Attachment A***)

3. Participation for Currently Eligible People

Changes in eligibility for the program can lead to increased enrollment among those who are already eligible for the program. For example, we assume that currently eligible but not enrolled children would become enrolled in cases where a newly eligible parent becomes enrolled under a coverage expansion. This is because eligibility for parents is determined on a family unit basis. Thus, children of parents who enroll in the program are automatically enrolled.

We also estimate an increase in enrollment among the currently eligible but not enrolled population resulting from expansions in eligibility for Medicaid and SCHIP, which has been called the "spill-over." This estimate is based upon evaluations of programs that expand coverage for children to higher income groups. One study of a coverage expansion for children

in California indicated that for each newly eligible child enrolled, they also enrolled 0.86 currently eligible but not enrolled children. Similar results have been reported for SCHIP outreach programs around the country. These results are used as a basis for modeling the spill-over effect associated with Medicaid eligibility expansions.[18]

4. Lags in Enrollment

Based upon experience with prior coverage expansions, we know that it may take two years or more before potentially eligible people learn of their eligibility and apply for the program. Thus, it is unlikely that these programs will reach the full implementation level of enrollment until the end of the second year of the program. For budgetary purposes, we developed 10 year cost estimates that reflect these expected lags in enrollment. We estimated the impact of these enrollment lags with the following assumptions:

- Enrollment is assumed to reach only 50 percent of the predicted level of enrollment (i.e., about 65 percent for the uninsured) on an average monthly basis in the first year of the program;
- Average monthly enrollment is assumed to reach 80 percent of predicted enrollment in the second year of the program; and
- Coverage expansions are assumed to reach their predicted level of enrollment in the third full year of the program and thereafter.

Our ten year cost estimates reflect these assumed enrollment lags.

D. Integration of Medicaid Simulation with HBSM

We integrate the Medicaid Simulations developed with CPS data into MEPS data included in HBSM. The MEPS data used in HBSM include all of the data required to simulate eligibility for the program except state of residence, which makes it difficult to use for Medicaid simulations. Our approach is to assign MEPS households to a state within the census region identified for the individual in proportion to the distribution of people by income (derived from the CPS). We then simulate eligibility and enrollment for MEPS households using exactly the same models and assumptions used to simulate Medicaid eligibility with the CPS. We then adjust participation function so that the MEPS- based enrollment estimates replicate the estimates developed with the CPS.

The MEPS data would actually be ideal for Medicaid simulations if it included a state of residence indicator. MEPS include month-by-month coverage and employment data which provide a basis for allocating reported income across months for each individual in these data. They also provide the family composition information required to identify family units.

This approach enables us to integrate the state-based Medicaid program analyses into HBSM, where detailed health data are available to simulate costs and other aspects of health reform. It

---

[18] Christopher Trenholm and Sean Orzol,"The Impact of the Children's Health Initiative (CHI) of Santa Clara County on Medi-Cal and Healthy Families Enrollment," (report to the Davil and Lucile Packard Foundation), Mathematica Policy Research, inc., September 2004.

also allows us to integrate the simulation of Medicaid expansions together with other elements of health reform such as employer requirements and the effect of tax policy on coverage and spending.

E. Simulation of Benefits Costs

The model estimates costs in HBSM from the data reported in the original MEPS, adjusted to 2010 levels. We also include an increase in utilization of health services for newly insured people. These imputations increase health services utilization to the levels reported by insured people with similar age, gender, income and health status characteristics. Our model estimates of costs per member per month (PMPM) in 2010 are:

- Parents: $336 PMPM;
- Non-custodial adults: $420 PMPM; and
- Children (currently eligible not enrolled): $107 PMPM.

We estimate these costs directly from the health expenditure data reported in MEPS for those who are selected to enroll in the program. These estimates include an increase in health services utilization for people who are newly insured. As discussed below, we assume that utilization for newly insured people will adjust to levels reported by insured people with similar age, gender income and health status characteristics.

Using the HBSM health spending data is important because the demographic characteristics of those who are newly eligible for the program often will be quite different than those who are now enrolled in the program. For example, extending coverage to non-custodial adults would enroll a substantial number of older adults, such as people age 55 to 64 who do not qualify for disability under current law. Costs for these people would be quite different than for parents now enrolled in the program. Consequently, we cannot simply assume that the adults who enroll in the program will costs about as much as currently enrolled parents.

Using this approach, we estimate that health spending for people who are eligible for but not enrolled in the program are about 25 percent less than for currently enrolled people in their eligibility group. This reflects the unique demographic and health status characteristics of eligible but not enrolled people.

We assume that administrative costs per newly eligible person are equal to average $170 per family per six-months of enrollment. This is based upon data from the California Medicaid program on eligibility processing costs.

F. Crowd-Out

"Crowd-out" is a major concern for policy makers in considering coverage expansions under public programs. Crowd-out is the process whereby publicly subsidized coverage is substituted for private insurance. There are two general ways in which this can occur including:

- Individual-based substitution ("opt-out") is the process where individuals explicitly discontinue their private coverage to enroll in publicly subsidized coverage; and

- Employer-based substitution ("push-out") is the process where employers explicitly reduce or eliminated health benefits with the expectation that these benefits would be provided to their workers and their dependents under the public program.

Several studies have attempted to estimate the extent of crowd-out using data on enrollment under public and private coverage during periods where Medicaid eligibility for poverty level children was expanded.[19] A review of the literature today reveals a range of crowd-out estimates of 0 to 60 percent for these SCHIP expansions using various data sources and analytical techniques. Thus, up to 60 percent of those taking coverage under these coverage expansions would have had private insurance in the absence of the program. A summary of the literature on Crowd-out is presented in ***Attachment F***

Our Medicaid participation model simulates the crowd-out that occurs as newly eligible people discontinue their private coverage and enroll in public coverage. As discussed above, we estimate that the participation rate for people with access to ESI is about 39 percent. We developed this estimate based upon CPS data showing the availability of employer based coverage for children who are eligible under Medicaid or SCHIP. As discussed in ***Attachment A***, this provided a basis for estimating separate participation rates for children with and without access to ESI, thus enabling an estimate of "crowd-out" for public program expansion simulation.

We also simulate the discontinuation of coverage by employers as workers become eligible for Medicaid or other premium subsidies for non-group coverage. In general, we assume that employers tend to discontinue coverage in cases where workers can purchase coverage for less than the cost of covering them as an employer group. The methods used to simulate these effects are presented in greater detail in the following chapter.

G. Impact of Anti-Crowd-Out Provisions

Most proposals to expand coverage under these programs would include provisions designed to minimize the substitution of public coverage for employer-sponsored insurance. One of the most widely used provisions under SCHIP is a requirement that applicants be uninsured for six months prior to enrolling.[20] This is intended to make it impractical for individuals to drop their employer coverage for the purpose of shifting to the public program.

It is difficult to know how effective these provisions have been. Many of the states that have used this approach in their SCHIP program have specified exceptions for people who have become uninsured involuntarily due to events such as becoming unemployed or being unable to pay the COBRA premium. In many instances, the waiting period rule is waived for people who have become uninsured through a voluntary change in employment.

---

[19] Beginning in 1989, there were a series of Medicaid eligibility expansions for children and pregnant women. Children through age 5 and pregnant women are eligible through 133 percent of the FPL. States also have the option of expanding eligibility for pregnant women to 185 percent of the FPL. Also, all children below the FPL who were born after September 30, 1983, are eligible for the program. Thus, all children below the FPL will be covered by 2001.

[20] The Centers for Medicare and Medicaid Services (CMS) recently permitted states to discontinue the waiting period rule.

Moreover, states find it difficult to enforce these provisions because they have no contractual relationship with the employers who must be contacted to verify an individual's coverage status. Most states rely upon self-disclosure or the "honor system" and have substantial flexibility in identifying exceptions. In addition, some states have eliminated these provisions based upon evidence that it excludes some needy individuals from the program. Consequently, it is difficult to know how effective this approach would be in preventing crowd-out.

In the long run, these anti-crowd-out provisions are likely to have little impact on what we have termed "dynamic crowd-out". As discussed above, this is the phenomenon whereby people who have become covered under the public program, decline employer coverage when they move to a job offering a health plan. This also represents a substitution of public for private coverage.

To simulate the impact of the waiting period requirement, we assumed that individuals covered under employer-sponsored insurance (ESI) are ineligible for the program if the policyholder works a full year with that employer without a job change. All other income eligible people with ESI are assumed to qualify under the special exceptions for people experiencing an involuntary loss of coverage. This includes people covered under ESI where the policyholder has a period of non-employment and/or a job change during the year.

V. INDIVIDUAL TAX CREDITS AND OTHER INSURANCE SUBSIDIES

To simulate the impact of tax credits and other premium subsidy proposals (e.g., vouchers), we developed modules in HBSM to estimate the likely response of individuals to various forms of subsidized coverage. This includes Lewin Group multivariate models of how changes in premiums affect the decision to take private insurance coverage, which we use to simulate enrollment in these programs.

We simulate the impact of these policies as programs that reduce the effective price of insurance coverage to affected individuals. For example, new tax credit programs or premium vouchers reduce the net after-tax amount paid for coverage by the individual, which is expected to result in an increase in the percentage of individuals obtaining coverage. Under this approach, vouchers, tax credits, tax exemptions and tax deductions all serve to change the price of coverage and are simulated in the same way.

A. Baseline Tax Simulation

We developed an income and payroll tax simulation methodology to estimate the impact of changes in health policy on tax revenues, such as revenue changes from wage effects and the impact of changes in tax policy on coverage. The model simulates taxes in the following steps:

- People were first formed into income tax filing units that correspond to the three main types of returns that are filed including single, joint and head of household returns. There can be more than one filing unit per MEPS family;
- Adjusted gross income (AGI) is approximated from the reported income data. This includes income from wages, self-employment, investments and the taxable portions of unemployment and social security benefits (estimated from income data);
- We imputed an average tax rate and a marginal tax rate to each filer based upon the tax data reported in the March CPS data by type of filer and estimated AGI;[21]
- Federal income taxes are calculated using the imputed average tax rate for each filer; and
- We estimated state income taxes for each filer assuming that state income taxes are equal to a fixed percentage of federal tax payments.

Tax payments and marginal tax rates are imputed to potential tax filers in MEPS based upon the Current Population Survey (CPS) data. The CPS provides information on tax payments and marginal income tax rates. These data are used to impute average and marginal tax rates for households in MEPS. These data are used to estimate the tax expenditure for health benefits and to estimate the value of tax deductions for health benefits.

Based upon an analysis of the CPS data on tax filings, we estimate that about 40 percent of all uninsured have no tax liability and are not required to file a tax return. However, about half of

[21] The imputed tax rates are cross-checked against the distribution of marginal tax rates for insured and uninsured families as reported in the March CPS.

these people file even though they are not required to do so, presumably so that they can obtain any refund they are entitled to receive (***Figure 23***).

Figure 23
Distribution of Insured and Uninsured Tax Filers by Marginal Tax rate in 2004

	With Earnings	Without Earnings	Total	With Earnings	Without Earnings	Total
All Tax Filing Units in the US				**Uninsured Tax Filing units in US**		
Total Potential Filers	**119,981**	**39,367**	**159,348**	**23,004**	**5,016**	**28,020**
Non-Filers	**9,451**	**20,377**	**29,828**	**2,848**	**3,330**	**6,178**
All Filers by Marginal Tax Rate				**Uninsured Filers by Marginal Tax Rate**		
0	18,855	11,203	30,068	5,982	648	6,630
10	15,679	2,470	18,149	4,992	354	5,346
15	43,914	3,447	47,361	7,389	484	7,873
27	25,537	1,394	26,931	1,424	140	1,564
30	4,437	359	4,796	242	43	285
35	870	60	930	60	9	69
39	1,235	54	1,289	67	7	74
Total Filers	**110,530**	**18,990**	**129,520**	**20,156**	**1,686**	**21,842**

Source: Lewin Group Estimates Using the 2005 Current Population Survey (CPS) Data.

Social Security and Medicare payroll tax payments were estimated based upon reported earnings and the appropriate payroll tax parameters including program tax rates and maximum taxable earnings for OASDI. There is no income limit for the Medicare HI payroll tax.

We used these data to estimate the value of the tax exclusion on employer-provided health benefits. The current tax code excludes the value of health benefits provided by the employer as taxable compensation to the employee. Similarly, health benefits are not taxable for purposes of calculating the Social Security and HI tax rates.

The taxes forgone by exempting employer health benefits are called "tax expenditure". We estimated the amount of the tax expenditure using the imputed marginal tax rates. ***Figure 24*** presents our estimates of the health benefits tax expenditure by income and other characteristics. As discussed below, some of the proposals analyzed in this project would eliminate this tax expenditure and use the revenues to finance new programs providing tax subsidies for health coverage.

Figure 24
Estimated Health Benefits Tax Expenditures in 2010
(in millions) [a/]

	Personal Income Tax Exclusion	Social Security	Medicare Hospital Insurance	Out-of-Pocket Deduction	State Income Tax Exclusion	Total Federal	Total Federal & State
FAMILY INCOME							
< 10,000	1537.	1836.	431.	39.	301.	3843.	4145.
10,000-19,999	3033.	4212.	989.	506.	567.	8740.	9307.
20,000-29,999	5896.	6310.	1480.	1183.	1135.	14870.	16004.
30,000-39,999	9349.	7433.	1743.	1877.	1852.	20403.	22254.
40,000-49,999	12016.	7761.	1820.	2336.	2419.	23933.	26353.
50,000-74,999	29214.	16180.	3794.	3977.	5980.	53166.	59146.
75,000-99,999	34792.	14476.	3411.	2995.	7199.	55674.	62873.
100,000-149,999	39866.	14972.	3997.	1730.	8361.	60564.	68925.
150,000 +	37790.	7824.	3306.	599.	7828.	49520.	57348.
INC AS % OF POV							
< POVERTY	2721.	4418.	1037.	134.	516.	8309.	8826.
100% - 199%	8935.	10728.	2517.	1537.	1728.	23716.	25443.
200% - 299%	17594.	13498.	3166.	3423.	3496.	37682.	41177.
300% - 399%	22290.	12900.	3038.	3206.	4610.	41434.	46044.
400% - 499%	25093.	11102.	2665.	2546.	5162.	41406.	46568.
500% +	96862.	28359.	8549.	4398.	20130.	138166.	158296.
AGE OF HEAD							
< 25	6025.	5473.	1313.	422.	1271.	13234.	14504.
25 - 34	28804.	18724.	4675.	1168.	6014.	53370.	59384.
35 - 44	38208.	20410.	5386.	1791.	7871.	65793.	73664.
45 - 54	43580.	21675.	5758.	2006.	8899.	73019.	81917.
55 - 64	37790.	13115.	3433.	3449.	7770.	57785.	65555.
65 +	19089.	1608.	408.	6408.	3819.	27512.	31331.
MARRIED	134555.	55575.	14747.	11687.	27701.	216560.	244261.
SINGLE	38939.	25428.	6224.	3556.	7941.	74148.	82089.
SINGLE MALE	16615.	10018.	2498.	1063.	3437.	30195.	33632.
SINGLE FEMALE	22324.	15410.	3726.	2493.	4504.	43954.	48457.
SELF EMPL UNINC	6157.	0.	0.	652.	1296.	6809.	8105.
CAFE PLAN	109464.	48331.	12785.	1959.	22469.	172538.	195007.
CAFE PLAN DIFF	12885.	6732.	1820.	0.	0.	0.	0.
NON-CAFE PLAN	57873.	32672.	8187.	12633.	11878.	111363.	123241.
INDIVIDUAL COV	0.	0.	0.	0.	0.	0.	0.
RETIREE COV	27042.	0.	0.	0.	5513.	27042.	32555.
TOTAL	173494.	81003.	20971.	15244.	35642.	290708.	326350.

a/ The tax expenditure is the amount of taxes forgone by exempting employer health benefits from taxes for both the income tax and FICA. Also includes tax revenues forgone due to the deduction for health expenses in excess of 7.5 percent of adjusted gross income (AGI).
Source: Lewin Group estimates using the Health Benefits Simulation Model (HBSM).

B. Modeling the Coverage Impact of Private Premium Subsidies

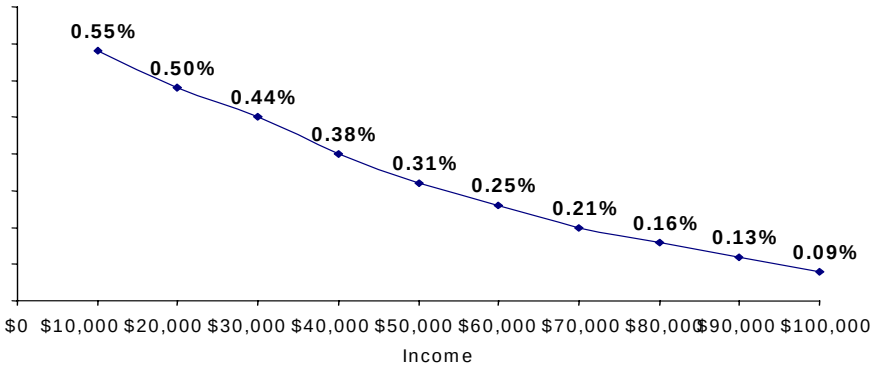
We use the household data in HBSM to identify people who are potentially eligible for the various tax subsidies or vouchers available under each proposal. We compute the price of insurance that uninsured individuals would face in the individual market based on HBSM estimates of premium costs under employer plans by age of policyholder and family composition. This amount is reduced by 16 percent to reflect the fact that families are likely to

seek less costly policies in the individual market with higher co-payment requirements.[22] It is also adjusted to reflect the higher cost of administration in the individual market. We then computed the after-tax cost of that insurance under current policy and for the tax subsidies provided under each proposal. The model estimates the number of uninsured who become insured based upon the change in the after-tax cost of insurance.

We estimate the increase in coverage under these tax provisions based upon a multivariate analysis of a broad range of factors affecting the level of private insurance coverage including the price paid for coverage. This analysis indicates a price elasticity of -0.34 percent. This means that, on average, a one percent real reduction (i.e., inflation adjusted) in private employer premiums correspond to an increase in the percentage of people with insurance of 0.34 percent.[23] The data and methods used here are presented in ***Attachment B.***

However, the sensitivity to price in this analysis varies with the income, age and demographic characteristics of the individual. For example, the percentage increase in coverage resulting from a one percent reduction in premiums ranges from a high of 0.55 percent among people with incomes of $10,000 to 0.09 percent among people with incomes of $100,000 ***(Figure 25)*** (i.e. a price elasticity of –0.55 to –0.09). Similarly, the percentage increase in coverage resulting from a one percent reduction in premiums ranges from 0.46 percent for people age 20 to 0.30 percent among people age 60 ***(Figure 26)*** (i.e. a price elasticity of –0.46 to –0.30). Thus, the model shows that older people and people in higher income groups are less sensitive to changes in price than other population groups.

Figure 25
Percentage Change in Coverage Resulting from a One-Percent Reduction in Premiums by Income [a/]

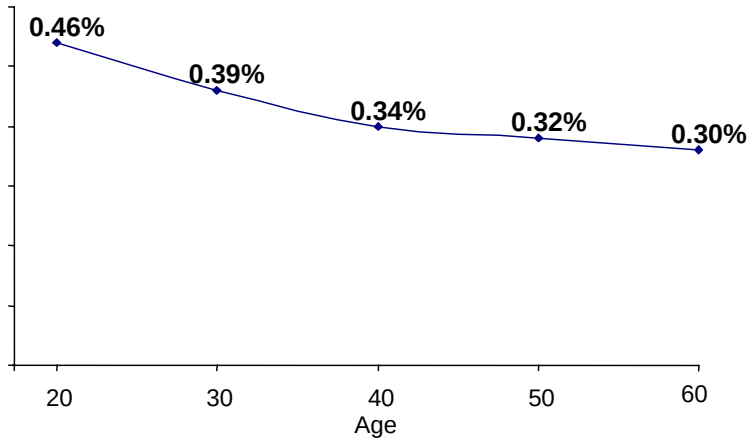


a/ Indicates a price elasticity ranging between –0.55 to -0.09 by income.
Source: Lewin Group estimates.

[22] This assumption is based upon estimates that the actuarial value of non-group coverage is typically about 16 percent less than the average for employer sponsored health plans. See: Gabel, Jon, et al., "Individual Insurance: How Much Financial Coverage Does it Provide", *Health Affairs*, April 2002.

[23] See Sheils, J., Haught, R., "Health Insurance and Taxes: The Impact of Proposed Changes in Current Federal Policy", (report to The National Coalition on Health Care), The Lewin Group, October 18, 1999.

Figure 26
Percentage Change in Coverage Resulting from a One-Percent Reduction in Premiums by Age (in percentages) [a/]



a/ Indicates a price elasticity ranging between –0.46 and –0.30 by age.
Source: Lewin Group estimates.

The model also measures the extent to which changes in income affect coverage levels. The equation indicates that a one percent increase in real wages results in an increase in the likelihood of coverage of 0.367 percent. This element is important in this study because some proposals would cause employers to "cash-out" health benefits by canceling their plan and giving the savings to workers in the form of increased wages. This increase in income would have an effect on an individual's likelihood of coverage, which we are able to model through this variable.

We use this model to estimate both the increases and decreases in coverage that can occur as a result of these proposals. We estimate the increase in coverage under premium subsidy programs by estimating the percentage reduction in premiums for eligible people. We then use the multivariate model to estimate the corresponding increase in the percentage of people taking coverage. Similarly, we estimate the decline in coverage resulting from a net reduction in premium subsidies in cases where this occurs.

We assume that vouchers and tax credits of the same nominal value would have the same impact on the demand for insurance, despite their differing implications for administration of benefits. For example, most working individuals could obtain their tax credit on an ongoing basis throughout the year simply by adjusting their tax withholding at work, whereas individuals would be required to apply with a separate agency for vouchers. Under a tax credit, however, many lower-income people who do not pay taxes now would have to file a tax return to get the benefits, which could become a disincentive to participating in the program. Therefore, enrollment levels could differ depending upon the administrative approach used.

In practice, the administration of the tax credits may often be similar to the administration of vouchers. This is because lower income people would need to go to a government agency to

apply for advance payments of the tax credit to be used to purchase insurance during the year. This is likely to involve a process quite similar to that required to administer a voucher program. Unfortunately, there is little empirical evidence on how participation would vary under these two administrative models.

We assume that these programs would be administratively feasible. We assume that under the various tax credits, an effective mechanism is developed to provide these subsidies throughout the year when coverage is purchased so that the individual does not have to wait until tax returns are filed at the end of the year to receive the subsidy. In fact, there may be substantial problems in developing such a system, which could reduce the program's effectiveness with lower-income populations. The administration is now developing a means of providing advance payments of the health insurance tax credits created under the Trade Adjustment Assistance (TAA) Act. The performance of this mechanism will be an indicator of the administrative feasibility of a tax credit with advance payments.

C. Simulation of Changes in Insurer Rating and Underwriting Laws

The model simulates the effect that changes in rating practices or pooling will have on the number of people with individual health insurance coverage. For example, community rating tends to reduce premiums for older people while increasing premiums for younger people. This causes an increase in the number of older people taking coverage while reducing the number of younger people taking coverage. The model simulates these changes in coverage using the models of how the likelihood of taking coverage is affected by changes in the price of insurance described above.

The model also simulates changes in individual coverage as people move in and out of employer coverage. In fact, many of those who would lose coverage under the employer provisions are likely to obtain coverage through the individual market. In addition, the model simulates changes in Medicaid enrollment for people losing coverage under the employer or individual market reforms.

D. Employer and Worker Response to Non-group Tax Credit or Voucher

We also model possible employer responses in proposals that provide a subsidy for non-group coverage, which could lead to reductions in employer coverage for some workers. Examples of such proposals are:

- **Tax credits for non-group coverage:** In proposals that offer tax credits for purchases of non-group coverage while leaving the existing employer health benefits exemption unchanged, some employer groups may find that their employees are on average better off if the employer were to "cash-out" their plan by terminating coverage and giving the savings to the workers in the form of higher wages. Workers can then use these wages to obtain coverage in the non-group market with the help of the tax credit.
- **Medicaid expansion or buy-in:** Medicaid buy-in proposals that would permit people to purchase coverage from Medicaid for a premium that varies with income, as much as it does under the various tax credit proposals, would potentially create incentives for workers to leave the employer coverage to obtain subsidized coverage. It would also

create incentives for employers to cancel or cash-out their health benefit so that their workers can obtain subsidized coverage.

These benefits cash-outs are most likely to occur in insuring firms with lower-wage workers where the value of the premium subsidy or tax exemption to the worker can be less than the value of a tax credit for the purchase of non-group coverage. However, not all of these individuals would obtain non-group coverage due to the increase in the amount of the premium that they would face (i.e., the non-group premium less the credit as compared with the employee contribution amount). This is a particular concern among older workers who would face age-rated premiums in the non-group market. We discuss the impact of these proposals on employers and on workers in more detail below.

1. Impact on Employer-Sponsored Coverage

We simulate the reductions in employer coverage that could result from public subsidies of non-group coverage. We assume that employers would seek to assemble the most efficient compensation package possible for their workers. Thus, we assume that employers cash-out their health plans in cases where their workers would be on average better off purchasing non-group coverage on their own with the help of the credit and their additional wages (after-tax) from the cash-out. This reflects the fact that the cost of comparable health coverage in the non-group market can be up to 20 percent greater than in the group market due to higher costs of administration, marketing and insurer risk-premiums (see section on administration below).[24]

We model the employer decision to terminate (i.e., cash-out) benefits using the database of "synthetic firms" described above. These data provide economic and demographic information for each firm's workforce that enables us to simulate the employer's decision to cash-out their health benefits. These data reflect the distribution of workers within each individual firm across income and family status groups. These data enable us to estimate the amount of the credit that each individual worker in each synthetic firm would be qualified to receive.

Using these data, we calculate the after-tax cost of their current employer coverage to each worker and the after-tax cost of comparable non-group insurance for these individuals with the credit.[25] These amounts are summed and averaged for all of the workers in the firm. These estimates reflect the fact that the amount of the premium subsidy (or tax credit) would vary with income and family type, and that many higher income employees may not be qualified for premium subsidies at all.

Once we identify the firms where it would be less costly for workers to obtain coverage in the non-group market, we simulate the employer decision to discontinue coverage. We do this based upon a multivariate analysis of how changes in the relative price of coverage for coverage alternatives affects the likelihood that people will switch to the lower cost plan. Strombom et al.

---

[24] Administrative costs for non-group plans typically range between 19 and 35 percent of benefit payments, compared with administrative costs for group coverage which average about 12 percent of benefits.

[25] The cost of coverage under the current system is equal to the total premium, including employer and employee shares, multiplied by 1.0 minus the marginal tax rates for each worker in the firm. The marginal tax rate equals the sum of the worker's marginal income tax rate (federal plus state) and the FICA tax rate including the employer and employee shares.

estimated an elasticity of about -2.47, which varies with the age and health status of the individual.[26] We used the average estimated price elasticity for workers in each synthetic firm to simulate the employer decision to shift to the lower cost plan.

2. Impact on Worker Coverage

Not all workers in firms that cash-out their benefits are expected to obtain insurance in the non-group market. We simulate the decision to purchase non-group coverage for workers in discontinued plans based upon the change in the price that they would pay for coverage. The price under current policy is equal to the employee premium contribution under the current plan. The price under the policy would be equal to the net cost of non-group coverage to the worker. Under a tax credit for non-group coverage, the price is equal to the premium for a typical non-group coverage plan less the amount of the tax credit. Under a Medicaid buy-in model, the price is equal to the Medicaid buy-in premium payment that each individual is required to pay.[27] For people who are not eligible for a subsidy, the price is equal to the full premium for non-group coverage.

The likelihood that a worker accepts non-group coverage is based upon the change in the probability of taking coverage for each individual. The probability of taking coverage under current policy is estimated based upon a multivariate analysis of the likelihood of taking employer coverage, given the characteristics of the worker and the premium contribution amount required under their current employer plan.

We estimated the probability of taking non-group coverage under the subsidy or buy-in based upon another multivariate analysis of the likelihood of taking non-group coverage, which we adjusted to reflect the net cost of non-group coverage under the policy. (These equations are presented in ***Attachment D***). The likelihood of taking coverage is calculated based upon the change between the probability of taking coverage under current policy and the probability of taking non-group coverage under the subsidy or buy-in.

3. Employer Facilitation of Enrollment

Under some proposals, employers would be required to facilitate the transition to non-group insurance for their workforce. This is important because, as discussed above, we estimate that take-up rates for workers in firms sponsoring coverage are about 32 percentage points higher than non-group coverage rates for workers whose employer does not offer coverage (after adjusting for differences in premiums and socio-economic characteristics).[28]

There is evidence that the role the employer plays in facilitating coverage has a significant impact on the percentage of workers taking coverage. Employers could facilitate the transition to non-group coverage for their workers by arranging for non-group insurers to offer coverage at work, arranging for premium withholding, and adjusting tax withholding to reflect the tax

---

[26] Strombom, Bruce A., Buchmueller, Thomas C., Feldstein, Paul J., "Switching Costs, Price Sensitivity and Health Plan Choice," Journal of Health Economics, October 2001.

[27] For people eligible for full Medicaid/SCHIP coverage, the likelihood of taking coverage is determined using the same enrollment function described above for Medicaid enrollment (see above and Attachment A).

[28] Lewin Group estimate using the 1996 MEPS data.

credit. In fact, the change in coverage could be made largely transparent to workers, except to the extent that it changes the cost of coverage to the worker.

In cases where the employer facilitates enrollment in non-group plans for their workers, we assume that the likelihood of enrolling in non-group coverage would be no different than under their current employer plan, except to the extent that the transition changes the cost of coverage to the individual (i.e., price response).[29] All other firms are assumed to terminate and cash-out their health plans without facilitating non-group insurance for their workforce.

4. Lags in Enrollment

We assume that it would take up to two years for newly eligible people to learn of their eligibility for these subsidies and enroll. We assume that only about half of the uninsured who will take coverage due to these subsidies actually obtain coverage in the first year. By the second year, we assume that 80 percent of those who would ultimately take coverage do so with the full impact of these subsidies on coverage occurring in the third year of the program. Thus, we assume that these subsidy programs are not fully implemented until the end of the second year.

However, we assume that all currently insured individuals take whatever subsidies are available to them beginning in the first year of the program unless they are simulated to drop coverage in response to changes in tax subsidies (see discussion below). This assumption of full participation among eligible people who now have coverage might seem strong in view of the low levels of participation in the earned income tax credit (EITC). However, people who have private coverage typically have high enough income that they are required to file a tax return with the IRS. Thus, it is reasonable to assume that all of these individuals would claim the health insurance credit simply by following the line-by-line instructions on the tax form, which would be modified to calculate the credit. This differs from the EITC where many of those who are eligible for the credit have such low income that they are not required to file a tax return, and consequentially do not file for the credit.

E. Impact of Default Enrollment on Coverage

We assume that take-up rates for subsidized coverage would be substantially higher than discussed above if the employer plays a role in processing and facilitating employee participation, even if the employer does not contribute to the cost of coverage. Employer participation in providing coverage is believed to have a significant impact on the proportion of workers who take coverage. The 2002-2005 pooled MEPS data indicate that while about 86 percent of all workers offered coverage through work take the coverage, only about 27 percent of workers who are not offered coverage at work purchase non-group coverage. Major differences in participation rates in 401(k) retirement plans as compared with participation in

[29] About 28 percent of firms simulated to discontinue coverage currently sponsor a multiple offering.

Individual Retirement Accounts (IRAs) for workers in firms that do not offer a 401(k) are often cited as further evidence of the importance of the employer's role in facilitating coverage.[30]

We estimated the impact of employer facilitation on enrollment rates based upon a multivariate analysis of worker participation rates in employer sponsored coverage and the proportion of workers without employer coverage who purchase non-group coverage. We estimated separate equations for both types of workers in the 2002-2005 MEPS data, which include income employment and demographic characteristics as explanatory variables. The equation for workers with access to employer coverage also includes an employee contribution amount variable that we imputed based upon employer survey data on employee premium contributions by firm size and industry. (This multivariate analysis is presented in ***Attachment D***).[31]

To standardize for differences in the demographic and economic characteristics of these two groups of workers, we solved both of these estimated equations assuming that both groups have the socio-economic profile of the worker population that is not offered employer coverage. This provided estimated take-up rates that are standardized for economic and demographic differences in the two populations. We also estimated how the take-up rates vary with the premium amount.[32] The analysis indicates that even after standardizing for differences in the premium for these two populations (i.e., the employee premium contribution amount is typically less than the cost of non-group coverage), take-up rates in firms that offer coverage are still between 30 and 35 percentage points higher than non-group take-up rates for workers in firms that do not sponsor coverage (***Figure 27***).

This estimate should be treated with caution, however, as it is the product of extrapolations to common premium amounts when there is actually a large difference between the employee premium contribution in a firm that offers coverage and the typical non-group premium. Moreover, much of the difference between workers with access to employer coverage and workers without access also could be attributed to a tendency for workers who desire health benefits to seek-out employers who offer them. Thus, our estimates may overstate the importance of employer facilitation on take-up rates. Unfortunately, there appears to be no way to isolate these "sorting" effects with the currently available data.

---

30 Madrian, B., Shea, D., "The Power of Suggestion: Inertia in 401(k) Participation and Savings Behavior", National Bureau of Economic Research (NBER), Working Paper No. 7682., May 2000

31 The Estimate is based upon a multivariate analysis of the 1997 RWJF database, which we adjusted to reflect employer premium contribution percentages for employer-sponsored coverage.

32 The equation for workers offered employer coverage includes a premium variable which permitted us to estimate these distributions. For workers without access to employer coverage, we estimated the percent taking coverage at the average premium level for non-group coverage estimated in HBSM and varied the take-up rate by premium amount assuming a price elasticity of -0.52, which is consistent with the premium price elasticity described above for people at this income level.

Figure 27
Extrapolated Worker Take-up Rates for Employer-Sponsored and Non-group Coverage [a/]

	Percentage of People Taking Coverage		
Premium Contribution	**Extrapolation from Employer Take-up Equation**	**Extrapolation from Non-group Take-up Equation**	**Estimated Group Effect**
$500	83.3%	51.7%	31.6%
$1,000	78.8%	45.4%	33.4%
$1,500	74.3%	39.9%	34.4%
$2,000	68.8%	35.0%	33.8%
$2,500	62.6%	30.7%	31.9%
$2,750	59.0%	27.0%	32.0%
$3,000	55.6%	23.7%	31.9%
$3,500	48.1%	20.8%	27.3%
$4,000	40.1%	18.3%	21.8%

a/ Extrapolations from Lewin Group multivariate model of take-up rates for non-group coverage by premium amount in 2002 dollars. Estimates are standardized to conform to the characteristics of people in the non-group market by income, age, gender, and family characteristics. Assumes a price elasticity of -0.52 for the non-group population which corresponds to the price elasticity estimate for people with incomes comparable to those reported by workers without coverage.

Source: Lewin Group analysis of the 1996 MEPS data. See *Attachment D*.

VI. EMPLOYER PREMIUM SUBSIDIES

HBSM uses the synthetic firm data to simulate the impact of proposals that affect the cost of insurance to the employer on coverage. These include a broad range of policies affecting premiums such as employer tax credits for offering coverage and changes in insurance rating practices such as changes in medical underwriting practices and state premium rating rules. We have also used it to model the effect of exceptions to state benefits mandates.

The model simulates the increase in the number of firms offering coverage based upon the change in the price of coverage to the employer using the database of synthetic firms described above. We estimate the employer's response to these proposals based upon a Lewin Group multivariate model of the likelihood of an employer sponsoring coverage based upon the premium and various employer characteristics. This model is based upon the 1997 RWJF Survey of Employers. Under some proposals, this requires analysis of the data on the synthetic coworkers assigned to each firm such as the number of employees in each firm who are eligible for a particular employer coverage subsidy or the average marginal tax rate for workers in each firm.

For firms that decide to offer coverage, the model estimates the employee contribution amounts based upon data from the 1997 RWJF employer survey. The model then simulates the employees' decision to participate in these plans when offered based upon the employee contribution requirement and a multivariate model of the percentage of workers eligible for employer coverage who participate. The various multivariate models used to simulate employer and employee decisions are presented in detail in ***Attachment C.***

A. Employer Coverage Decision

We developed a multivariate model of the employer decision to offer coverage which reflects the impact of price on the employer's purchase decision. We used the 1997 RWJF Survey of Employers which provides data on a representative sample of establishments. These data include information on the size of the firm, industry, and workforce characteristics of establishments. Data include both firms that offer insurance and those that do not. It also provides information on the characteristics of the health plans offered by each employer including premium costs and the share of the premium paid by the employer. These data were used to estimate a multivariate model that shows how the likelihood that a firm will offer coverage varies with wage level, workforce composition, firm size, industry and other firm characteristics.

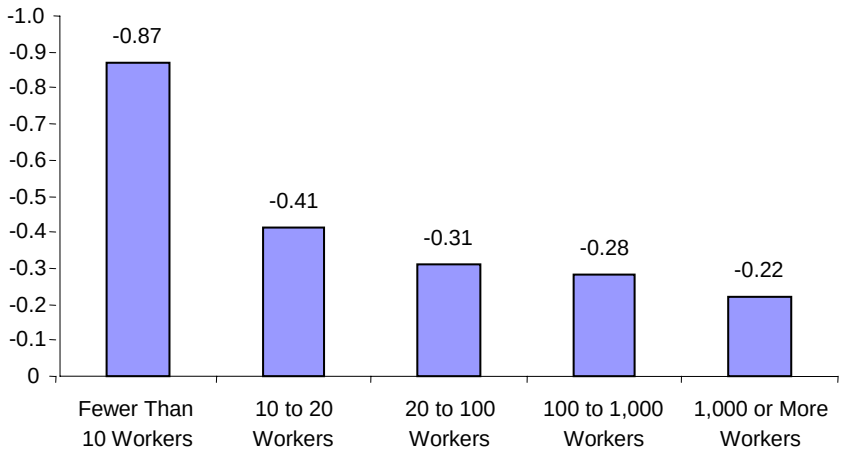
We developed a multivariate model of the employer decision to offer coverage which reflects the impact of price on the employer's purchase decision. We used the 1997 RWJF Survey of Employers which provides data on a representative sample of establishments. These data include information on the size of the firm, industry and workforce characteristics of establishments. Data include both firms that offer insurance and those that do not. It also provides information on the characteristics of the health plans offered by each employer including premium costs and the share of the premium paid by the employer. These data were used to estimate a multivariate model that shows how the likelihood that a firm will offer

coverage varies with wage level, workforce composition, firm size, industry, other firm characteristics and the price of health insurance.[33]

While the RWJF data include premium information for employers that offer coverage, no data is provided on the premiums faced by firms that do not offer coverage. To model the price effect we imputed premiums to non-insuring firms with a multivariate model of how premium levels vary with the workforce and firm characteristics that we estimated from the RWJF data on insuring establishments. We then entered these imputed premium amounts in our model of the likelihood of offering coverage to develop price elasticity estimates.

The effect of price on the purchase of a good or service is typically summarized by what economists call "price elasticity." For example, the implicit price elasticity for firms with fewer than 10 employees is -.87. This means that for each 1.0 percent reduction in price, there is an increase of 0.87 percent in the number of firms offering insurance. The implicit price elasticity declines as firm size increases to -0.41 for firms with 10 to 20 workers, and -0.22 for firms with 1,000 or more workers (***Figure 28***). These estimates compare with a range of elasticity estimates of -0.4 to -0.6 for small firms estimated elsewhere in the literature.[34] The data and methods used to estimate the employer coverage decision are presented in ***Attachment C***.

Figure 28
Employer Health Insurance Price Elasticity Estimates by Firm Size [a/]



a/ Based upon multivariate analysis of the 1997 Robert Wood Johnson Foundation (RWJF) Survey of Employer Characteristics. "Health Benefits Simulation Model (HBSM)," The Lewin Group, August 2003.

Source: Lewin Group estimates using the Health Benefits Simulation Model (HBSM).

---

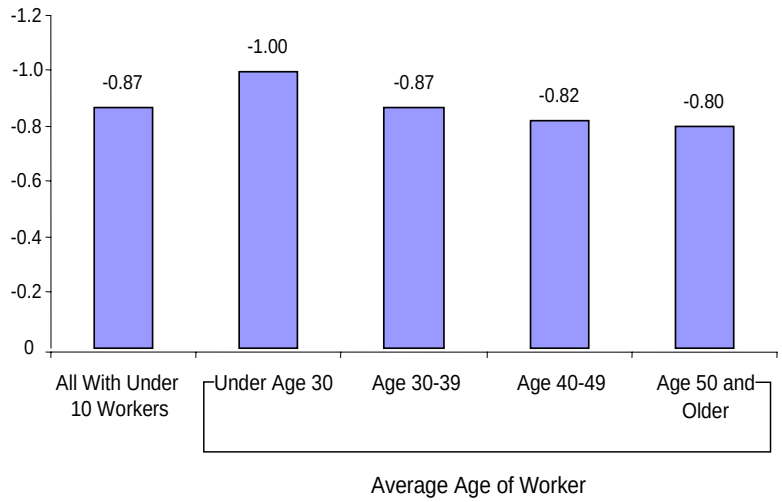
[33] While the RWJF data includes premium information for employers that offer coverage, no data is provided on the premiums faced by firms that do not offer coverage. To model the price effect we imputed premiums to non-insuring firms with a multivariate model of how premium levels vary with the workforce and firm characteristics that we estimated from the RWJF data on insuring establishments.

[34] Glied, S., et al. "Modeling Health Insurance Expansions", (Report to the Robert Wood Johnson Foundation (RWJF)), June 26, 2001.

These price elasticity estimates were used to simulate the impact of tax credits and other policies affecting employer premiums. In this analysis, tax credits and other subsidies are treated as a reduction in the price of insurance to the employer. Changes in prices for coverage resulting from pooling, which typically involves an indirect subsidy, are all treated as changes in the price of coverage. The likelihood that a non-insuring synthetic firm will offer coverage at this lower price is estimated using the elasticity estimates shown in ***Figure 28***. For example, for a firm with 10-20 workers, the likelihood of offering coverage increases by 0.41 percent for each 1.0 percent reduction in premiums.

The model reflects variations in firm price elasticity depending upon the characteristics of the firm. For example, the model shows that the firm price elasticity tends to decline as average age of workers rise (***Figures 29*** and ***30***). Also, the price response declines and average worker income rises. This results in a lower estimated price elasticity among currently insuring firms -- averaging about -0.56 for firms with 10 or fewer workers -- because the employers that offer coverage tend to have older and more highly compensated workers.

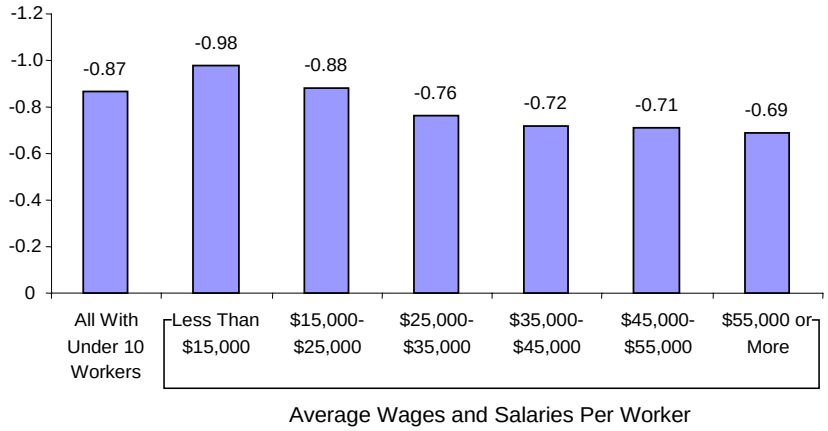
Figure 29
Employer Health Insurance Price Elasticity Estimates for Firms with Under 10 Workers by Age of Workers [a/]



a/ Based upon multivariate analysis of the 1997 Robert Wood Johnson Foundation (RWJF) Survey of Employer Characteristics. "Health Benefits Simulation Model (HBSM)," The Lewin Group, August 2003.

Source: Lewin Group estimates using the Health Benefits Simulation Model (HBSM).

Figure 30
Employer Health Insurance Price Elasticity Estimates for Firms with Under 10 Workers by Average Wages and Salaries per Worker [a/]



a/ Based upon multivariate analysis of the 1997 Robert Wood Johnson Foundation (RWJF) Survey of Employer Characteristics. "Health Benefits Simulation Model (HBSM)," The Lewin Group, August 2003.
Source: Lewin Group estimates using the Health Benefits Simulation Model (HBSM).

B. Coverage for Part-time Workers

We also used the RWJF data to measure how price affects the likelihood that an employer who offers coverage to full-time workers would also offer coverage to part-time and seasonal workers. We did this using the RWJF data on firms that offer coverage, which indicates whether part-time and seasonal workers are eligible. This analysis was relatively straightforward because the premium amounts faced by the firm are reported in the data (i.e. the premiums reported for covered people), thus eliminating the need to impute prices.

However, the analysis showed no statistically significant relationship between premium amounts and coverage for part-time and seasonal workers. As shown in ***Figure 31***, the price elasticity estimates were small, statistically insignificant, and of the wrong sign. Consequently, we assume that changes in premiums due to tax credits or other price changes have no impact on the employers' decision to cover part-time and seasonal workers.

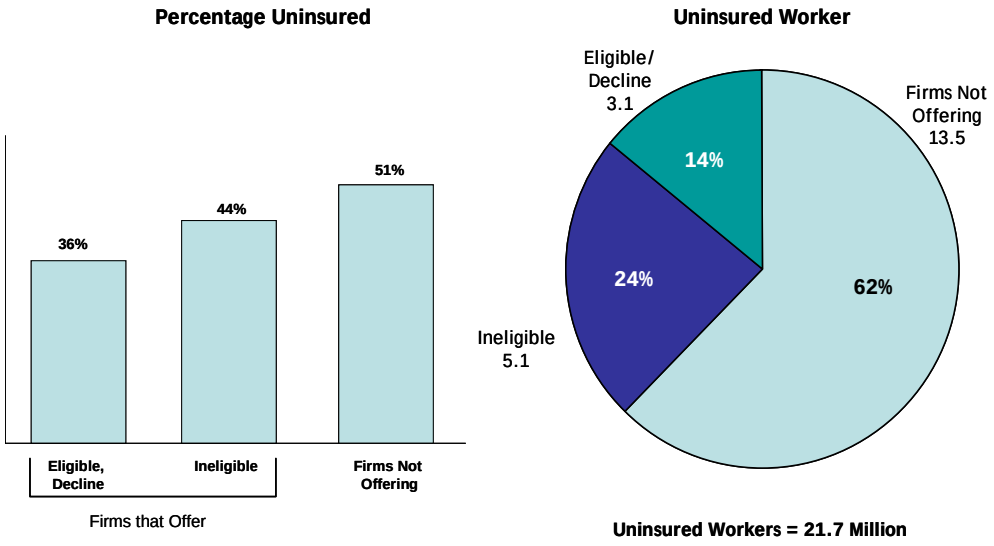
Figure 31
Price Elasticity Estimates for Firms Offering Coverage

Firm Size	Firms Offering Coverage [a/]	Firms Offering to Part-time, Seasonal Workers [b/]
Less than 10 Workers	-0.87	0.044
10 – 20 Workers	-0.41	0.091
20 – 100 Workers	-0.31	0.040
100 – 1,000 Workers	-0.28	0.073
Over 1,000 Workers	-0.22	0.078

a/ Estimates were significant at the 99 percent level.
b/ Estimates were not statistically significant.
Source: Lewin Group analysis of the 1997 RWJF Employer Survey data.

This result has a significant impact on our estimates of the number of workers who would be affected by changes in the price of coverage to employers. As shown in ***Figure 32***, of the 21.7 million uninsured workers in the U.S., about 24 percent are working for an employer who offers coverage but is ineligible under the plan rules, typically due to their part-time or temporary status. Only about 62 percent of uninsured workers are in firms that do not offer coverage to at least some workers. Another 14 percent of uninsured workers are eligible for coverage but have declined to participate, presumably because of the cost of coverage.

Figure 32
Uninsured Workers by Coverage Eligibility Status for Employer Plan
(in millions)



Source: Lewin Group estimates using Health Benefits Simulation Model

C. Employer Premium Contribution

In addition, we estimated multivariate models predicting the percentage of the premium paid by the worker using the RWJF employer data. These equations measure how premium shares vary with the characteristics of the firm, their workforce and the amount of the total premium. These amounts are used to estimate the cost of insurance for workers in each firm selected to offer coverage in response to the program.

The data and methods used to develop these multivariate models are presented in ***Attachment C***.

D. Worker Take-up in Firms Induced to Provide Coverage

Once firms are selected to offer coverage, we simulate enrollment among workers assigned to these plans. The enrollment decision is simulated with a multivariate model of the likelihood that eligible workers will take the coverage offered to them based upon data reported in the 1996 MEPS data for people offered coverage through an employer. The model measures how

take-up varies with the characteristics of the individual as well as the employee premium contribution required by the employer. This required imputing a premium amount to MEPS respondents in firms offering coverage based upon premium contribution data reported in the HRET employer data by firm size and industry. See ***Attachment C***.

We do not simulate employer responses that are designed to maximize tax credit payments under these proposals. For example, some small employer tax credit proposals limit eligibility to firms with average wage levels per worker below the national average for all small firms. Employers could respond by shifting to part-time workers or substituting non-wage compensation for wages to stay below the average wage requirement. In addition, larger firms may find it less costly to lay-off some workers and outsource their functions to smaller firms that are made more price-competitive because they receive the credit. None of these potential effects are estimated in this analysis.

E. Comparison with other Firm Price Elasticity Estimates

The Lewin price elasticity estimates are within the range of estimates developed by other researchers. Our firm price elasticity estimates are similar to those estimated by several researchers. For example, Hadley and Reschovsky estimated a price elasticity of -0.63 for firms with fewer than ten workers, and -0.30 for firms with between 10 and 24 workers.[35] They showed variations in firm price elasticity by age and income. Gruber estimated a firm price elasticity of between -0.66 to -0.99 for firms with fewer than 50 workers.[36]

However, some studies show larger firm price elasticity estimates. For example, Feldman estimated a firm price elasticity of between -3.9 and -5.5.[37] Blumberg and Nichols recently estimated a firm price elasticity of up to -1.8 for firms with fewer than 10 workers, dropping to -0.66 for firms with 10 to 24 workers and -0.25 for firms with 100 or more workers.[38]

All of these price elasticity estimates yield very little change in the number of people with coverage. In all of these studies, these price elasticity estimates are large only for the smallest firms. For example, a 25 percent reduction in premiums (e.g., in the form of a tax credit) for firms with under 50 workers would cover about 3.0 million workers using our price elasticity assumptions, which is only about 10.1 percent of workers without coverage in this firm size group (***Figure 33)***. Results are similar under the various firm price elasticity estimates.

The estimated impact is small because the price elasticity yields a percentage increase in the number of people with coverage in each firm size group, which is already quite small. There are about 19.2 million workers in firms with under 50 workers who had insurance in 2003. In this example, the estimated percent increase for all with under 50 workers was 15.5 percent [i.e., the

---

35 Hadley, J. and Reschovsky, J., "Small Firms' Demand for Health Insurance: The Decision to Offer Insurance," *Inquiry* 39:118-137, 2002.

36 Gruber, J., Lettau, M., "How Elastic is the Firm's Demand for Health Insurance?," (report to the National Bureau of Economic Research), Working Paper 8021, November 2000.

37 Feldman, R., et al., "The Effect of Premiums on the Small Firm's Decision to Offer Health Insurance," *Journal of Human Resources*, vol. 32, no. 4 (fall 1997), pp. 637-658.

38 Blumberg, B., et al., "The Health Insurance Reform Simulation Model (HIRSM): Methodological Detail and Prototypical Simulation Results," (report to the U.S. Department of Labor), The Urban Institute, July 2003.

weighted average price elasticity for under 50 workers (-0.64) multiplied by the percent change in premiums (25 percent)]. This is then applied to the number of people in the affected group who now have coverage (about 19.2 million workers) to estimate the change in coverage, which we estimate to be about 3.0 million workers (i.e., 15.5 percent increase over 19.2 million covered workers).

Figure 33
Comparison of Firm Price Elasticity Estimates

	Lewin [a/]	Gruber [b/]	Blumberg [c/]	Hadley & Reschousky [d/]
Estimated Price Elasticity				
Less than 10 Workers	-0.87	--	-1.8	-0.63
10-24 Workers	-0.41	--	-0.66	-0.30
25-100 Workers	-0.31	--	-0.25	-0.135 [e/]
Weighted Average for 1-50 Workers	-0.64	-0.66	-1.18	-0.45
Impact of a 25 Percent Reduction in Premiums for Firms With 50 or Fewer Workers				
Change in Number of Workers With ESI (thousands)	2,986	3,079	5,505	2,162
Percent of Workers in Non-insuring Firms Who Become Covered Under ESI	10.1%	10.4%	17.2%	7.3%

a/ John Sheils and Randall Haught, "Covering America: Cost and Coverage Analysis of Ten Proposals to Expand Health Coverage," Appendix A, (report to the Robert Wood Johnson Foundation (RWJF)), October 2003.
b/ Gruber, J., Lettau, M., "How Elastic is the Firm's Demand for Health Insurance?," (report to the National Bureau of Economic Research), Working Paper 8021, November 2000.
c/ Blumberg, B., et al.,"The Health Insurance Reform Simulation Model (HIRSM): Methodological Detail and Prototypical Simulation Results," (report to the U.S. Department of Labor), The Urban Institute, July 2003.
d/ Hadley, J. and Reschovsky, J., "Small Firms' Demand for Health Insurance: The Decision to Offer Insurance," *Inquiry* 39:118-137, 2002.
e/ Weighted average for the 25 to 50 worker and 50 to 100 worker firm size groups.
Source: Illustrative analysis by the Lewin Group.

VII. EMPLOYER CONTRIBUTION REQUIREMENTS

HBSM simulates the effect of proposals that would require employers to contribute to the cost of coverage for their workers. This includes mandates for employers to cover their workers and "pay-or-play" proposals that require employers to chose between offering coverage and paying a tax. In addition, we model how new subsidies for non-group coverage and an individual mandate affect the employer decision to offer coverage.

The model simulates the impact of an employer mandate directly from the worker and firm level data. For pay-or-play programs, the model simulates the employer's decision to purchase coverage or pay the tax based upon the cost of these two approaches to the employer. We generally assume that employers would tailor their response to achieving the most efficient compensation package possible for their workforce.

Even proposals that do not directly affect employers can result in changes in employer coverage. For example, plans that expand eligibility under Medicaid or provide subsidies for non-group coverage could cause some employers to discontinue their health plans believing that their workers can obtain coverage at lower costs through these subsidized programs. Conversely, a program mandating that individuals obtain coverage would increase worker demand for group insurance - which is typically less costly than non group insurance – resulting in an increase in the number of employers offering coverage.

In this section, we describe how HBSM is used to simulate these policy scenarios. We present the methods we used to simulate these employer responses in the following sections:

- Estimating workforce premiums in alternative markets;
- Simulating an employer mandate;
- Simulating a pay-or-play program;
- Employer response to non-group subsidies;
- Employer response to an individual mandate;
- Plan enrollment and benefits;
- Wage and tax effects; and
- Employment effects.

A. Estimating Workforce Premiums in Alternative Markets

HBSM simulates employer coverage decisions based upon the cost of coverage for their workforce under employer group insurance or non-group coverage. To do this, we estimate for each firm the premium for workers if coverage is provided through an employer group plan. We then estimate the cost of coverage for the employer's workforce assuming that each worker obtains coverage in the non-group market, given the various subsidies that would be available under the health reform proposal. The employer coverage decision is modeled based upon these two estimates of plan cost.

1. Estimating Premiums for Individual Groups

As discussed above, each worker in HBSM is assigned to one of the "synthetic firms" included in the model. These synthetic firms include data for each of the people working in that firm and their dependents, including the family income data used to determine their eligibility for subsidized coverage under the proposal. They provide information on both insuring employers and those that do not offer coverage. These data include the following for each employer:

- Worker characteristics data required to simulate the insurance premium for each group including: age, gender, industry, health status and pre-existing conditions;
- The worker classification data required to calculate each firm's potential tax payment under a pay-or play proposal (i.e., part-time/full-time and temporary workers);
- Determination of actuarial equivalence to proposed minimum benefits standards and the cost of bringing plans into compliance; and
- Information on the number of ineligible workers and the number of eligible workers who have declined coverage to estimate the cost of proposals requiring full enrollment.

Using these data, we estimate the cost of coverage for each group (regardless of employer/employee premium contributions) under their current health plan using the health insurance markets model discussed above. We then subtract from this the amount of any direct subsidies to employers under the proposal and the taxes saved for each individual due to the tax exclusion for employer provided health benefits.[39]

The next step is to calculate the cost of insurance for each worker assuming they were to obtain coverage on their own. The model identifies people in each synthetic firm who are eligible for coverage under Medicaid or any premium subsidies or tax credits created to assist in the purchase of non-group coverage. For workers with incomes too high to qualify for subsidies, we estimate the premium based upon the after-tax cost of coverage in the private non-group market.

Nowhere in these calculations do we account for the portion of the premium for employer coverage paid by the employer vs. the employee. This is because we assume that if the employer were to discontinue coverage, the savings to the employer would be "cashed-out" and passed-on to the worker in the form of higher wages, thus reducing the net cost of insurance to the workers of obtaining coverage on their own. This would happen either through an explicit employer cash-out or in the natural course of competition in the labor markets for workers. Thus the cash-out offsets the loss of the employer premium contribution.

These calculations are performed for both insuring and non-insuring firms to provide a basis for simulating policies that could cause some employers to change their decision to offer coverage.

---

[39] The tax benefit is estimated using the marginal tax rate for each individual which we imputed to the HBSM household data from tax data reported in the 2005 CPS.

2. *Actuarial Equivalence for Currently Insuring Firms*

We assume that currently insuring employers who continue to provide coverage would upgrade coverage to the minimum benefits package if their current benefits fall below the minimum standard under the program. We determine whether plans fall below the minimum benefits standard based upon an actuarial valuation of each plan relative to the actuarial value of the minimum benefits package.

As discussed above, we estimate the actuarial value of the benefits offered by each employer in the synthetic firm database based upon the coverage and co-payment data provided in these data sources (i.e. from the KFF/HRET data). These data provide a limited amount of information on covered services, and patient cost sharing, which we used to estimate the actuarial value of each employer plan based upon the worker health spending data provided in the MEPS household data. ***Figure 34*** presents estimates of how employer premiums vary with the characteristics of the plan.

3. *Estimated Group Plan Change Price Elasticity*

To model the decision to offer or drop coverage, we calculate a "composite" plan change price elasticity for each group based upon the average plan change price elasticity for each group member. This is based upon the plan change price elasticity estimates developed by Stombom et al. as described below (see ***Figure 37*** below), which vary with age and health status.

We then calculate the percentage change in the cost of covering each group under the Medicaid expansions and/or the premium subsidy program for non-group coverage. As discussed below, we use the percentage difference in costs under ESI and non-ESI coverage to estimate the likelihood of changing to or from employer coverage using the composite plan change elasticity for the group. We discuss the ways in which the plan change price elasticity is used below.

B. Simulating and Employer Mandate

We assume that all employers respond to the employer mandate by providing coverage to those groups of workers that are subject to the mandate. The model simulates the effect of provisions that define the scope of the mandate including limiting the extent of the mandate by: firm size, for-profit/not-for-profit status, part-time/full-time worker status, and temporary or seasonal worker requirements.

The premiums for insuring firms are based upon the premium estimated for each synthetic firm under their current benefits package, adjusted to reflect the cost of the minimum benefits package. We first estimate the premium for each employer group subject to the coverage requirement using the insurance market model described above.

The premium is estimated based upon the minimum benefits package specified in the legislation.[40] The employer's premium varies with the characteristics of their employees under the insurance market rating rules that would apply under the legislation for the minimum

[40] Separate assumptions are devised in cases where a minimum benefits package is not specified.

benefits package. The premium estimated above for each firm is used unless the legislation is accompanied with changes in insurance rating requirements. So, for example, the premium for a firm would reflect prohibitions on medical underwriting and provisions designed to reduce premium variation by demographic or health status characteristics. We simulate the premium based upon the minimum benefits package required under the proposal, unless employers are permitted to substitute actuarially equivalent plans.

Figure 34
Average PMPM Premium Cost for Standard Population by Design Element: 2010 [a/]

	Monthly Individual Premium	Monthly Family Premium
BCBS Standard Option		
Estimated Premium	**$405**	**$970**
Impact of Varying Deductibles		
No Deductible	$477	$1,143
$250 Individual $500 Family	$405	$970
$500 Individual $1,000 Family	$382	$915
Impact of Varying Co-Payments		
10% Copayment	$422	$1,012
20% Copayment	$405	$970
30% Copayment	$387	$927
Impact of Varying Out-of-Pocket Limits		
$1,000 Individual $2,000 Family	$432	$1,037
$2,000 Individual $4,000 Family	$405	$970
$5,000 Individual $10,000 Family	$341	$818
Impact of Varying Covered Services		
Hospital, Physician Visits, Major Medical, Rx, Dental, and Mental Health	$405	$970
Excluding Mental Health	$380	$911
Excluding Dental	$368	$881
Excluding Rx	$345	$829
Excluding Mental Health, Dental and Rx	$296	$620

a/ Assumes the Blue Cross/Blue Shield Standard Option plan offered to workers in the Federal employees health benefits program (FEHBP).
Source: Lewin Group estimates using the Health Benefits Simulation Model (HBSM).

For currently non-insuring firms, we estimate the premium they would face in the insurance markets using the premium simulation model described above. As in our simulation of premiums for insuring firms, the model sets premiums according to whatever health insurance rating practices are required under the legislation. The premiums themselves are calibrated to reflect the estimated cost of coverage for the population groups subject to the legislation.

The employer cost of coverage is determined by multiplying the estimated group premium for each firm by the minimum percentage of the premium that the employer is required to pay (e.g., 85 percent single; 75 percent family).

C. Simulating a Pay-or-Play Program

The pay-or-play model presents employers with a choice between offering coverage or not offering coverage and paying the tax. Employers who now provide coverage would have the option of paying the tax rather than providing coverage. Non-insuring employers would also be required to decide between offering coverage and paying the tax. However, the employer decision to offer coverage will differ depending upon whether individuals are required to have coverage.

1. Pay-or-Play without an Individual Mandate

For firms that now offer coverage, we simulate the employer decision to discontinue coverage in the same way that we simulate the discontinuation of coverage under the FHP buy-in. For each insuring employer, we estimate the cost of covering their workforce through ESI and the cost of the group taking coverage through other sources, including FHP and the FHP buy-in, just as we described above. However, under the pay-or-play model, the cost to the group of not offering ESI is equal to the cost of non-ESI coverage for the group, plus the amount of the payroll tax that the employer would be required to pay for not offering coverage. We then simulate the employer's decision to terminate coverage based upon the percentage difference in costs and the composite group plan change price elasticity estimated as described above.

Under a pay-or-play scenario where there is no mandate for people to have insurance, we assume that non-insuring employers decide between offering coverage and paying the tax on the basis of whichever is less costly to the employer. Thus, if paying the payroll tax is less costly than offering insurance, we assume that they pay the tax. If the cost of providing ESI is less than paying the tax, we assume that they would decide to offer coverage.

2. Pay-or-Play with an Individual Mandate

Under this scenario, the pay-or-play proposal is implemented together with a mandate for all people to have coverage. For firms that currently offer coverage, we simulate the decision to discontinue or continue to offer ESI in the same way as under the voluntary pay-or-play model. That is, we estimate the cost of covering the group under ESI and compare it with the cost of their workforce taking coverage through non-group market (or the exchange if applicable), plus the payroll tax penalty. We then simulate the decision to terminate coverage using the composite plan change price elasticity estimates discussed above.

For firms that do not now offer coverage, the coverage mandate would increase the demand among their workers for ESI. Thus, under the individual mandate, we assume that currently non-insuring employers would decide whether to offer coverage based upon the total cost of coverage for the group under ESI vs. the cost of non-ESI coverage for the group, where the non-ESI option includes the payroll tax for firms not offering coverage. In cases where it is less costly for the group to obtain coverage through their employer, we simulate the decision to offer coverage using the composite plan change price elasticity based upon the percentage difference in the cost of covering the group under ESI and the cost of covering the group through non-ESI sources.

Thus, under this scenario, the cost of coverage in the non-group market is increased to reflect the cost of the payroll tax. This results in a larger number of employers deciding to offer coverage.

D. Employer Response to Voluntary Non-Group Subsidy Programs

Several recent proposals would provide subsidized coverage to individuals who do not have access to employer insurance. These include expansions in eligibility for Medicaid or subsidies for the purchase of private health insurance in the non-group market. Under these proposals, many employers may discontinue their coverage assuming that their workers can obtain coverage at a lower cost through Medicaid or other premium subsidy programs.

Our underlying assumption is that employers would seek to provide the most "efficient" compensation package for their workers. Thus, if the total cost of insurance to an individual employer's work force (i.e., net of tax effects) is lower when workers obtain insurance on their own through the non-group market or exchange, the employer may be inclined to discontinue their health plan.

HBSM simulates the decision to discontinue coverage based upon the plan switching analysis discussed above. We simulate the employer's decision to discontinue coverage by applying the composite plan change price elasticity described above for each group to the percentage reduction in costs for the group if they were to take coverage under the non-ESI coverage available under the proposal. However, to reflect the fact that there is evidence of a preference for private employer coverage among workers, we reduce the plan switching elasticity figures by 25 percent.

E. Employer Response to an Individual Mandate

Under an individual mandate, we assume that some employers would discontinue coverage, while others would start to offer ESI. As discussed above, employers offering ESI who find that non-ESI coverage under the proposal would be less costly than the employer coverage could discontinue coverage. We simulate the discontinuation of employer health plans under the mandate in the same way that we simulate the discontinuation of coverage under the voluntary non-group subsidy program discussed above.

However, we anticipate that some non-insuring employers would start to offer coverage. This is because workers who are newly required to obtain insurance may increase the demand for employer coverage among workers. This will be particularly true in cases where the employer

can provide the coverage at a lower cost (including the effect of tax benefits) than if their workers were to obtain coverage through the FHP buy-in and/or the non-group market.

For each non-insuring employer, we calculate the cost of providing insurance for the employer's workforce through ESI (reflecting tax benefits) and compare this with the cost of purchasing coverage for that workforce through the FHP program and the non-group market for those not eligible for the FHP buy-in. In cases where it is less costly for the group to obtain coverage through their employer, we simulate the decision to offer coverage using the same composite plan change price elasticity used to simulate the decision for employers to discontinue coverage (see discussion of employer behavior under the voluntary buy-in in the prior section). The percentage "change in price" for the group is computed as the percentage difference in the cost of covering the group under ESI and the cost of covering the group through non-ESI sources.

F. Employer Plan Enrollment and Benefits

The model simulates enrollment, benefits and premium contributions for people in firms that are simulated to offer employer coverage. The methods used vary with the features of the pay–or-play proposal that we are simulating and the premium contributions under the proposal.

1. Enrollment

We assume that all workers in firms that decide to offer coverage would enroll in the plan if there is a mandate for all individuals to have coverage. If there is no mandate, we simulate the worker's decision to enroll in the employer plan based upon multivariate analyses of enrollment behavior in existing employer health plans, which reflects both differences in demographic and economic characteristics as well as the worker premium contribution requirement (see ***Attachment D***).

Under some pay-or-play proposals, workers in firms that decide to pay the tax rather than offer insurance are automatically covered under a health insurance connector or a new public plan. We assume that all workers in these circumstances are automatically enrolled in the designated plan. If no such coverage is provided, we simulate their coverage decisions using the individual coverage simulation methods described above for Medicaid expansions and/or premium subsidies for non-group coverage (see ***Attachments B***).

2. Benefits Simulations

As discussed above, currently insuring firms with plans that fall below the actuarial value of the minimum benefits package are assume to upgrade their coverage to the minimum benefits package if it is less costly than paying the tax. For each of these employers, we determine covered benefits for each worker and dependents in these firms using the health utilization and expenditure data provided in the HBSM household data and the actual provisions of the minimum benefits package. We assume no change in benefits for people in firms with plans that exceed the actuarial value of the minimum benefits package.

We also compute benefits for people who become newly insured under the minimum benefits package. These include people in currently non-insuring firms who decide to offer coverage, and people who become covered under the public plan. This is done using the health utilization

and expenditure data reported in the HBSM MEPS data and the actual coverage provisions of the minimum benefits package.

3. Employer Premium Contributions for Insuring Firms

We assume that the premiums for currently non-insuring firms that decide to offer coverage are equal to the premiums estimated with the HBSM employer insurance market model described above. The employer share of the premium is assumed to be equal to the minimum percentage of the total premium required under the program which typically differs for individual and family coverage. Workers are assumed to pay the remainder.

For currently insuring firms that are assumed to upgrade their coverage to the minimum standard, we also re-estimate the total premium for coverage and the amount paid by the employer. The employer contribution is assumed to be equal to this adjusted premium multiplied by the minimum employer contribution percentage required under the program. The dollar amount of the employer contribution is assumed to remain at least as great as the amount of the employer contribution under their current health plan.

The employer contribution is also recomputed for currently insuring firms simulated to continue to offer their current health plan. The employer share of the cost is assumed to be equal to the minimum contribution percentage multiplied by the portion of total group costs attributed to the minimum benefits standard. Costs for the minimum benefits portion of coverage are estimated based upon the ratio of the actuarial value of the minimum benefits package to the estimated actuarial value of benefits offered by the employer. The dollar amount of the employer contribution is assumed to be no less that the amount of the employer contribution under their current health plan.

4. Public Program Expenditures under the Pay-or-Play Model

In general, tax revenues are not expected to be large enough to cover the cost of covering workers and dependents in the firms that choose not to provide coverage. The reason for this is that we assume that the only firms that would pay the tax are those who would find that the tax is less costly than the cost of insurance. Thus, the assumption that employers would do whatever minimizes the employer's costs causes the payroll tax revenues to be less than the cost of covering the workers and dependents in firms that decide to pay the tax rather than provide insurance.

G. Wage and Tax Effects

We assume that changes in employer costs for health benefits are passed-on to workers in the form of changes in wages. Thus, increases in employer costs are assumed to be passed-on to workers in the form of reduced wages while decreases in health benefits expenses are passed-back to employees in the form of increased wages. We assume that this wage adjustment would occur among government employers as well, assuming that government compensation packages will be adjusted to remain competitive in the labor markets. We assume that this pass-through occurs among both insuring and non-insuring firms whose labor costs are affected by the proposal due to changes in health benefits or payroll taxes imposed as part of the program.

We also assume these wage changes would occur in response to both mandates affecting employers and voluntary changes in employer coverage induced by health reform.

Our pass-through assumption is based upon the economic principle that the total value of employee compensation, which includes wages, employer payroll taxes, health benefits and other benefits, is determined in the labor markets. Thus, for example, a reduction in the cost of one form of compensation would cause wages and other compensation to be bid up in the labor markets resulting in an eventual pass-through of these savings to the worker. Similarly, increases in compensation costs would lead to reductions in wages or other benefits to reflect the change in costs.

There is considerable agreement among economists that these pass-throughs would occur in response to changes in employer benefits costs.[41] However, there is disagreement over the period of time over-which these adjustments would occur. It is likely that these adjustments would often take the form of reduced wage growth over-time. However, the full amount of the pass-through could take several years to materialize. For illustrative purposes, we generally present our estimates with and without wage effects.[42]

We present our wage change estimates on an after-tax basis. We do this by calculating the change in taxes based upon the amount of the change in earnings and the marginal tax rates imputed to families in HBSM (discussed above). Household wage changes are then adjusted to reflect these tax effects. The model also calculates the changes in tax revenues to the federal and state governments due to these wage changes.

We assume that changes in employer costs for retiree health benefits would not be passed on to workers as changes in wages. This is because retiree benefits costs are related to prior employer commitments that have little impact on the current labor markets. Thus, savings in retiree benefits are assumed to accrue to the employer. While these changes in employer profits could affect investor incomes, we do not model these effects here.

H. Employment Effects

Estimates of the employment effects are based on the theoretical framework of wage adjustments discussed in the previous section. In this framework, employers subject to higher health care costs attempt to adjust for these costs by reducing wages and other benefits over time. When wage reductions fully offset the increase in health care costs, there are no employment effects.[43] However, when wage adjustments are not able to fully offset the effects of

---

41 See, for example, James Heckman, "What Has Been Learned About Labor Supply in the Past Twenty years?" American Economic Review, (May 1993).

42 See, for example, Jonathan Gruber and Alan B. Kreuger, "The Incidence of Mandated Employer-Provided Insurance: Lessons from Workers Compensation Insurance," in Tax Policy and the Economy (1991); Jonathan Gruber, "The Incidence of Mandated Maternity Benefits, " American Economic Review, (forthcoming); and Lawrence H. Summers, "Some Simple Economics of Mandated Benefits, " American Economic Review (May 1989).

43 Strictly speaking, there are no involuntary employment effects for workers. If the elasticity of labor supply is non-zero (that is, employees' labor supply decisions are responsive to changes in after tax wages), some workers may choose to withdraw from the labor force. Moreover, because relative wages will change across firms and

higher health care costs because of a binding minimum wage, there would be employment effects.

We estimate the effect on employment using micro-data from HBSM. In these data, we observe the individual wage, the implied adjustment to that wage for changes in health care costs to the employer, and the increase in net costs to employers of some workers because the minimum wage constrains the wage adjustment. In our estimates, it is only those employees whose wages cannot be fully adjusted to offset the employer's higher health care costs that are considered "vulnerable" to employment effects. We define vulnerable workers to be those who are at or near the minimum wage (the minimum wage varies by state), which we assume to be workers earning less than $7.00 per hour.

The number of employees who actually become unemployed will depend on the number of vulnerable workers affected and employer responsiveness to changes in labor costs. We can summarize employer responsiveness as the "elasticity of demand" for labor.[44] The elasticity of demand for labor is the percentage change in employment resulting from a percentage change in labor costs to the employer. Because we have micro-data, we transform this expression into a probability that a given "vulnerable" worker will lose their position based on the actual change in employer costs for that worker.[45]

There is evidence regarding the elasticity of labor in the literature, from studies that attempted to measure the effects of changes in the minimum wage on employment. These estimates typically measure the effect of changes in the minimum wage by age group considered at risk from increases in the minimum wage, such as 16 to 20 year old workers or 20 to 24 year old workers. The elasticity estimates are typically small: in the range of -0.1 to -0.3.[46] These estimates are based upon changes in aggregate employment given a change in the minimum wage.[47]

---

industries, workers may choose to leave firms where wages have fallen significantly and migrate to firms where wages have fallen by less, or have increased.

44 The notion here, which is quite familiar in economic theory, is that the amount an additional worker contributes to the firm diminishes with the number of workers hired. Hence, as workers begin to leave the firm, the marginal value of the remainder rises. For firms that cannot adjust wages to offset higher employee costs, the adjustment will be to reduce employment of the remaining workers until the marginal worker is again worth the higher cost.

45 A linear probability model is assumed. Losses are based on the expected values of the probabilities.

46 See, for example, Charles Brown, Curtis Gilroy, and Andrew Kohen, "The Effects of the Minimum Wage on Employment and Unemployment," Journal of Economic Literature, June, 1982; and Brown, Gilroy and Kohen, "Time Series Evidence of the Effect of the Minimum Wage on Youth Employment," Journal of Human Resources, Winter, 1983. More recent evidence is summarized in Jacob Klerman and Dana Goldman, "Job Loss Due to Health Care Reform," (Rand Corporation) Statement prepared for the Subcommittee on Health of the House Committee on Ways and Means, November 4, 1993.

47 These elasticity estimates were transformed so that they could be applied to the vulnerable worker population only as represented in HBSM, resulting in elasticity assumptions of -0.2 and -0.5.

VIII. SIMULATION OF RISK SELECTION FOR NEW INSURANCE POOLS

We have used HBSM to simulate the effects of several proposals that would create voluntary public insurance pools that would operate as an alternative to the existing private insurance market. These proposals would generally permit employers and individuals to choose between community-rated public coverage and private insurance plans that may or may not be subject to the same rating rules (e.g., community-rating). In this type of market, the private plans are expected to accumulate healthier, lower-cost individuals leaving the higher-cost groups and individuals to be covered under the community-rated public plan.

Because of the accumulation of higher-cost cases in the public plan, costs in the public plan are expected to exceed premium revenues, which would increase the amount of public funds required to operate the program. However, private premium costs are expected to decline as higher-cost cases are siphoned off to the public plan, which could result in an increase in the number of employers and individuals who have coverage. The accumulation of costs in excess of premiums in the public plan would be paid by the federal government, which constitutes a subsidy to the market. Covering higher cost individuals under the public plan would result in lower premiums for younger and healthier people, which would result in increased coverage among these groups.

Despite this tendency towards adverse selection, the public plan could be designed to have lower costs. For example, a public plan that pays providers at Medicare payment levels could be up to 40 percent less costly that private coverage. This reflects that payment rates under public programs are typically much lower than is paid by private plans. The public plan may also have lower administrative costs than private coverage due to the elimination of insurer profits and agent/broker sales commissions.

Thus, enrollment in the public plan will be determined through a complex mixture of effects. We present the methods we use to simulate these enrollment choices in the following sections:

- Public Plan Features;
- Simulation premiums in insurance pools
- Selection Effects in the Individual Market;
- Insurance pool Enrollment for Employers; and
- Worker Enrollment Simulation.

A. Public Plan Features

We have used HBSM to model several proposals to create a "public plan." These proposals typically would establish a government operated plan modeled on Medicare that individuals and employers could buy into by paying a premium based upon actual costs within the public plan. These proposals would reimburse health care providers at Medicare payment levels and would use the existing Medicare infrastructure to the extent possible.

The public plan has been proposed as part of an overall approach to expand health insurance coverage and control costs. In this section, we present results based upon an illustrative proposal.

1. Illustrative Public Plan

For illustrative purpose, we begin the analysis by estimating the effect of creating a new public plan modeled on Medicare that is available to individuals and the self employed. Also, all employers would be able to purchase coverage for their workers through the public plan. We assume that providers would be reimbursed using Medicare payment levels.

We assume that the benefits provided under the public plan are the same as the BlueCross/Blue Shield Standard Option offered to members of Congress and federal workers under the FEHBP (as proposed by President Obama). These benefits include hospital care, physician services, prescription drugs, substance abuse and mental health services and dental care. For in-network utilization, there is a $15 copayment for office visits with no deductible. The plan includes a $250 deductible and higher copayments for out-of-network utilization, up to a maximum out-of-pocket limit amount of $4,000.

In addition, we assume that the public plan would be implemented as part of a health reform program that includes coverage expansions similar to those proposed by President Obama in the 2008 campaign. For illustrative purposes, we assume the following:[48]

- There would be a mandate for children to have coverage;
- Medicaid eligibility is expanded to include all adults living below 150 percent of the Federal Poverty level (FPL), including able-bodied adults without custodial responsibilities for children;
- Tax credits are provided to people purchasing private insurance who live between 150 percent and 400 percent of the FPL;
- Medical underwriting and health status rating is eliminated in all insurance markets, but rating by age is permitted;
- Large employers are required to offer insurance or pay a payroll tax; and
- Tax credits are provided to small employers (fewer than 10 workers) with low-wage workers for up to 50 percent of employer spending for worker coverage.

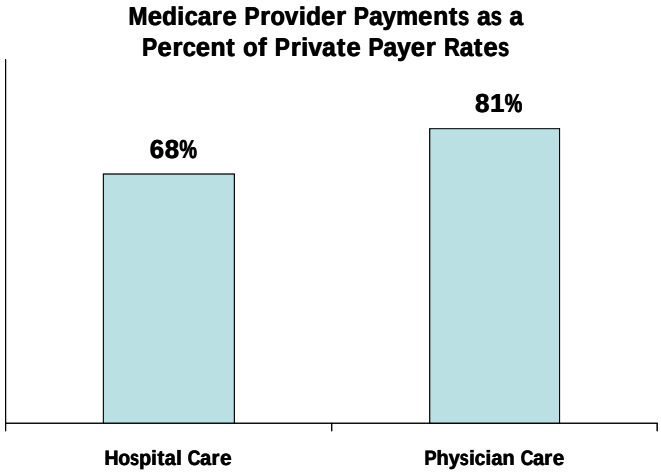
2. Benefits Costs in the Public Plan

This model would result in premiums for the public plan that are between 30 percent and 40 percent less than comparable private coverage. As shown in ***Figure 35***, provider payment levels for hospital services under Medicare are equal to only about 71 percent of what is paid by private health plans for the same services. For physician services, Medicare pays only about 81 percent of what is paid by private health plans for the same services.

---

[48] "McCain and Obama Health Care Policies: Cost and Coverage Compared," The Lewin Group, October 8,2008.

Figure 35
Benefits and Administrative Costs Under a Medicare-Based Public Plan and Private Insurance:

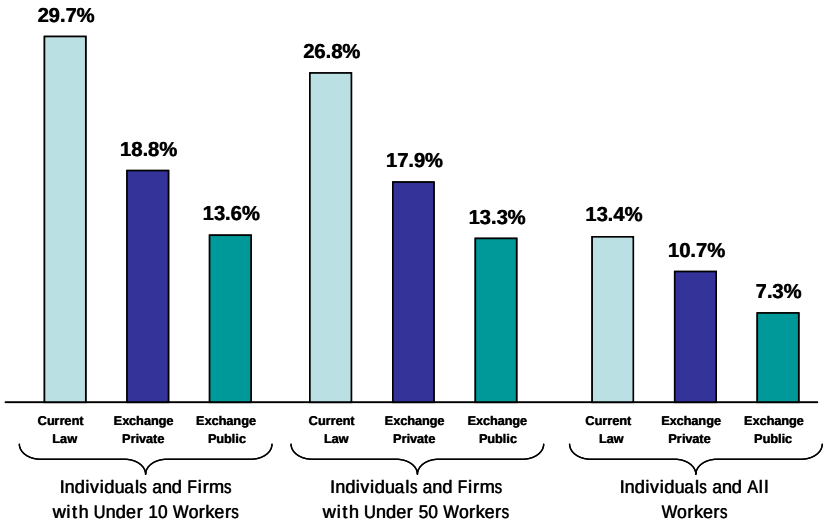


Source: American Hospital Association, "Trends Affecting Hospitals and Health Systems, Trendwatch Chartbook April 2008; "Report to Congress: Medicare Payment Policy," Medicare Payment Advisory Commission (MedPAC), March 2008; and State Health facts, The Kaiser Family Foundations (KFF), 2003 report.

3. Administrative Costs in the Public Plan

Administrative costs are also expected to be lower in the exchange than in the private market. We estimate that administrative costs for individuals and small firms (fewer than 50 workers) under current law are equal to about 26.8 percent of benefits costs (i.e., claims costs). We estimate that administrative costs in the exchange for individuals and small firms would be equal to 15.0 percent of benefits costs (***Figure 36***). This is based upon actuarial estimates of how administrative costs are reduced in due to economies of scale (see administrative cost section below).

Figure 36
Administrative Costs as a Percent of Claims Cost



Source: The Lewin Group estimates. See administrative cost section below.

We assume that costs in the private plan would be the same as for other plans in the exchange, except that the public plan public plan would not include an allowance for insurer profit and insurance agent and broker commissions and fees. Administrative costs for individuals and small employers in the public plan would be about 15.0 percent of benefits costs. Thus, administrative costs in the public plan are estimated on the basis of private payer costs for individuals and small groups. We chose this approach because the Medicare administrative costs do not reflect the cost of administering changes in coverage as people change jobs as would occur in covering the non-Medicare population. Using these assumptions, we estimate that public plan administrative costs would be equal to about 11.2 percent of covered services.

4. Utilization Review Costs

Premiums in the public plan will also differ from private plans due to differences in the level of utilization management. Unlike Medicare, private insurers typically have utilization management programs. These include pre-certification for high-cost procedures, disease management, concurrent utilization review and discharge planning. Therefore we adjusted the public plan premiums to reflect that these utilization review processes are not used in Medicare.

Studies of private utilization management programs have shown that these utilization management programs reduce health spending. A study by Feldstein et al. showed that these utilization review features reduced plan costs by 8.4 percent.[49] They found that these programs saved plans eight dollars for every dollar spent to administer them. A study by Wickizer showed savings of six percent.[50] Another more recent study showed savings of about four percent in PPOs and eight percent in HMOs.[51]

In this study, we used a weighted average of the estimated savings for PPOs and HMOs. This resulted in an average savings of 5.4 percent. We assumed that administrative costs in the public plan are reduced by 0.5 percent of benefits costs to reflect administrative savings from not having utilization review programs.

5. Cost Shifting under Public Plan

The net change in uncompensated care and payment shortfalls in payment under the public plan will result in cost-shifting to those who remain in private coverage. As discussed below, providers provide a substantial amount of services to uninsured people that become uncompensated care. Also, payments for Medicare and Medicaid are usually less than the cost of services provided. Hospitals and physicians cover the cost of uncompensated care and payment shortfalls under public programs by increasing negotiated payments with private health plans through a process known as cost shifting.

---

[49] Feldstein, P., Wickizer, T. and Wheeler, J., "The Effects of Utilization Review of Health Care Use and Expenditures," ***NEJM***, 1988; 318:1319-4, Volume 3

[50] Wickizer, Thomas, "The Effects of Utilization Review on Hospital Use and Expenditures: A Covariance Analysis," *Health Services Research*, May 16, 1991.

[51] Stapleton, D., "New Evidence on Savings from Network Models of Managed Care," (a report to the Healthcare Leadership Council), The Lewin Group, Washington, DC, May 1994.

In our analysis, we assume that a portion of reductions in uncompensated care resulting from an expansion in coverage would be passed back to privately insured people as a reduction in the rate of growth in private payments. However, new payment shortfalls for people shifted to the private plan would be passed back to private payers in the form of slowed growth in private insurer payments. Based upon research described below, we assume that 40.0 percent of changes in payment shortfalls are passed on to private payers.

We estimate that premiums for privately insured people would increase by about $526 per privately insured person. This reflects the shortfalls in payments under the new public plan which is partially offset by the reduction in uncompensated care due to the coverage expansion in the illustrative plan used here.

6. Risk Selection in the Public Plan

The model simulates risk selection into and out of insurance pools. The new public plan could tend to acquire a disproportionate share of higher cost individuals, which is called adverse selection. This can happen if the plan design somehow attracts higher cost people or if private insurers target marketing practices to attract healthier individuals and groups. The amount of selection is measured as the average difference between the premiums collected and actual health care costs for the insurance pool.

If the costs in the pool are greater than the premiums collected, the group is said to have adverse selection. For example, a plan that attracts older workers is not experiencing adverse selection if the premiums changed adequately reflect the higher expected costs or the people covered under the plan. Typically, when one insurance pool experiences adverse selection it results in an offsetting favorable selection for other insurance pools.

We simulate risk selection on the basis of studies showing how changes in the price of insurance affect the likelihood of switching to a lower cost plan when offered. These studies show that younger and healthier people are more likely to shift to a new plan in response to a change in the relative prices in alternative health plans. This tends to result in a disproportionate share of higher cost individuals enrolling in newly offered plans such as the proposed public plan.

As described below, we estimate that the public plan would experience adverse selection of about 7.1 percent. This would be met with favorable selection of about 5.0 percent in the remaining private insurance markets (including private plans in the exchange). This is a differential of about 12.7 percent between the two groups, beyond what is corrected with age rating. In this scenario, we have assumed the use of age rating by five-year age groups, with no premium adjustment for health status.

7. Public Plan Premiums

Figure 37 presents our estimates of the average cost of insurance per covered worker under the current law and under the public plan in 2010 under three scenarios. These include:

- The Public plan is open to all individuals and firms of all sizes;
- The Public plan is open to all individuals and firms with fewer than 50 workers; and
- The public plan is open to all individuals and firms with fewer than 10 workers.

Figure 37
Average Monthly Premiums for Currently Insured Workers under Public Plan Scenarios: 2010

	Premiums in Public Plan			Private Plan Premiums		
	Benefits Costs	Administration	Total	Benefits Costs	Administration	Total
Current Law Premiums: All Firms	$592.00	$81.10	$673.10	$592.00	$81.10	$673.10
Changes in Premiums: All Firms and Individuals Eligible for Public plan						
Payment Level Adjustment	-$126.82	$0.00	-$126.82	$0.00	$0.00	$0.00
Administrative Savings	$0.00	-$37.89	-$37.89	$0.00	$0.00	$0.00
Selection Effects	$32.99	$0.00	$32.99	-$29.60	$0.00	-$29.60
Reduced Utilization Review	$26.90	-$2.96	$23.94	$0.00	$0.00	$0.00
Cost Shift	$0.00	$0.00	$0.00	$61.86	$0.00	$61.86
Total Premiums Under Public Plan						
Total	$525.07	$40.26	$565.33	$624.26	$81.10	$705.37
Current Law Premiums: Firms with fewer than 50 workers	$572.00	$153.30	$725.30	$572.00	$153.30	$725.30
Changes in Premiums: Public Plan open to Individuals and Firms with under 50 Workers Only						
Payment Level Adjustment	-$122.53	$0.00	-$122.53	$0.00	$0.00	$0.00
Administrative Savings	$0.00	-$77.33	-$77.33	$0.00	$0.00	$0.00
Selection Effects	$31.87	$0.00	$31.87	-$28.60	$0.00	-$28.60
Reduced Utilization Review	$25.99	-$2.86	$23.13	$0.00	$0.00	$0.00
Cost Shift	$0.00	$0.00	$0.00	-$3.26	$0.00	-$3.26
Total Premiums Under Public Plan						
Total	$507.34	$73.10	$580.44	$540.14	$153.30	$693.44
Current Law Premiums: Firms with fewer than 10 workers	$634.00	$188.30	$822.30	$634.00	$188.30	$822.30
Changes in Premiums: Public Plan open to Individuals and Firms with under 10 Workers Only						
Payment Level Adjustment	-$126.82	$0.00	-$126.82	$0.00	$0.00	$0.00
Administrative Savings	$0.00	-$42.62	-$42.62	$0.00	$0.00	$0.00
Selection Effects	$50.98	$0.00	$50.98	$1.56	$0.00	$1.56
Reduced Utilization Review	$27.87	-$2.96	$24.91	$0.00	$0.00	$0.00
Cost Shift	$0.00	$0.00	$0.00	$65.29	$0.00	$65.29
Total Premiums Under Public Plan						
Total	$562.33	$84.32	$646.65	$593.27	$188.30	$781.56

Source: Lewin Group Estimates Using the Health Benefits Simulation Model (HBSM)

Average costs per covered worker will reach $673.10 per month under current law. Under the first scenario – individuals and all firms eligible - premiums in the public plan would average $565.33 per worker due to the lower payment levels and reduced administrative costs under the public plan. These savings are partly offset by the fact that Medicare does not have the utilization review programs used in private plans, resulting in additional utilization of health services. Also, we estimate that the program would result in some adverse selection into the public plan that would increase premiums.

Cost for those remaining in private health plans would go up under the proposal from their current level of $673.10 per month to $705.37 per month, primarily due to increased cost shifting induced by the program. As illustrated below, Medicare payment levels for hospitals are equal

to only about 91 percent of the cost of providing the care. These shortfalls in reimbursement are typically passed on to privately insured people through the cost shift. Increasing the number of people covered under Medicare payment levels would result in increased cost shifting. However, this is partially offset by premium reductions reflecting that disproportionately higher cost individuals are expected to enroll in the public plan, leaving healthier groups in the private insurance market.

B. Alternative Models for Setting Premiums

One of the most crucial elements of insurance pooling models is the manner in which pool premiums are determined. As discussed above, group premiums in today's market typically vary with the age of the worker, health status and experience (i.e., claims history). Many proposals would use mechanisms for determining premiums in the pool that differ from those used in the insurance markets. This can have a dramatic effect on coverage and premiums in both the pool and the traditional insurance market. There are three ways in which premiums are set under most small group proposals. They include:

- **Uniform pool premium:** In this model, premiums in the pool are set at a single amount per enrollee regardless of age and risk factors. Some of those proposals that would extend the FEHBP to small groups would permit plans to charge only a single uniform premium that varies only with family status (i.e., single vs. family etc.). This approach would tend to attract higher cost groups that find the premium in the pool to be less than what they are paying in the traditional insurance market.
- **Risk factor rating of pool premiums:** In this model, plans in the pool are free to set premiums according to any risk factors they choose. This means that pools can fully adjust for health status and age even in states that limit the use of health status and age ratings in the traditional market. Under this model, groups with younger and healthier members would tend to enroll in the pool because they can offer these groups lower premiums than would be charged in the traditional market. Premiums in the traditional market typically increase due to the migration of lower-cost people to the pool.
- **State rating laws apply in pool:** Under this approach, plans selling coverage in the pool must follow the same rating rules that apply to coverage sold in the traditional market, including limit on age and health status rating. Under this model, premiums in the pool are expected to be the same in the insurance markets, except to the extent that the pool can achieve savings in administration and/or benefits costs.

Thus, if the pool is less able to vary premiums with risk factors than the insurers in the traditional market, the pool will tend to acquire a disproportionate share of high-cost groups, with lower cost people remaining in the traditional market. Conversely, if rating variation in the pool is permitted to be greater than is required in the traditional insurance market, the pool will acquire lower-cost people that left the higher-cost population in the traditional insurance market. This phenomenon - known as "adverse selection" - can have significant implications for the distribution of groups across the pool and traditional insurance markets. This, in turn, will result in premium adjustments in the pool and the traditional insurance market, which will result in further shifts in coverage.

C. Selection Effects in the Individual Market

We simulate the individual's decision to enroll in the public plan by estimating the premium that these individuals would pay in the current private market for the benefits offered in the public pool. The public plan could increase coverage if they provide coverage to uninsured people at a lower cost than in the current market. They can also result in shifts in coverage from existing sources to the public plan.

1. Simulating Changes in Number with Coverage

We began by estimating the program's effect on the number of people with coverage. We first identify uninsured people who would now be able to purchase coverage at a lower price than they would pay in the individual market under current law. We interpret this as a reduction in premiums that will cause some people to take coverage. We simulate their decision to take that coverage using research on how changes in premiums affect the likelihood of taking coverage. We assume that newly insured people will enroll in whichever coverage option is least costly.

In the next step, we identify currently insured people who would now face a higher premium. This would occur in cases where the availability of the public plan is coupled with changes in insurer rating regulations affecting the premiums in both the private market and the public plan. For example, the Obama proposal would prohibit medical underwriting, which will generally increase premiums for relatively healthy individuals now covered in the individual market. We also simulate losses of coverage for these people using the same research on how price affects the individual's decision to take coverage.

2. Allocation to Public and Private Coverage

In this step, we identify privately insured people who would be eligible to purchase coverage at a lower cost through the public plan. We then simulate their decision to shift to the public plan based upon studies of how people respond to changes in the relative price of insurance within employer groups offering a choice of health plans. [52]

We model the shift of privately insured individuals to the lower cost public plan. We do this using "plan change price elasticity" estimates developed by Strombom et al., which averages about -2.47 for health plans overall and -5.27 for managed care plans. This means that on average, a 1.0 percent decrease in the price of an alternative source of coverage was associated with a 2.47 percent migration of enrollees to the lower cost health plan. As shown in ***Figure 38***, the likelihood of shifting to a lower cost plan is lowest for older and sicker people, reflecting that these groups are typically less willing to change providers.[53]

These estimates are consistent with other studies showing that people leaving fee-for-service (FFS) health plans for HMOs and other managed care plans tend to have lower costs than those

---

[52] Stombom, B., Buchmueller, T., Feldstein, P. "Switching Costs, Price Sensitivity and Health Plan Choice," *Journal of Health Economics*, 21 (2002), 89-116.

[53] The weighted average for privately insured people using HBSM population weights by age and health risk status is -3.68.

who remain with these FFS plans. Similarly, people who leave HMOs for a FFS plan tend to have higher costs than those who remain with the HMO.[54] The price elasticity estimates developed by Strombom are consistent with those developed by Royalty and Solomon, which range between -3.7 to -6.2.[55]

3. Enrollment in Private Plans in the Exchange

In the second step we model risk selection against the public plan. Some managed care plans would develop products that tend to attract younger and healthier people through benefits design or marketing practice. This will tend to leave the public plan with higher cost individuals. We simulate this by assuming that private HMOs are able to offer a product that is four percent less costly than the premium for the public plan. This assumption is based upon research showing that utilization of health services in HMOs is about four percent less than in PPO and other FFS plans.

We simulate the shift of individuals from the public plan to these HMO using the plan change price elasticity estimates presented in ***Figure 38***. This approach tends to leave higher cost individuals in the public plan, with lower cost individuals shifting to HMOs.

Figure 38
Health Plan Change Price Elasticity Assumptions by Age and Health Risk

Age of Participant	All Insured Groups		HMOs Only	
	Low Risk	High Risk [a/]	Low Risk	High Risk [a/]
Under 31	-5.8	-5.3	-7.0	-8.0
31 – 45	-3.9	-3.6	-5.9	-6.4
Over 45	-2.4	-2.1	-4.3	-4.5

a/ The study defines high risk people as those who had selected illness or hospitalizations. In our model, as a proxy for this definition, we assumed that people with expected spending in excess of the 80th percentile of spending are "high risk".
Source: Stombom, B., Buchmueller, T.,Feldstein, P. "Switching Costs, Price Sensitivity and Health Plan Choice," *Journal of Health Economics* 21 (2002) 89-116.

D. Public Plan Enrollment for Employers

Under the public plan scenarios presented above, some or all employers would have the option of covering their workers under the public plan by paying a premiums. In some cases, non-insuring employers would start to offer coverage in response to the lower premium available in the public plan. Also, many currently insuring employers will shift to the public plan to take advantage of the lower public plan premium. The approach that we use to simulate the impact of the public plan on employer coverage is similar to that used to simulate coverage decisions in the individual market.

---

[54] David M. Cutler and Richard J. Zeckhauser, "Adverse Selection in Health Insurance," National Bureau of Economic Research, working paper 6107, July 1997; and Paolo Belli, "How Adverse Selection Affects the Health Insurance Market," Harvard School of Public Health

[55] Royalty, A. and Soloman, N., "Health Plan Choice: Price Elasticities in a Managed Competition Setting," The Journal of Human Resources, University of Wisconsin Press, Vol. 34, no 1 (winter, 1999, pp. 1-41.

1. Simulate Changes in the Number of Employers Offering Coverage

We first identify non-insuring employers who would now be able to purchase coverage at a lower price than they would pay in the current insurance market. We simulate their decision to take that coverage due to the price reduction using studies of how changes in premiums affect the likelihood that a firm will offer coverage. We assume that newly insured people will enroll in whichever coverage option is least costly.

In the next step, we identify firms that would now face a higher premium. Under the Obama-like health reform proposal modeled here, the elimination of medical underwriting would increase premiums for younger and healthier groups while reducing premiums for older and sicker groups. We simulate losses of coverage for these people using the studies of the effect of changes in premiums on the firm decision to offer insurance.

2. Allocation to Public Plan

In the stage, we identify privately insured firms that would be eligible to purchase coverage at a lower cost through the public plan. We simulate these shifts in a two step process that allocates affected people into one of the following three groups:

- Employers who remain with their current private health plan rather than shifting to the public plan. (These will tend to include older and less health individuals who decide not to change their source of coverage, perhaps to retain their current physician); and

- Employers who drop private coverage to enroll in the public plan due to the lower premium.

We simulate the employer decision to switch to the lower cost public plan based upon the plan change price elasticity estimates used in our individual market simulations (see ***Figure 38*** above). We do this by estimating the plan change price elasticity for each worker in the firm based upon the age and health status of each worker. We then use this average price change elasticity for workers in each firm to simulate the employer decision to change their source of coverage.

Figure 39 presents our estimates of the changes in sources of coverage assuming that providers are paid according to Medicare payment levels. The figure shows the number of workers and dependents in employer plans under current law, the number who remain with their current health plan, the number shifting to the public plan, and the number who leave the public plan to enroll in a lower cost HMO. The figure shows average health benefits costs for each group of firms. These data demonstrate the degree of adverse selection for the public plan, separately for fully insured and self-funded groups.

3. Enrollment in Private Health Plans in the Exchange

The final step is to model enrollment in private health plans offered through the exchange. We assume that integrated delivery systems such as HMOs would be able to market coverage that would be price competitive with the public plan. We assume that these plans would be priced about 2 percent lower than the public plan. This assumption is consistent with recent experience

Figure 39
Workers and Pure Premiums in Firms by Type of Coverage Offered Under the Illustrative Health Reform Proposal [a/]

	Currently Insuring Firms					Currently Non-insuring Firms				
	Small Firms		Large Firms			Small Firms		Large Firms		
	Self-Insured	Fully-Insured	Self-Insured	Fully-Insured	Total	Self-Insured	Fully-Insured	Self-Insured	Fully-Insured	Total
All Workers in Firm and PMPM costs: Includes Insured and Uninsured Workers in Firms										
Employees (1,000s)	1,059	23,498	55,491	35,119	115,169	0	34,705	0	12,053	46,758
Costs [b/]	$630	$570	$619	$562	$592	$0	$400	$0	$291	$372
Current Law Premium [c/]	$630	$537	$619	$519	$572	$0	$437	$0	$385	$424
Policy Premium [d/]	$666	$547	$655	$544	$599	$0	$462	$0	$405	$447
Public Plan Premium [e/]	$479	$480	$500	$484	$491	$0	$404	$0	$365	$394
Offer Private Coverage Under Health Reform Proposal										
Employees (1,000s)	438	3,995	14,362	12,570	31,364	0	2,684	0	1,676	4,360
Costs [b/]	$306	$712	$439	$600	$537	$0	$729	$0	$345	$581
Current Law Premium [c/]	$306	$650	$439	$538	$504	$0	$611	$0	$404	$532
Policy Premium [d/]	$324	$661	$465	$567	$529	$0	$628	$0	$463	$565
Public Plan Premium [e/]	$492	$580	$486	$505	$506	$0	$550	$0	$418	$499
Do not Offer Coverage Under Health Reform Proposal										
Employees (1,000s)	65	2,434	1,683	1,858	6,041	0	17,293	0	4,748	22,041
Costs [b/]	$1,028	$504	$416	$471	$475	$0	$345	$0	$278	$330
Current Law Premium [c/]	$1,028	$467	$416	$427	$447	$0	$403	$0	$379	$398
Policy Premium [d/]	$1,087	$498	$440	$527	$497	$0	$439	$0	$410	$432
Public Plan Premium [e/]	$442	$436	$456	$471	$453	$0	$384	$0	$369	$381
Offer Coverage in the Public Plan										
Employees (1,000s)	508	15,662	35,865	18,422	70,457	0	12,204	0	4,549	16,753
Costs [b/]	$847	$545	$696	$544	$624	$0	$416	$0	$287	$381
Current Law Premium [c/]	$847	$519	$696	$513	$610	$0	$449	$0	$383	$432
Policy Premium [d/]	$896	$528	$736	$532	$638	$0	$462	$0	$384	$441
Public Plan Premium [e/]	$477	$463	$508	$473	$489	$0	$405	$0	$347	$389
Offer Private HMO Coverage										
Employees (1,000s)	50	1,407	3,581	2,270	7,308	0	2,524	0	1,080	3,604
Costs [b/]	$746	$552	$662	$564	$611	$0	$360	$0	$282	$337
Current Law Premium [c/]	$746	$531	$662	$530	$597	$0	$426	$0	$387	$415
Policy Premium [d/]	$789	$519	$700	$533	$614	$0	$437	$0	$383	$421
Public Plan Premium [e/]	$429	$456	$498	$474	$482	$0	$383	$0	$346	$372

a/ Pure premiums include benefits costs only and exclude administration, profit and broker and agent commissions. For purposes of simulation the coverage decision for firms, we compute costs assuming that all employers who decide to offer coverage would cover all of their employees. The actual coverage decisions for individual employees are simulated individually for each worker in the HBSM data in a latter step.
b/ Includes costs for individuals in firms at private payer rates.
c/ Pure premium under current rating practices.
d/ Pure premium under changes in rating practices required under the health reform proposal.
e/ Pure premium that would be charged for the group in the Public plan.
Source: Lewin Group estimates using the Health benefits Simulation Model (HBSM).

in the Medicare Advantage program where health plan bids are averaging about 98 percent of Medicare fee-for-service costs.

We simulate the shift of individuals from the public plan to these HMOs using the plan change price elasticity estimates presented above in ***Figure 38***. This approach tends to leave higher-cost individuals in the public plan, with lower-cost individuals shifting to HMOs. This result is consistent with the fact that HMOs do tend to attract younger and healthier people through benefits design or marketing practice.

E. Worker Enrollment Simulation

In cases where the employer decides to start offering coverage, we simulate enrollment for individual workers using the approach described in the prior chapter. We first estimate the share of the premium that workers would pay based upon the multivariate analysis of the 1997 RWJF data (see ***Attachment C***). We then simulate the worker's decision to take coverage based upon a multivariate analysis of enrollment behavior based upon the MEPS data, which reflects the effect the worker premium would have on the enrollment decision (see ***Attachment D***).

The reduction in private plan premiums resulting from this selection activity could also increase enrollment among people who have declined taking the coverage offered to them by their employer. As discussed above, there are over 3.1 million uninsured workers who are eligible for coverage at their place of employment, but have declined coverage. We estimate the number of these workers (and their dependents) who would respond to this reduction in premium by taking up coverage. We do this using the equation described above showing how changes in premiums affect enrollment in employer health plans.

Finally, we model the selection of health plans by workers in cases where the pool offers both private coverage alternatives and a public plan. We model enrollment in the public plan using the coverage change price elasticity estimates described above, which we base upon the worker premium contribution under the current plan and the contribution required for the public plan. We assume that newly insured workers enroll in whichever coverage alternative is least costly.

IX. ITERATIVE SIMULATION OF MARKET EFFECTS

The complexity of the effects that health reform proposals would have on coverage and costs requires us to use an iterative simulation process to determine an "equilibrium" level of coverage and premiums. The premiums charged to individuals and employers are dependent upon the cost characteristics of those enrolling in the various forms of coverage. Thus, the premiums estimated above must be adjusted to reflect the actual cost profiles of those who enroll in each of the coverage options. However, these changes in premiums would result in changes in the number of people taking coverage in the various plans. Thus, premium levels are dependent upon those enrolling, while enrollment is dependent upon costs for those who enroll.

We simulate the interdependence of premiums and plan selection by running the simulation several times in an iterative process where premiums in each insurance pool are updated each time to use the premiums estimated from the results of the prior iteration. This step is repeated several times until the premiums under the various insurance pools converge upon a solution where premium revenues match total costs in each pool.

This process is particularly important in health plans with several changes occurring simultaneously. Thus our iterative simulation will encompass the full range of simulations presented above including:

- Employer pay-or-play requirements;
- Medicaid eligibility and enrollment;
- Premiums subsidy programs;
- Changes in insurer rating and medical underwriting rules; and
- The availability of a public plan

A. Program Interactions

The impact of selection behavior on costs and coverage is simulated in an iterative process. We begin with estimating premiums for the public plan to be equal to average costs for all people eligible to enroll in the public program, including the Medicaid/SCHIP population. Employers and workers in the model were assumed to choose health plans by comparing this public plan premium with the private premium in the current market, which we estimate for each synthetic firm as described above. We then simulate employer and employee selection of public vs. private coverage based upon whichever course minimizes costs as described in the prior sections.

After the first pass, we adjust the premiums in the private sector to reflect the fact that many of those with higher health care costs have shifted to the public plan. This reduces average costs for the healthier individuals who remain with private coverage, which we treat as a single private insurance pool. We adjust the private sector premiums (estimated for each synthetic firm as discussed above) downward to reflect total covered costs for those who take private coverage plus the insurer's cost of administering this coverage. Benefits costs are computed

directly from the MEPS expenditure data for people assumed to take private insurance. Insurer administrative costs are estimated as discussed below.

Thus, private sector premiums are adjusted so that total premium payments would be equal to total benefits and administrative costs for people with private coverage. This step is important because it lowers the premium in the private sector, which is expected to induce some firms and individuals to taking coverage.

We also adjust the public plan premium upwards to reflect the higher costs for people who enroll. This is because the community-rates in these pools are required to be set on the basis of pool experience. In this step, the premiums in the public pool are increased to reflect actual health benefits costs for this population as calculated from the MEPS health expenditure data for people assigned to the public program. This calculation is also important because it increases the public plan premium which would actually reduce the number of people enrolling.

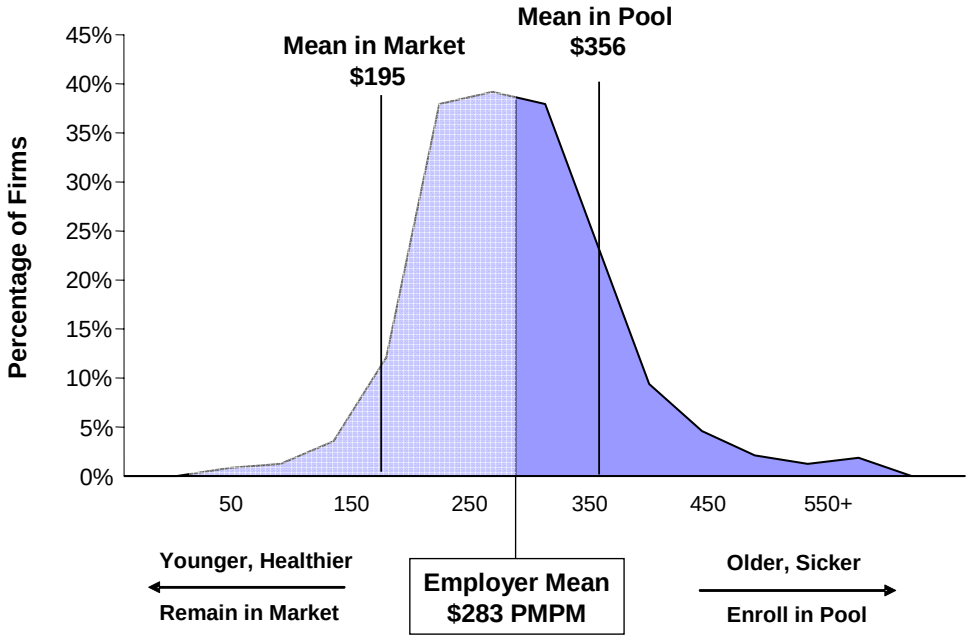
Once the premiums are reset, we repeat the process of employers and individuals selecting health plans using these new premiums. The reduction in the private premium attracts more people to private coverage and causes some uninsured people to take coverage as described above. Conversely, the increase in public plan premiums would cause a reduction in the number of people in the public plan and would move some of the higher cost individuals back to private coverage. This would result in a new distribution of people by source of coverage.

Each time premiums are reset in this manner, costs and enrollment changes in our simulation of public and private pool enrollment. These steps are repeated iteratively to produce our estimate of the distribution of people and costs by source of coverage. We typically do three iterations including the initial pass through the data. In this study, we found that additional iterations have only small impacts on the results.

B. Example Simulation of a Pool with Full Cost Premiums

Figure 40 illustrates how the model would simulate a pool that is required to set its premiums based upon the average cost of people enrolled in the pool, regardless of risk characteristic. The figure shows the distribution of insuring firms based on the premiums the firms would pay per-member per-month (PMPM) under current insurer rating practices. If the pool were established with a uniform premium of $283 – which is our estimate of the average premium in the small group market in 2006 – firms with premiums in excess of that amount would enroll in the pool with the rest remaining in the traditional market. Under this example, the premium in the pool would need to be increased to $356 PMPM to collect premiums sufficient to meet pool costs.

Figure 40
All Insuring Employers by Premium Cost PMPM in 2006: Includes Benefits and Administration [a/]



a/ Estimates for a standard benefits package.
Source: Lewin Group estimates using the Health Benefits Simulation Model (HBSM).

The model simulates these effects on the equilibrium price of insurance in an iterative process. For example, in this example the small pool premium is reset at $356 PMPM while the premium for those who remain in the traditional insurance market is adjusted to reflect the migration of more costly groups to the pool. Similarly, premiums in the traditional market are adjusted to reflect the accumulation of lower-cost people in the pool. Enrollment in the pool and the private market is then re-simulated at these premium levels. This process is repeated multiple times to arrive at an equilibrium pool enrollment and premium estimate (equilibrium is defined to be the point where total costs are roughly equal to the cost of benefits and administration for the pool).

The model can also simulate the effect of permitting greater variation in premiums by risk factors than is permitted in the traditional market. Under this model, the pool would tend to accumulate lower-cost groups with higher-cost groups remaining in the traditional market. We simulate the resulting changes in premiums in the pool and the insurance markets using the iterative process described above; the pool and the insurance market are in equilibrium (i.e., premiums equal costs).

Pool premiums are affected by other factors as well. For example, some non-insuring employers are expected to enroll as coverage at a lower premium is made available to them. Also, some small group pool proposals permit the sale of coverage that is exempt from state regulations of insurance such as mandatory benefits and solvency standards. This would tend to attract lower-cost groups that are more willing to accept the reduction in benefits in exchange for the lower premium.

IX. SINGLE-PAYER PROPOSALS

A single-payer program would greatly expand access to health services, while dramatically changing the administrative structures in the system. Moreover, these proposals would move from a premium financed system to a tax financed system, which would dramatically alter the incidence of health care costs across employers and households. The impact of the single payer model on health expenditures is discussed below.

A. Health Services Utilization

As discussed below, we assume that under a program of universal insurance coverage, use of health services for those who would otherwise be uninsured would increase to levels reported by insured people with similar age, sex, income and self-reported health status characteristics. This is an estimate of the net change in utilization for this group, which reflects reduced hospitalizations for preventable conditions offset by increased utilization of preventive care and increased use of elective procedures.

There also would be an increase in utilization for previously underinsured people. Many insured individuals do not have coverage for some of the services that would be covered under the uniform benefits package. We assume that utilization of these services would increase to levels reported by people who have coverage for these services with similar age, sex, income, and health status characteristics. In addition, we estimate the increase in utilization from the elimination of managed care based upon studies showing the effects that managed care has on utilization.

An important issue in the design of a single-payer system is whether there will be cost sharing at the point-of-service under the proposals. Research from the National Health Insurance Experiment indicates that eliminating cost sharing increases physician utilization by 30 percent and hospital utilization by about 10 percent.[56] Other studies have shown similar differentials in utilization when cost sharing is not required.[57] Even within HMOs, utilization has been documented to increase by between 11 and 33 percent when cost-sharing is eliminated.[58] These data are used to simulate the impact of these features of the single payer model as discussed below.

B. Administrative Costs

The single-payer system replaces the current system of multiple public and private insurers with a single source of payment for the full amount of covered services. This eliminates both the complexity of diverse insurer rules and patient billing for un-reimbursed amounts. The single-payer system also replaces hospital billing for individual patients with an annual operating

---

56 W.G. Manning et al., "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment," *The American Economic Review* (June 1987): 251-277.

57 V.F. Fuchs and J.S. Hahn, "How Does Canada Do It? A Comparison of Expenditures for Physicians Services in The United States and Canada," The New England Journal of Medicine (27 September 1990): 884.

58 D.C. Cherkin et al., "The Effect of Office Visit Copayments on Utilization in a Health Maintenance O Organization," Medical Care 27 (July 1989): 669-679; and J.R. Hankin et al., "The Impact of a Copayment Increase for Ambulatory Psychiatric Care," Medical Care 18 (1980): 807-815.

budget, which effectively eliminates claims filing functions for hospitals (claims filing would continue for foreign patients). Administrative savings would be realized at both the insurer and the provider level as follows:[59]

- **Insurer Administration:** The single-payer program would extend large-group economies of scale throughout the health care system by covering all individuals under a single insurance mechanism. This would eliminate the costs associated with underwriting, transition in coverage, and maintaining the administratively cumbersome linkage between employers and insurers.
- **Physicians Administration:** The single-payer approach would substantially reduce claims-filing costs for physicians by standardizing the means of reimbursement through a single-payer and by providing full reimbursement through a single source using a standardized electronic claims-filing process. Standardization of coverage would also reduce physician costs related to adjudication of claims and negotiation of selective-contracting arrangements.
- **Hospital Administration:** The single-payer proposal would all but eliminate hospital administrative costs associated with filing claims because under the single-payer model, hospitals are given an annual operating budget covering all services provided by the hospital. However, hospitals would still need to submit claims for out-of-state patients.

We estimate these savings based upon a prior Lewin Group study of the impact of a single-payer model on administrative costs.[60] We assume that the cost of administration is similar to administrative costs under the Medicare program, which can be thought of as a single-payer program for the elderly. We adjusted these costs to reflect the unique characteristics of the single-payer models that we are simulating.

Detailed data on hospital administration costs are not available at the national level. Consequently our estimates of the savings in hospital administration are extrapolated to national levels based upon the detailed hospital spending data provided by the California Office of Statewide Health Planning and Development (OSHPD). These data show hospital costs in the state for over 20 separate categories of overhead and administration including fiscal services, data processing, billing, collections, education and research. We use these data to identify the categories of administration that are attributed to the administrative functions that would be eliminated or simplified under the single-payer model.

We estimate nationwide physician administrative expenses based upon average physician administrative expenditures reported in a survey of physician groups conducted by the Medical Group Management Association (MGMA).[61] The MGMA survey is based upon a sample of multi-specialty medical groups which provide detailed information on medical group

---

[59] Sheils, J.,et al.,"National Health Spending Under a Single-Payer System: The Canadian Approach," Staff Working Paper, The Lewin Group, January 8, 1992.

[60] Sheils, J., et al., "O Canada: Do We Expect Too Much From Its Health System", *Health Affairs*, Spring 1992.

[61] Projections of physician net revenues were provided by the Office of National Health Statistics Health Care Financing Administration Office of the Actuary. Data on physician expenses were obtained from: Medical Group Management Association (MGMA), "The Cost and Production Survey Report: 1990 Report," Denver, CO, 1990.

expenditures for various categories of physician staff, information services, and overhead expenses for facilities, equipment, and supplies.

C. Provider Reimbursement and Global Budgets

Under the single-payer model, the government effectively determines the level of spending by setting hospital budgets and reimbursement rates for health professionals. Unless otherwise specified, we assume that hospital budgets would be equal to what would have been spent on hospital care. Reimbursement rates for physicians and other health professionals would be set so that on average, the reimbursement level for each service is the same as under the current system (i.e., average of Medicare, Medicaid and private). We also assume that funds are budgeted to cover the cost of increased service utilization under the program.

We also assume that provider payments/budgets would be reduced to reflect the expected level of savings in administration for providers. This adjustment is necessary because savings in provider administration will not accrue to consumers unless the provider payment rates are reduced to reflect these cost reductions.

Under some single payer proposals, prescription drugs and durable medical equipment would be purchased using the federal supply schedule (FSS). Prices under the FSS for prescription drugs are estimated to be about 30 percent lower than the prices paid by Medicaid, even though Medicaid receives an average rebate of about 18 percent.[62] This compares with an average payer rebate of about 8 percent under private health plans.

We calculate the savings from using the FSS based on these data. This results in savings of about 40 percent for drugs now purchased in the private sector and savings of about 30 percent for drugs now purchased through Medicaid. We assume that the percent savings for durable medical equipment under the FSS would be the same as for prescription drugs.

Simulating the impact of global health expenditures budgets for capital and health services is complex. Health expenditure budgeting is sure to be a highly political process that may not always produce results that are consistent with the goals of cost containment. Therefore, we do not assume savings from the budgeting process unless the author has specified formulas for determining spending levels such as limiting the rate of growth in spending to the growth in state Gross Domestic Product (GDP). In the absence of such provisions, we assume that expenditures would grow at the same rate that they would grow under current policy.

---

[62] Projections of physician net revenues were provided by the Office of National Health Statistics Health Care Financing Administration Office of the Actuary. Data on physician expenses were obtained from: Medical Group Management Association (MGMA), "The Cost and Production Survey: 2000 Report," Denver, CO, 2000 (includes data for 1999).

X. HEALTH SERVICES UTILIZATION

HBSM includes only acute care for the non-institutionalized population. When we analyze proposals that include long-term care, we typically integrate results from the Lewin Group Long-term Care Simulation model, which is specifically designed to simulate the impact of policies affecting the nursing home population. Acute care services include inpatient hospital services, ambulatory care from physicians and other licensed providers, outpatient prescription drugs and durable medical equipment. Acute care excludes nursing home services and home health services. ***Figure 41*** presents a summary of health services utilization rates assumed in our baseline data for 2010 for the general non-institutionalized population by age and pregnancy status.

In this section, we present the assumptions we use to model the effects of reform proposals on health services utilization.

A. Utilization for the Uninsured

The MEPS data report that health services utilization for uninsured people is substantially less than among insured people. As shown in ***Figure 42***, physicians' visits per 1,000 people are about 1,349 for the uninsured compared with 3,283 for insured people. Also, hospital stays for the insured are more than double that of the uninsured. Part of the difference in utilization rates is due to the fact that the uninsured are on average younger than insured people. Consequently, we adjust for this when estimating how utilization would change for this population as they become insured.

We assume that uninsured people who become covered under a coverage expansions proposal would use health care services at the same rate reported by currently insured people with similar age, sex and health status characteristics. This assumption encompasses two important effects. First, the increase in access to primary care for this population would result in savings due to a reduction in preventable emergency room visits and hospitalizations. Second, there would be a general increase in the use of elective services such as primary care, corrective orthopedic surgery, advanced diagnostic tests, and other care that the uninsured either forego or delay.

Also, to avoid overestimating utilization of currently eligible but not enrolled children, we excluded select acute conditions which would have resulted in hospitalization regardless of insured status. These conditions include:

- Teen pregnancy and delivery;
- Dehydration;
- Acute bronchitis and bronchiolitis;
- Pneumonia;
- Appendicitis;
- Noninfectious enteritis and colitis;
- Kidney/urinary infections;
- Pelvic inflammatory disease;
- Complications from pregnancy

Figure 41
Health Services Utilization Measures for Selected Services in 2010 by Age and Pregnancy Status [a/]

	PERSONS	UNDER 15	15 - 21	PREGNANT	22 - 44	45 - 64	UNDER 65	65 +
PHYSICIANS VISITS								
VISITS PER 1000 PERSONS	3559.89	2440.51	1715.99	8156.12	2230.72	4453.05	3028.39	7440.33
PERCENT OF PERSONS WITH VISITS	70.49	72.71	57.51	97.95	57.96	75.86	67.80	90.13
PERCENT OF VISITS BY TYPE								
A. DIAGNOSIS AND TREATMENT	50.75	52.14	57.41	17.20	57.38	52.57	51.53	48.43
B. PRENATAL AND POSTNATAL CARE	3.24	0.32	0.03	62.53	0.01	0.00	4.33	0.00
C. GENERAL CHECK UP	26.95	34.88	22.59	12.23	21.88	26.15	25.68	30.72
D. OTHER SERVICES	19.06	12.67	19.98	8.04	20.73	21.27	18.46	20.84
DENTAL VISITS								
VISITS PER 1000 PERSONS	896.53	814.22	909.03	742.07	731.99	1102.39	880.70	1012.05
PERCENT OF PERSONS WITH VISITS	42.20	41.91	43.11	38.21	37.58	47.74	42.25	41.86
HOSPITAL STAYS								
HOSPITAL STAYS PER 1000 PERSONS	99.34	35.09	21.81	694.90	45.71	107.84	75.17	275.83
AVERAGE LENGTH OF HOSPITAL STAY	6.20	7.09	4.97	3.75	5.79	6.20	5.60	7.39
OUTPATIENT VISITS								
VISITS PER 1000 PERSONS	519.76	143.70	175.47	622.84	307.00	790.65	402.54	1375.61
EMERG. ROOM VISITS								
VISITS PER 1000 PERSONS	177.72	170.38	171.24	402.32	168.66	155.16	171.32	224.43
PRESCRIPTION DRUGS								
PERCENT WITH DRUG EXPENSES	63.79	51.56	49.00	81.56	54.99	75.24	60.11	90.68
OTHER SERVICES								
PERCENT WITH OTHER SERVICES	34.92	18.09	23.15	49.48	29.40	46.70	31.53	59.70

a/ Based upon utilization data in the 2005 MEPS re-weighted to reflect projected population growth by age and gender for 2010.
Source: Lewin Group estimates using the Health Benefits Simulation Model (HBSM).

- Convulsions;
- Chest pain;
- Injury and poisoning;

Figure 42
Health Services Utilization for People under Age 65 by Insured Status [a/]

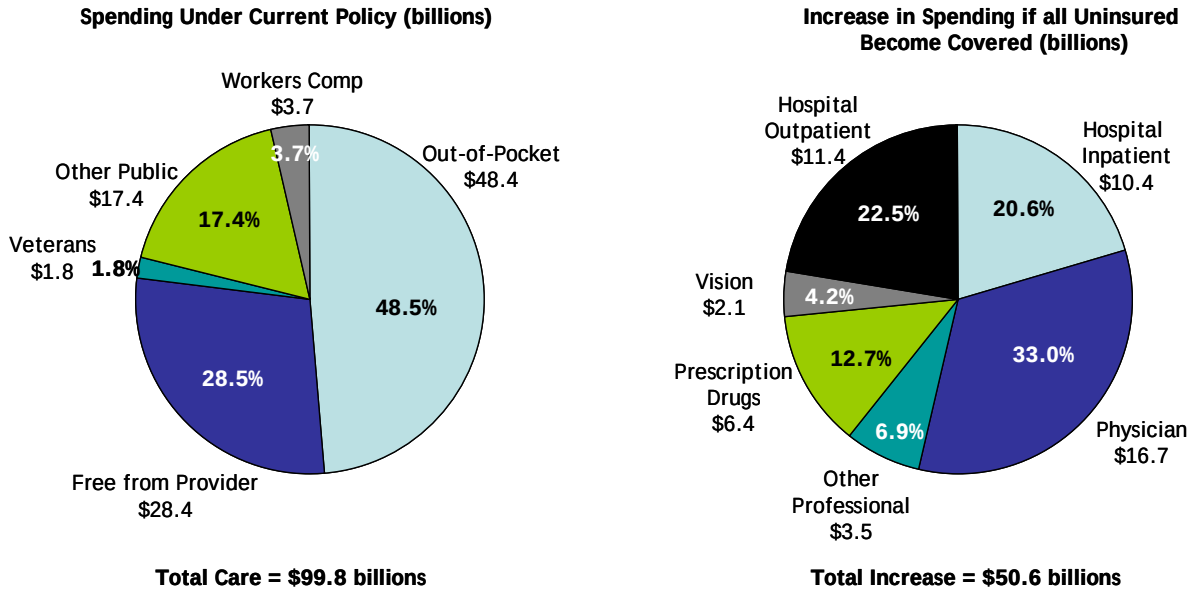
	Uninsured	Insured	All People
Physician Visits per 1,000	1,349	3,283	**3,028**
Dental Visits per 1,000	326	965	**881**
Hospital Stays per 1,000	36	81	**75**
Outpatient Visits per 1,000	148	441	**403**
Emergency Visits per 1,000	149	175	**171**

a/ Utilization rates per 1,000 people.
Source: Lewin Group analysis of the 2005 Medical Expenditures Panel Survey (MEPS) data.

Using this methodology, we estimate that health spending among the currently uninsured population would increase as they become insured. That is, savings from improved primary care would be more than offset by increased use of other care, including elective services. Overall, we estimate that if the uninsured were to become insured, utilization of health services by the uninsured would increase by about 70 percent.

As shown in ***Figure 43***, we estimate that the uninsured received about $54.0 billion in health services in 2010. This includes all health spending for all people during months where they are uninsured. Thus, it includes all spending for people uninsured all year and health spending for people uninsured part of the year during the months while uninsured.

Figure 43
Health Spending for Uninsured People in 2010 by Source of Payment (billions)



Source: Lewin Group Estimates using the Health Benefits Simulation Model (HBSM).

Of the $99.8 billion in spending for the uninsured, about $28.4 billion of this is care provided without charge by a health care provider. Another $17.4 billion would be care obtained through some other public source such as public hospitals or clinics. In addition, the uninsured will pay about $48.4 billion out-of-pocket for health services. We estimate that the uninsured receive about $3.7 billion in medical workers compensation benefits, and about $1.8 billion in Veterans benefits. Spending for health services would increase by about $50.6 billion if all of the uninsured were to become covered.

B. Utilization for Underinsured

Many of the insured have policies that do not cover certain services such as, prescription drugs, dental care and other professional services. In this analysis, we assume that utilization of these services by people who currently do not have coverage for these services would increase to the levels observed among people covered for these services with similar demographic and health status characteristics.

C. Elimination of Cost Sharing

The model will simulate proposals that would have no deductible or co-payment requirements as typically found in most health plans (e.g., $10 per visit, $10 per prescription etc.). Prior studies have shown that eliminating cost sharing results in increased utilization of health services. For example, the National Health Insurance experiment data developed by the RAND Corporation showed that eliminating cost sharing increases physician utilization by about 30 percent and increases inpatient utilization by about 10 percent.[63]

Another study compared health services utilization in Canada, where there is no cost sharing, with neighboring American states where cost sharing is common. The study indicated that physician utilization in Canada is about 30 percent higher than in the U.S.[64] A study from the Congressional Budget Office (CBO) also showed that health services utilization among Medicare beneficiaries with supplemental coverage (i.e., Medigap) is about 28 percent higher than among those without supplemental coverage.[65] In addition, studies have shown that even among HMOs, eliminating cost sharing can result in utilization increases ranging from 11 to 30 percent.[66]

When modeling a proposal that eliminates cost sharing, we assume that utilization of health services would increase for all people who do not currently have first-dollar coverage. We assume that utilization of physician services would increase by 30 percent and that inpatient hospital utilization would increase by about 10 percent. We simulate no change in utilization for

---

[63] W.G. Manning et., al., "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment," *The American Economic Review*, vol.77, No. 3, June 1987, pp.251-277.

[64] Victor R. Fuchs and James S. Hahn, "How Does Canada Do It? A Comparison of Expenditures for Physician's Services in the United States and Canada," *New England Journal of Medicine*, vol.323, September 27, 1990, 13, pp. 884.

[65] Sandra Christenson, Congressional Budget Office.

[66] D.C. Cherkin et al., "The Effect of Office Visit Copayments on Utilization in a Health Maintenance O Organization," Medical Care 27 (July 1989): 669-679; and J.R. Hankin et al., "The Impact of a Copayment Increase for Ambulatory Psychiatric Care," Medical Care 18 (1980): 807-815.

people who already have a policy without cost sharing. These include Medicaid enrollees, aged people with Medigap coverage (these policies typically pay anything not paid by Medicare for covered services), and people currently enrolled in an HMO that does not have cost sharing.

XI. PROVIDER REIMBURSEMENT

Health reform proposals typically have significant implications for provider reimbursement and costs. These policies can also result in substantial amounts of cost shifting. Examples of such policies include:

- Proposals that would shift most of the population now covered by Medicaid and SCHIP to a program where participants have a choice of private health plans. Because private payer reimbursement rates are typically higher than Medicaid payment rates, this would result in an increase in payments to providers for the care provided to this population;
- An expanded Medicare program that pays providers at Medicare payment levels. This implies that payment levels for services now provided to Medicaid recipients would adjust (usually increase) to Medicare levels as this population is shifted to the Medicare based program; and
- Proposals that would shift privately insured people to a public plan would result in lower provider payment levels (usually to Medicare levels) for services.

HBSM estimates costs for payer groups under health reform proposals based upon the payment levels actually used in the program. We then estimate changes in private-payer costs due to the cost shift.

A. Payment Differentials by Payer Group

We simulate these changes in provider payments based upon recent studies of relative differences in provider payment rates by type of payer. ***Figure 44*** presents estimates of payments as a percentage of costs by payer, which were used as the basis of our simulation of changes in provider reimbursement levels.

Figure 44
Provider Payments as a Proportion of Medicare Payments by Payer Type

Payer Type	Hospital Care [a/]	Physician Care
Medicare	1.00	1.00
Medicaid	0.95	0.64 [b/]
Private Coverage	1.16	1.41 [c/]

a/ "Trend Watch Chart Book 2001," American Hospital Association (AHA).
b/ Norton, Stephen, "Recent Trends in Medicaid Physician Fees," The Urban Institute, 1993-1998.
c/ "Physician Payment Review Commission, Annual Report to Congress, 1996"
Source: Lewin Group assumptions.

Under today's system, public health insurance programs such as Medicaid often pay less than the actual cost of providing care resulting in "undercompensated care" burden for providers. Also, hospitals and other providers provide uncompensated care for the uninsured people which contributes to this burden.

Providers recover part of the cost of uncompensated and under-compensated care by increasing prices charged to privately insured people. This surcharge is known as the "cost-shift" which increases costs for employers and individuals with private health insurance. Conversely, as uncompensated and under-compensated care costs are reduced under health reform, we expect that a portion of the cost-shift amount would be passed back to private payers in the form of reduced growth in charges for services.

Historical data show that private-payer payments increase as payment shortfalls under public programs rise and decline as payment shortfalls under public programs decrease. For example, during years when Medicare payment shortfalls (i.e., revenues minus costs) as a percent of total costs increased (i.e., prior to 1995), private-payer payments as a percentage of total costs increased (***Figure 45***). As Medicare payments started to rise in 1995, private-payer payments as a percentage of total costs declined. Thus, private payer payments not only increased as public payer rates decline, they declined as public payer rates increased. This is evidence that private-payers are able to negotiate back a portion of the increase in reimbursement resulting from increases in reimbursement rates and reduced uncompensated care.

This symmetrical relationship between public and private payment rates for hospitals suggests that a portion of the change in reimbursement in these reform proposals will be passed on to private payers, whether it would be a net increase or a net decrease in payment rates.

B. Estimating the Impact of Policy Options on the Cost Shift

Not all of these changes in uncompensated and undercompensated care are actually passed on as changes in private sector prices. There are two separate studies indicating that about one-half of hospital payment shortfalls are passed on to private payers in the form of higher charges.[67] However, two other studies showed considerably less evidence of hospital cost-shifting, although they did not rule out a partial cost-shift.[68] One study of physician pricing by Thomas Rice et al., showed that for each one percent reduction in physician payments under public programs, private sector prices increased by 0.2 percent.[69] Our own analysis of hospital data indicates that about 40 percent of the increase in hospital payment shortfalls (i.e., revenues minus costs) in public programs were passed-on to private-payers in the form of the cost shift during the years studied.[70]

---

[67] Dranove, David, "Pricing by Non-Profit Institutions: The Case of Hospital Cost Shifting," *Journal of Health Economics*, Vol. 7, No. 1 (March 1998); and Sloan, Frank and Becker, Edward, "Cross-Subsidies and Payment for Hospital Care," *Journal of Health Politics, Policy and Law*, vol. 8., No. 4 (Winter 1984)

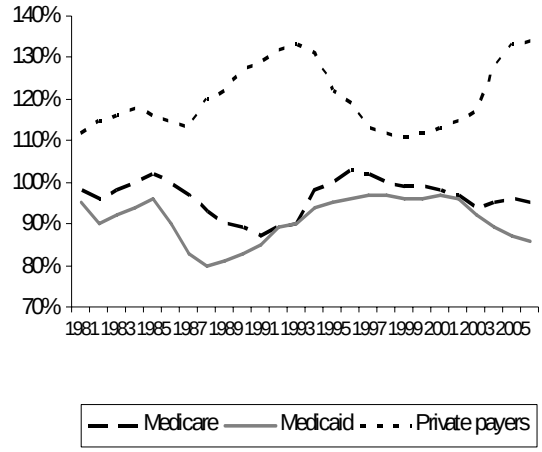
[68] Zuckerman, Stephen, "Commercial Insurers and All-Payer Regulation," *Journal of Health Economics*, Vol. 6. No. 2 (September 1987); and Hadley, Jack and Feder, Judy, "Hospital Cost Shifting and Care for the Uninsured," *Health Affairs*, Vol. 4 No. 3 (Fall 1985)

[69] Rice, Thomas, et al., "Physician Response to Medicare Payment Reductions: Impacts on public and Private Sectors," Robert Wood Johnson Grant No. 20038, September 1994.

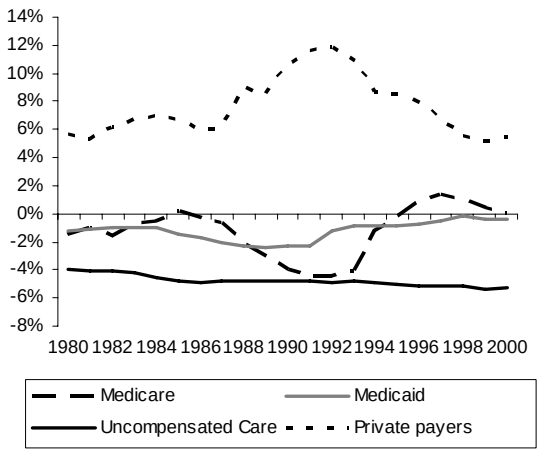
[70] Sheils, J., Claxton, G., "Potential Cost Shifting Under Proposed Funding Reductions for Medicare and Medicaid: The Budget Reconciliation Act of 1995," (Report to the National Coalition on Health Care), The Lewin Group, December 6, 1995

Figure 45
Aggregate Losses or Gains as a Percent of Total Hospital Costs for Medicare, Medicaid, and Uncompensated Care[a/ b/]

Total Private Gains and Losses for Other Payers as a Percentage of Total Costs (1981-2005)



Private Payer Gains and Other Payer Losses as a Percent of Total Costs by Payer (1980-2000)



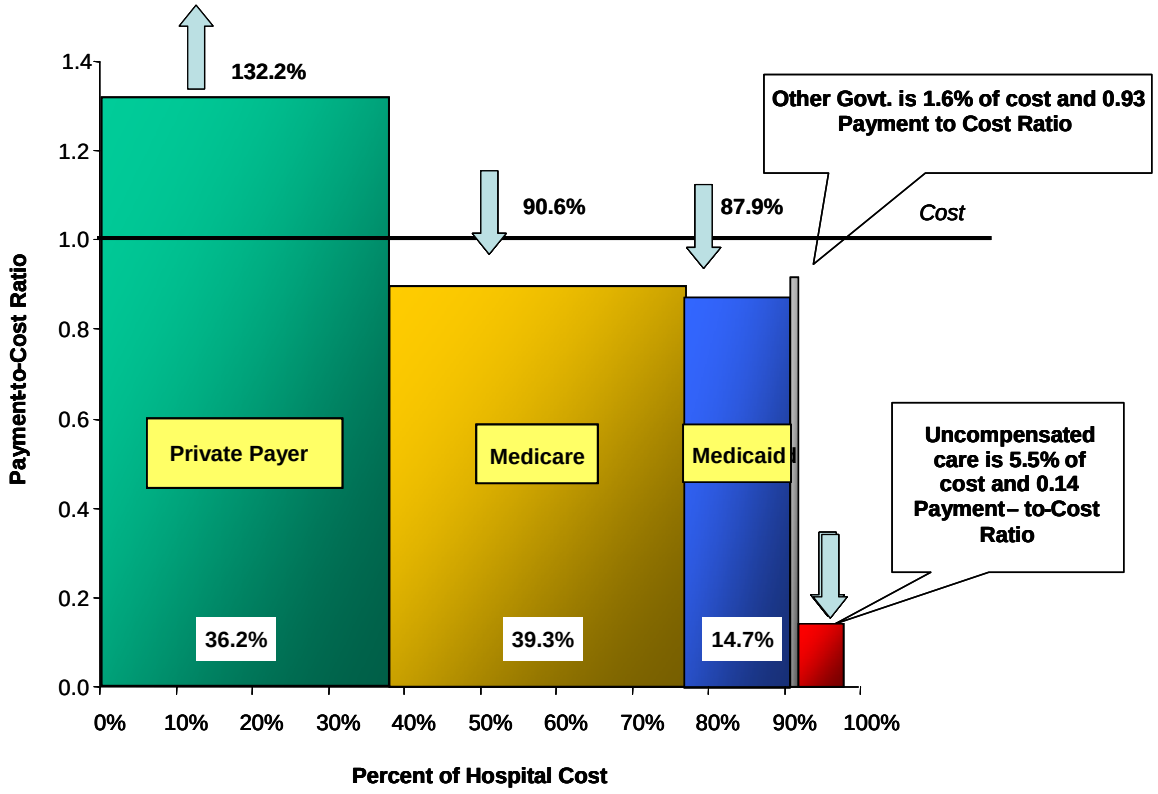
a/ Private gains include private payer gains (i.e., revenues minus costs) as a percentage of total costs. Private payers include employer-sponsored coverage and individually purchased non-group coverage.
b/ Other payer losses include losses (i.e., revenues minus costs) for Medicare, Medicaid, and uncompensated care as a percentage of total costs.
Source: Lewin Group analysis of data from the American Hospital Association (AHA) Annual Survey of Hospitals.

C. Estimation of Hospital Payment Levels and the Cost Shift

The Cost-Shift graphic below (***Figure 46***) depicts the hospital cost shift to private payers driven by shortfalls from government payers and the uninsured in an illustrative state. Typically, we use data from states' hospital associations and other sources (when available) which provide general, financial and utilization information at the facility level for hospitals. This data typically includes aggregate gross revenues, net revenue and expense information, gross patient revenues and net patient revenue information by source of payer.

We use the data to calculate payment-to-cost ratios for each payer source as well as calculate the relative share each payer represented of total hospital costs in a state. In order to derive payer level cost information, an aggregate cost to charge ratio (RCC) is calculated for each hospital. The RCC is then applied to each payer's gross revenue to calculate payer level costs for each hospital. Net patient revenues and costs are than aggregated across hospitals to generate a payment to cost ratio for each payer at the state level. In addition, the charges line is calculated by taking the inverse of the average RCC. This helps provide some insight to the relative discount accrued to each payer source. The payer sources which include Private, Medicare, Medicaid, other government, and uncompensated care are described below.

Figure 46
Average Payment-to-cost Ratios for Hospitals by Payer Group Nationally for 2007



Source: The Lewin Group analysis using published data from the American Hospital Association (AHA).

- **Private Payers:** This includes the total gross patient revenue billed to group and individual accident and health insurance sources, employer self-funded plans, other organization self-funded plans, Health Maintenance Organizations (HMOs), other alternative health care payment systems, persons who do not have health insurance coverage (self-pay), Workers' Compensation, and any other non-government source.
- **Public Programs:** Payments for Medicare include the total gross patient revenue billed to Medicare and to HMO's reimbursed by Medicare. The Medicaid and State's Children Health Insurance Program (SCHIP) estimates are based upon total gross patient revenue billed to Medicaid and HMO's covering people from those programs. These include spending under both Medicaid and SCHIP. Revenues from TRICARE (the health care program for military personnel) and high risk pool programs (if a state has such a pool) are also included in the "Other Government" payer source.
- **Uncompensated Care:** Uncompensated care is broken into two components – charity care and bad debt. Charity care includes health services that were never expected to result in cash inflows. Charity care results from a provider's policy to provide health care services free of charge or at reduced charges to individuals who meet certain financial criteria. Charity care is measured on the basis of revenue foregone, at full

established rates. Bad Debt is the provision for actual or expected uncollectible expenses resulting from the extension of credit and is reported at full charges.

Any facility with negative values in reported revenue or expense fields were excluded from the analysis. No hospitals were excluded as a result of this criterion. The calculations for each component of the cost to pay ratios were as shown in ***Figure 47***.

Figure 47
Variable Definitions for Hospital Payment Analysis

Cost to Charge Ratio (RCC) Calculations	
RCC =	(Total Expenses – Bad Debt Expenses)/(Total Revenue + Total of Other Operating Revenue)
Cost Calculations	
Private =	(Commercial Total Charges + Managed Care Total Charges + Self-Pay total charges + Others Total Charges + Premium Revenue – Bad Debt Expenses – Charity Care)* RCC
Medicare =	Medicare Total Charges * RCC
Medicaid =	Medicaid Total Charges * RCC
Other Government =	Champus Total Charges) * RCC
Uncompensated Care =	(Bad Debt Expenses + Charity Care) *RCC
Revenue Calculations	
Private =	Commercial Total Charges + Managed Care Total Charges + Self-Pay total charges + Others Total Charges + Premium Revenue –Commercial Total Contractuals – Managed Care Total Contractuals – Self Pay Total Contractuals – Others Total Contractuals
Medicare =	Medicare Total Charges – Medicare Total Contractuals
Medicaid =	Medicaid Total Charges – Medicaid Total Contractuals
Other Government =	Champus Total Charges – Champus Total Contractuals
Uncompensated Care =	Tax Subsidies

XII. INSURER AND PROGRAM ADMINISTRATIVE COSTS

The cost of implementing an expansion in coverage is composed of the cost of benefits provided and the costs associated with administering coverage and subsidies. Administrative costs include the cost of administering eligibility and coverage in public programs plus the cost of health plan administration (e.g., enrollment, claims processing etc.). There also would be a cost associated with administering any income-tested subsidies provided under public expansion programs. In addition, if the expansion includes the creation of a connector/exchange or public insurance pools, there would be a cost to administering these programs.

We base our estimates of insurer and program administrative costs under current law using data provided by the Office of the Actuary (OAct) of CMS. We then estimate administrative costs under proposals to expand insurance coverage based upon experience in operating similar programs where possible. The net change in administrative costs under public expansion proposals is assumed to be equal to total administrative costs for private health plans and public programs under the proposal, less the amount spent by governments and private health plans under current policy.

Administrative costs for providers are modeled separately when appropriate. Physicians and hospitals incur substantial administrative costs. These include insurance-related administrative costs such as claims submission, eligibility verification and claims adjudication and appeals. These also include payroll, financial and plant management costs found in any business.

Administrative costs can be difficult to estimate for many proposals because the proposal creates programs and subsidies that have never been implemented on a wide scale. For example, several of the proposals we have studied would create insurance pools that sponsor a selection of health plans in all areas of the country. Many proposals also implement tax credit programs that rely upon "self-attestation" of income and costs (subject to audit) to determine eligibility and the amount of any tax benefits. Wherever possible, we model administrative cost based upon the cost of administering similar programs at the state or federal levels. In cases where such experience data do not exist, we must develop an *ad hoc* methodology to estimate costs, which we document in our reports.

In this section, we explain how we estimate administrative costs under the current system. We also explain how we estimated the cost of administering the various coverage expansion proposals in the following sections:

- Private insurance administrative costs under Current Policy;
- Simulation of administration under policy options;
- Administrative costs under an exchange;
- Administration of subsidies; and
- Impact on provider administrative costs.

A. Private Insurance Administrative Costs under Current Policy

Our estimates of spending for insurer and program administration are based upon OAct estimates of total spending for administration by payer source. However, we use other insurer administrative data to estimate how these administrative costs are distributed across employer plans by firm size and individuals purchasing non-group or Medicare supplemental coverage (i.e., MediGap).

In ***Figure 48***, we present our estimates of benefits payments and administrative costs by source of payment in our 2010 baseline. We present the data and assumptions used to estimate these administrative costs separately for private health insurance and public programs.

Figure 48
Estimated Insurer Administration and Program Administrative Costs by Source of Payment for the 2010 Baseline

Source of Payment	Costs in Millions of Dollars			
	Benefit Payments	Administrative Costs	Total Costs	Administration as Percent of Benefits
Out of Pocket	$238,355	$0	$238,355	0.0%
Employer: Workers	$658,332	$81,149	$739,481	12.3%
Employer: Non-Workers	$81,696	$7,101	$88,797	8.7%
Non-Group	$50,248	$18,039	$68,287	35.9%
Free from Provider[a/]	$55,065	$0	$55,065	0.0%
Medicare	$445,961	$24,974	$470,935	5.6%
Medicaid	$231,004	$21,483	$252,487	9.3%
CHAMPUS/VET	$63,938	$3,517	$67,454	5.5%
Other Public	$34,014	$646	$34,660	1.9%
Workers Comp	$27,159	$7,496	$34,655	27.6%
Medi-Gap	$21,788	$7,822	$29,610	35.9%
TOTAL	**$1,907,559**	**$172,226**	**$2,079,785**	**9.0%**

a/ Based upon estimate of the cost of these services provided in MEPS. Administrative costs as a percentage of benefits payments average about 12.7 percent across the privately insured population.
Source: Lewin Group estimates for 2010.

1. Private Insurance Administrative Costs under Current Law

We estimate administrative costs for private insurance based upon data provided by Hay/Huggins on administrative costs by size of group developed for the Congressional Research Service. As shown in ***Figure 49***, administrative costs for fully insured groups vary from as high as 40 percent of covered claims for groups of 1 to 4 people to 5.5 percent for groups with 10,000 or more workers. Administrative costs are also as low as about 3.5 percent of benefits payments for self-funded health plans. Administrative costs for people with non-group

coverage vary between a high of 40 percent of claims, and about 19 percent of claims for insurers with large non-group pools.[71]

Figure 49
Private Insurance Administrative Cost Assumptions for Baseline [a/]

Number of employees	Claims Admin.	General Admin.	Risk, Profit & Interest Credit [b/]	Commissions	Premium Taxes	Total
Individuals	6.7%	9.0%	7.2%	6.0%	2.8%	31.7%
2 to 4	6.1%	8.2%	6.5%	5.5%	2.8%	29.1%
5 to 9	5.8%	7.6%	6.3%	4.1%	2.7%	26.5%
10 to 19	5.2%	6.6%	6.1%	3.6%	2.6%	24.1%
20 to 49	5.1%	6.2%	6.0%	2.7%	2.5%	22.5%
50 to 99	4.6%	5.1%	5.8%	2.1%	2.4%	20.0%
100 to 499	3.8%	3.7%	5.6%	1.5%	1.1%	15.7%
500 to 2,499	3.1%	2.6%	4.0%	0.6%	0.3%	10.6%
2,500 to 9,999	3.5%	1.3%	3.0%	0.3%	0.0%	8.1%
10,000 or more	3.2%	0.7%	2.8%	0.1%	0.0%	6.8%

a/ Adjustments by firm size are based on underwriting practices of major insurance companies.
b/ Includes allowance for risk and profit less the interest credit earned by the insurer on cash flow.
Source: Lewin Group estimates based upon unpublished actuarial data and data from Hay/Huggins Company, Inc. As appeared in: "Cost and Effects of Extending Health Insurance Coverage" Congressional Research Service (CRS), October 1988.

We estimate private insurer administrative costs for each privately insured individual in the HBSM household data base who reports having private insurance. For employer groups, administrative costs are estimated based upon the administrative cost data in ***Figure 49***. This is done simply by multiplying the amounts covered for each worker and dependent in the aged HBSM data by the administrative cost percentage corresponding to their reported size of firm.

For workers with retiree coverage, we estimate administrative costs based upon the administrative cost percentages that correspond to the size of the firm that is providing the coverage. However, because retiree coverage is disproportionately concentrated among the largest firms, administrative costs as a percentage of claims are more similar to those in large groups. We estimate the average size of firm per retiree based upon the employer health plan data used in the model.[72] We estimate insurer administrative costs for people with non-group coverage based upon these data. This includes people purchasing non-group coverage as their primary source of coverage and people purchasing Medicare supplemental coverage, often called MediGap coverage.

---

71 Estimates based upon data provided by Hay/Huggins and Lewin Group experience with large insurers with large non-group insurance pools.

72 This is the KFF/HRET employer data matched with the 1997 RWJF data which provides added information on the number of retirees by firm size.

In the final step, we adjust the imputed administrative costs for all sources of private coverage to match the aggregate amounts of insurer administration reported by CMS. We use an average of private insurer administrative costs over a five-year period to account for fluctuations in administrative overhead throughout the underwriting cycle. Based upon this, we assume that private insurer administration is equal to about 12.7 percent of covered benefits.

2. Public Program Administrative Costs under Current Policy

We estimate the cost of administering public programs based upon administrative data reported for these programs and estimates provided by the Office of the Actuary (OAct) of CMS. Administrative cost data for Medicare and Medicaid were taken from cost projections developed by the Congressional Budget Office (CBO). Administrative cost data for the CHAMPUS program was obtained from the program. Administrative costs for other programs are estimated from National Health Accounts data developed by OAct of CMS.

B. Simulation of Administration under Policy Options

We use the model to estimate administrative costs under policies that expand coverage. We simulate administrative costs that come from increased enrollment in existing forms of health coverage using data on the administrative cost for these types of insurance under current law. However, many health reform proposals would change the way insurance is purchased by creating new insurance clearing houses called the "connector" or "exchange." Under these proposals we estimate how administrative costs would be affected by these new coverage market places.

1. Administrative Costs without Marketplace Reforms

Some policy proposals would expand coverage by providing subsidies for employers and individuals in the form of a tax credit or a voucher. These proposals do not create new insurance pools and/or insurance market clearing houses that change the ways in which people obtain coverage. Also, many proposals would expand coverage under Medicaid the existing Medicaid and SCHIP programs.

We assume that administrative costs for newly insuring employer groups would be the same as for existing employer health plans. As discussed above, these costs vary from as high as 40 percent in small firms to 5.5 percent in the largest firms. Administrative costs for employers who now provide coverage generally would be the same as under current law, except to the existent that enrollment in an employer's plan increases as a result of the policy proposal. In these cases, we assume that administrative costs for employers increase in proportion to the increase in benefits payments for newly covered workers.

In some instances, administrative costs under a given proposal could result in economies of scale and greater competition due to the size of the expansion. For example, proposals that require employers to offer coverage would nearly double coverage for all groups. Enrollment in the non-group insurance market could grow by between 300 percent and 400 percent under an individual coverage mandate for those without employer coverage.

Under these types of reform proposals we assume that administrative costs would be equal to about 19 percent of benefits costs for the self-employed and non-group enrollees. This is substantially lower than administrative costs for covering people under current law, which can reach up to 40 percent of claims. We choose a lower assumption based upon the expectation that there would be economies of scale in running a large public plan and there are likely to be fewer marketing expenses, including broker and agent commissions. Our assumption of 19 percent is based upon the administrative overhead rates experienced in large non-group plans.

For small employers, we assume that administrative costs for newly insuring firms also would be no more 19 percent, reflecting an assumed increase in economies of scale under a large coverage expansion.

We also assume that administrative costs for Medicaid beneficiaries who are shifted to private coverage through the public plan would be the same as we assume for other people taking coverage and individuals in the non-group market. However, we assume that this increase in administrative costs would occur among only the portion of Medicaid beneficiaries who are not already enrolled in private managed care plans.

C. Administrative Costs under an Exchange

We have analyzed several proposals that would create an exchange that facilitates the selections of a health plan for individuals and employers. The exchange is a quasi-public entity charged with presenting a selection of alternative health plans for a defined population group. The exchange provides consumers with comparative information on benefits and copayments under these plans. They would also provide information on quality measures to facilitate plan comparisons. The exchange would also facilitate enrollment in the plans selected by consumers.

1. Impact on Administrative Costs for Health Plans

The exchange is designed to reduce administrative costs by extending large-group economies of scale throughout the insurance system and through centralized revenue collection. The exchange would effectively organize regional populations into a large single group for each insurer, each of which is likely to include 10,000 or more members. Thus, by using the exchange as a single source for enrollment and premium payments, insurers can be expected to cover these populations at costs comparable to those of existing large groups, where administrative costs are typically equal to about 3.4 percent of administrative costs.[73]

Depending upon the design of the program, savings can be achieved by standardizing coverage and eliminating medical underwriting. Also, consumers will often be able to stay in their health plans when they change jobs or become unemployed, resulting in fewer transitions in coverage.

We estimated private insurer costs using the detailed administrative cost data provided by the Hay Group discussed above. The study provided data on insurer administrative costs as a percentage of claims under current law and under a mandatory insurance pool with a selection

[73] Estimates are based upon underwriting practices of major insurance companies. Hay/Huggins Company, Inc. As appeared in: "Cost and Effects of Extending Health Insurance Coverage" Congressional Research Service (CRS), October 1988.

of health plans, similar in design to an exchange. We modified these administrative cost percentages for current law to reflect recent administrative cost levels (***Figure 50***).

We modified the administrative cost rates for the mandatory pooling model from the CRS analysis to reflect unique elements of the exchange. The Hay Group analysis assumed that the pool would include only firms with fewer than 100 workers. For plans that cover lager firms in the exchange, we adjust these administrative cost rates to reflect the economies of scale in administering coverage to these firms. In general, we assume that brokers and agents would receive a commission equal to 1.0 percent of claims for all exchange participants. As a result, we estimated that private insurer administrative costs including profits and commissions would be 9.4 percent of covered claims compared with 12.7 percent under current law.

2. Costs for the Exchange Administration

The Exchange would also require funding to perform the enrollment and plan payment functions, much of which would be supplemented and facilitated by brokers and agents. These include many functions now performed by insurers such as enrollment and administration of plan selection, collection and distribution of premium dollars to plans, and other enrollment and payment functions. The exchange would effectively organize regional populations into large single groups for each insurer, each of which is likely to include 10,000 or more members. Thus, insurer administrative cost would be more comparable to that of very large groups, where administrative costs are typically equal to about 3.4 percent of administrative costs.

We estimate that exchange costs would be equal to about 2.6 percent of claims under a program where firms of all sizes are permitted to enroll. This estimate is based upon data from the Health Insurance Purchasing Cooperative (HIPC) for small employers (i.e., less than 50 workers) in California, which performs a similar roll in administering plan selection and premium payment. The exchange reports that its administrative costs are covered through a premium add-on of about 4.5 percent. We adjusted this add-on percentage to reflect that exchange would be compiling plan selection information submitted by employers of all sizes, including very large employer plans where there will be substantial economies of scale.

We subtracted the 2.6 percent of claims figure from the overall administrative cost (e.g., 9.4 percent). This leaves insurers with administrative costs and profits equal to 6.8 percent of claims. However, these administrative costs must be recalculated for each individual policy option to accurately reflect the cost of administering each unique proposal with an exchange.

Figure 50
Cost of Administering Health Insurance as a Percentage of Claims under Current Law and an Exchange [a/]

Size of Group	Claims Administration		General Administration		Risk / Profit Interest Credit		Commissions		Premium Taxes		Total Administrative	
	Current	Exchange	Current	Exchange	Current	Exchange	Current	Exchange	Current	Exchange	Current	Exchange
Individuals	6.7%	5.0%	9.0%	6.0%	7.2%	3.6%	6.0%	1.8%	2.8%	2.8%	31.7%	19.2%
2 to 4	6.1%	5.0%	8.2%	6.0%	6.5%	3.6%	5.5%	1.6%	2.8%	2.8%	29.1%	19.0%
5 to 9	5.8%	5.0%	7.6%	6.0%	6.3%	3.4%	4.1%	1.2%	2.7%	2.7%	26.5%	18.3%
10 to 19	5.2%	5.0%	6.6%	5.5%	6.1%	3.1%	3.6%	1.0%	2.6%	2.6%	24.1%	17.2%
20 to 49	5.1%	4.5%	6.2%	5.0%	6.0%	3.0%	2.7%	0.8%	2.5%	2.5%	22.5%	15.8%
50 to 99	4.6%	4.0%	5.1%	4.8%	5.8%	3.0%	2.1%	0.6%	2.4%	2.4%	20.0%	14.8%
100 to 499	3.8%	4.0%	3.7%	4.0%	5.6%	3.0%	1.5%	0.4%	1.1%	1.1%	15.7%	12.5%
500 to 2,499	3.1%	3.9%	2.6%	3.2%	4.0%	3.0%	0.6%	0.2%	0.3%	0.3%	10.6%	10.6%
2,500 to 9,999	3.5%	3.4%	1.3%	1.3%	3.0%	3.0%	0.3%	0.1%	0.0%	0.0%	8.1%	8.0%
10,000 +	3.2%	3.0%	0.7%	0.7%	2.8%	2.8%	0.1%	0.0%	0.0%	0.0%	6.8%	6.5%
Total	4.0%	3.8%	3.0%	2.7%	4.1%	3.0%	1.4%	0.4%	0.8%	0.8%	13.4%	10.7%

a/ Only small firms are permitted to enter the exchange, which we assume includes firms with fewer than 25 workers.
Source: Analysis of the Effect of Creating a Mandatory Insurance Pool developed by the Hay Group, "Cost and Effects of Extending Health Insurance Coverage," Congressional Research Service 1990.

D. Administration of Subsidies

Lewin has also analyzed proposals that provide subsidized coverage to low-income people. The cost of administering income tested subsidies for low-income people through vouchers, tax credits or coverage under a public program is based upon the cost of determining eligibility under the current Medicaid/SCHIP program, which we estimate to be about $190 per family.[74] For people without employer subsidized coverage, costs are assumed to equal $190 per family as under the Medicaid/SCHIP program. For people eligible for subsidies who have employer coverage, the cost of administering the subsidy is assumed to be half that amount, reflecting the fact that under these proposals, the employer would assist in these functions.

As an alternative to providing a subsidy, some would replace the current exemption for employer provided health benefits with a refundable tax credit for all individuals, which effectively lowers the overall cost of insurance to the individual (similar to a subsidy). However, many of the individuals who are eligible for the tax credit do not have enough income to pay taxes and often have a loose attachment to employment. As a result, we assume that much of the lower-income population would not be able to make effective use of the income tax and employer withholding system.

Consequently, under the tax credit proposals, we assume that a process would be implemented to certify eligibility and arrange for payment of the tax credits for all people with incomes below the federal poverty level and people who qualify for the current Medicaid and SCHIP program. For these people, we assume the following:

- The cost of administering subsidies to individuals who are not employed would equal $170 per family as under the Medicaid/SCHIP program.
- For people who have employer coverage, the public cost of administering the subsidy is assumed to be about half that amount in proposals that require employers to facilitate enrollment and coverage for their workers.

In addition, we assume that the administrative budget for the Internal Revenue Services (IRS), currently $9.9 billion, would be increased by 25 percent to administer these tax credits.

E. Impact on Provider Administrative Costs

Spending for provider administration is embedded in payments to providers. For example, payments to a physician are used to pay for a wide range of costs in providing care including wages and salaries of non-physician employees, supplies, facilities costs, insurance related administrative costs and physician net income. We assume that these costs are covered within the amounts paid to providers and generally do not itemize these costs within the providers practice unless required for the analysis.

For example, proponents of the single-payer model argue that the provider's cost of interacting with insurance companies are greatly reduced by having a single insurer with a standard set of rules and practices for determining eligibility, covered services and co-payment amounts, if

[74] Estimated from detailed administrative data for the California Medicaid program (Medi-Cal)

included in the plan. For these proposals, we estimate these savings to providers because these programs would subtract the amount of savings in provider administration from provider payments. Thus, this step is critical to estimating payment levels and overall program costs.

To develop these estimates, we first allocate physician and hospital administrative costs to up to 40 separate line-items of administrative costs. These include such things as reception, billing, insurer utilization review, employee wages and benefits, facilities costs, net physician income and other line items. We use the following data sources for these estimates:

- For physician's offices, we use survey data from the Medical Group Management Association (MGMA) on the physician practice expenses by administrative function. We use data available by geographic region when developing regional estimates;
- For hospitals, we typically rely upon detailed data available for individual states where information is provided on a detailed line-item basis. For example we have used the California Office of Statewide Health Planning and Development (OSHPD) data, which provides detailed hospital administrative cost data; and
- We estimate the amount of physician time attributed to administration by functional area (insurer, practice management etc) based upon data provided in the American Medical Association (AMA) survey of Physician Socioeconomic Statistics.

Once these data are developed, we estimate the impact that the health reform plan would have on provider administrative costs. Where data on likely program effects is not available, we interview industry experts on how spending for each of these line-item functions would be affected by the changes implied by the proposal. These include such things as standardized eligibility verification, standardization of accrediting requirements, elimination of patient co-payments (where proposed) and standardized utilization review. The data and assumptions used in these analyses are documented separately for each proposal modeled.

XIII. PROPOSALS TO RESTRUCTURE CONSUMER INCENTIVES

We use HBSM to model the effects of proposals that would change consumer incentives by making consumers more sensitive to the costs associated with their choices of health coverage. To sensitize consumers to the cost of coverage, these proposals typically require people to pay the full increment of the cost of selecting the more costly forms of insurance and/or limit the tax exclusion for employer provided health benefits in ways that encourage consumers to enroll in more efficient health plans.

In the sections above, we explain how we simulate the decision for individuals to take or discontinue coverage given a change in the price of the coverage available to the individual. Thus, at this point in the simulation, our coverage simulations fully reflect the effect of government policies that affect the premiums paid by individuals. In this section, we are concerned only with the individual's decision to move to a less costly health plan in response to changes in incentives under policy proposals.

We simulate this shift in coverage and the resulting savings based upon studies of how changes in the relative price of alternative sources of coverage affects consumer choice of health plans. This requires a careful analysis of the premiums for the alternative health plans offered to people through work or a newly created insurance "exchange." Our approach is presented in the following sections:

- Changing consumer incentives;
- Modeling competitive pricing proposals;
- Modeling changes in tax policy;
- Impact on the actuarial value of coverage;
- Modeling health savings accounts (HSAs);
- Direct Effects of Managed Care; and
- Long-term effects of managed care.

A. Changing Consumer Incentives

A major criticism of employer-sponsored insurance is that the employer selects the health plan and coverage features of the policy rather than the consumer. Workers often do not even know how much their insurance costs. The tax exempt status of coverage further detaches the individual's consciousness of the cost of their health care.

Many proposals are designed to increase incentives for consumers to seek lower-cost health plans. These include proposals to limit or eliminate the tax exclusion for employer-sponsored insurance (ESI). These also include "managed competition" programs designed to provide consumers with a choice of health plans where people must pay out-of-pocket the full increment of the cost of enrolling in a more costly health plan. Increasing consumer price sensitivity is designed to spur new competition among health plans and integrated delivery systems. Some of the proposals that would increase price competition include:

- Requiring all employers who offer a choice of health plans to make a fixed contribution for coverage, thus requiring the individual to pay the full increment of the cost of selecting the more costly coverage;
- Creating incentives or requiring employers to provide a choice of health plans with a fixed contribution for each worker;
- Providing public insurance pools that offer a choice of health plans with individuals required to pay the full increment of cost for enrolling in something above the median premium charged in the pool;
- Limiting the tax exclusion for health benefits to a standard such as the median cost of health plans offered in each area; and
- Replacing the tax exclusion for ESI with a fixed tax credit or deduction so that people can switch to a lower cost plan without losing tax benefits for health insurance.

Many economists argue that the tax exclusion for employer provided health benefits encourages over-use of the health care system by encouraging the purchase of comprehensive policies with little incentive to contain costs. The tax exclusion artificially reduces the price of healthcare relative to other uses of income which causes us to purchase overly comprehensive coverage that enables us to over-consume care, thus driving up health care costs.

Proposals have emerged that would replace the tax exclusion for ESI benefits with a deduction or tax credit that is a fixed dollar amount regardless of the amount the individual actually pays for insurance. This differs from the tax exclusion where the higher the premium is, the greater the tax benefit becomes. Thus, under current law, electing a less costly health plan actually reduces the amount of tax subsidy the individual receives. By comparison, with the flat tax credit or deduction, consumers can chose a lower cost plan without losing any of the tax benefit.

These proposals are usually coupled with policies that extend a greater variety of health plans to people with ESI. Under today's system, many workers are in insuring firms that provide only one health plan option for their workers. This limits the worker's ability to shift to a lower-cost coverage option regardless of changes in tax policy. Thus, proposals that emphasize competition typically provide an "exchange" that presents a variety of coverage options ranging from traditional fee-for-service coverage to HMOs or health savings accounts (HSA). Thus, proposals that increase consumer sensitivity to the price of insurance must be matched with access to lower-cost options for these incentives to succeed in changing consumer purchasing behavior.

B. Modeling Competitive Pricing Proposals

The Managed Competition model is designed to strengthen incentives to limit costs by enabling workers to retain the entire amount of any savings resulting from a shift to a lower cost plan. In the existing system, many employers do not offer a selection of health benefits. In firms that do provide a choice of health plan, many actually increase the amount of the premium they pay for people as they select more costly options, which reduces consumer sensitivity to the true price of more costly coverage. Some proposals would require employers to contribute a fixed dollar amount to the premium regardless of the plan selected, thus requiring the worker to pay the full increment of the cost of enrolling in a more costly plan.

The KFF/HRET employer data indicate that about 48 percent of covered workers are in firms offering a choice of health plans. Of these, only about 34 percent make a uniform contribution towards the cost of insurance, regardless of the plan selected.

We estimate the impact of changes in financial incentives based upon a simulation of the effect that these incentives would have on enrollment in various types of health plans. We assume that the primary effect of these programs would be to shift individuals from fee-for-service (FFS) plans (including PPO or POS plans) to integrated delivery systems such as HMOs, where costs are typically lower for a given level of coverage. Based upon available research, we assume that HMOs are 12.0 percent less costly than fee-for-service plans with the same covered services and cost-sharing (see discussion below). We use this as a proxy measure of the increment of cost for staying with a higher cost plan.[75] We also include the change in out-of-pocket premiums for people resulting from the use of a fixed employer premium contribution by the employer.

We also assume that the price elasticity for coverage in multiple choice offerings (i.e., plans offering a choice of coverage options) varies with age and health risk, averaging -2.47. This is an estimate of the percentage change in enrollment for an HMO given a 1 percent change in the premium for that plan when workers have a choice of health plans. As shown in ***Figure 51***, the elasticity ranges form -5.8 for people under the age of 31 who are a low health care risk to -2.1 for high risk individuals over the age of 45.[76] Individuals were randomly selected to shift to an HMO based upon these price changes and these price elasticity estimates.[77] We then assume that expenditures for these individuals are reduced by 12.0 percent (i.e., savings in HMOs).

Figure 51
Health Plan Change Price Elasticity Assumptions by Age and Health Risk

Age of Participant	Low Risk	High Risk [a/]
Under 31	-5.8	-5.3
31 – 45	-3.9	-3.6
Over 45	-2.4	-2.1

a/ The study defines high risk people as those who had selected illness or hospitalizations. In our model, as a proxy for this definition, we assumed that people with expected spending in excess of the 80th percentile of spending are "high risk".
Source: Stombom, B., Buchmueller, T.,Feldstein, P. "Switching Costs, Price Sensitivity and Health Plan Choice," *Journal of Health Economics* 21 (2002) 89-116. Estimates are adjusted to reflect the overall price elasticity estimate for the study.

We assumed no savings among people who are currently enrolled in HMOs. People who are currently in multiple choice offerings with a fixed employer contribution were also assumed to

---

75 Stapleton, D., "New Evidence on Savings from Network Models of Managed Care," (report to the Healthcare Leadership Council), The Lewin Group, Washington, DC, May 1994

76 Strombom, Bruce A., Buchmueller, Thomas C., Feldstein, Paul J., "Switching Costs, Price Sensitivity and Health Plan Choice," Journal of Health Economics, October 2001.

77 Newly insured people were randomly assigned to HMOs based upon the percentage of privately insured people who are in HMOs after we have executed our simulation for currently insured people.

be unaffected by fixed premium contribution requirements, unless the plan also eliminates or reduces the tax exemption for these employee premium contributions. In these instances we model a shift of individuals in FFS plans to an HMO based upon the increase in costs to the individual resulting for the tax change.[78]

C. Modeling Changes in Tax Policy

Several proposals are designed to neutralize the impact of the tax system on the choice of health insurance. Under the existing tax exclusion for employer provided health benefits, the amount of the tax benefit increases as the cost of insurance increases. An alternative approach is to specify a fixed dollar amount tax credit or deduction that is provided to everyone who takes private health insurance regardless of the premium. This approach enables people to elect a lower cost health plan without forfeiting any of the tax benefit. This is designed to encourage people to enroll in more efficient health plans.

As above, we assume that the programs' effects would be to shift individuals from fee-for-service (FFS) plans (including PPO or POS plans) to integrated delivery systems such as HMOs. Our approach was to simulate the shift to these types of plans based upon the change in out-of-pocket premium payments under the proposal and the plan change price elasticity estimates presented above. Premiums are defined as follows:

- **Current policy premiums:** For people with employer coverage, the premium under current policy was defined as the employee premium contribution amount. For people with non-group coverage, the out-of-pocket premium includes the full amount of the premium paid for their policy.
- **Premiums under proposal:** Premiums for people with employer coverage under the policy are equal to: the employee contribution amount; plus, the increase in taxes due to eliminating the tax exclusion, less the amount of the tax credit under the proposal (or the tax savings from the deduction). For people with non-group coverage, the premium is equal to the premium they pay less the amount of the credit.

These premium definitions also reflect any changes in premiums resulting from other policy changes including fixed premium contribution models, changes in insurance rating rules and changes in insurance pools under the proposal.

We estimated the number of people who would drop their current coverage to enroll in a less costly plan based upon the price elasticity assumptions presented above in ***Figure 51***. Thus, we assume that the price elasticity for coverage in multiple choice offerings (i.e., offered a choice of coverage options) varies with age and health risk, averaging -2.47. These data generally show that older and sicker consumers are less price sensitive than younger and healthier individuals. Individuals were randomly selected to shift to a lower cost plan based upon these estimated price changes and these price elasticity assumptions).

---

[78] These individuals are assumed to have already considered differences in premiums in selecting their current FFS coverage.

D. Impact on the Actuarial Value of Coverage

We assume no changes in the actuarial value (i.e., covered services, co-payments) of coverage as people shift to a managed care plan except as described below. The amount of care received and the amount paid through insurance for each person is assumed to be the same as under current law, less the 12 percent HMO adjustment described above for new HMO enrollees. We are implicitly assuming that individuals would be able to obtain a plan corresponding to the actuarial value of the health plan that they currently have once the program is implemented, albeit a managed care plan.[79]

It is possible that managed competition would result in broader access to high deductible plans and that the financial incentives it creates would cause people to shift to these lower levels of coverage. This is important because there is good evidence that higher levels of cost-sharing result in reduced utilization. However, there are some ways in which managed competition and changes in tax policy could actually result in less cost-sharing for some people. For example:

- Many people will move to HMOs where co-payments are typically lower than under PPO/POS/FFS plans;
- Managed competition would provide access to a broader range of health plans, including some low cost-sharing plans that are not available to many workers under the current system. In these instances, higher-users of care may be attracted to the lower-cost sharing plans once they become available to them through managed competition, resulting in increased utilization. This effect could be significant given that these people are higher users of care;
- Expanded availability of subsidies for lower-income people under these proposals would make all of the coverage options offered through the managed competition model more affordable, possibly resulting in higher levels of coverage for some people; and
- These managed competition models typically retain the employer benefits tax exemption which encourages people to pay for as much of their care as possible through low-deductible insurance, which would continue to encourage higher utilization.

E. Modeling Health Savings Accounts (HSAs)

Health Savings Accounts are a form of coverage that is designed to create incentives for people to be more conscious of costs in using health services. The HSA model includes a high deductible health plan (HDHP) with a deductible of between $1,000 and $5,000. People and/or employers are permitted to make a tax exempt contribution to a health savings account that can be use to pay amounts below the deductible. For example, an individual could have an HDHP with a deductible of $1,000 with an HSA deposit of $500. Individuals can retain the unused portion of the HSA deposit as savings that can be used to pay health bills in latter years, or used in retirement. Interest on the amounts saved is tax exempt.

---

[79] Note that we use a definition of actuarial value where the cost of coverage does not vary with the degree of utilization management.

The opportunity to retain some of the HSA deposit as savings creates an incentive for participants to shop for lower cost health care and/or avoid unnecessary consumption of health services. Many of the employers now offering these plans provide enrollees with information on the cost of services provided by area physicians and hospitals to foster more competition.

It is important to understand that the potential for HSAs to reduce costs is affected by the size of the deductible under the plan. For example, we have estimated that about 84 percent of all health spending occurs above a $1,000 deductible. That is, 84 percent of care for the privately insured occurs after the first $1,000 in health spending for people who spend more than $1,000 on health care (***Figure 52***). This means that under a plan with a $1,000 deductible, only about 16 percent of spending would be subject to increased cost sensitivity, and its incentives to reduce costs, which reduces the program's cost savings potential.

Figure 52
Percentage of Total Health Spending in Excess of Selected Deductible Amounts [a/]

Deductible Amount	Percentage of Total Health Spending Over Deductible Amount
$1,000	83.8%
$2,000	73.3%
$3,000	65.5%
$4,000	59.4%
$5,000	54.3%
$6,000	49.9%
$7,000	46.2%
$8,000	42.9%
$9,000	40.1%
$10,000	37.5%

a/ The amount of spending in excess of selected deductible amounts for people with spending in excess of these amounts.

Source: The Lewin Group estimates using the Health Benefits Simulation Model (HBSM), based upon the Medical Expenditures Panel Survey (MEPS) data for 2002 through 2005.

Studies have shown that increases in cost-sharing lead to reductions in utilization of health services. Data from the National Health Insurance Experiments showed that for each 1.0 percent increase in cost-sharing, utilization was reduced by about 0.2 percent. But these savings are restricted by the fact that once people have exceeded their deductible, co-payments under the plan are similar to those in existing plans.

We have modeled proposals that extend eligibility for HSAs to groups who do not now have this as a coverage option. For example, an exchange could offer these plans as an alternative source of coverage. We model enrollment based upon KFF/HRET data on the percentage of workers who elect the HSA in firms that now offer this coverage as an option. These data show that about 14 percent of workers have access to an HDHP with and HSA or and HRA. Of these,

2 percent enroll. However, the KFF/HRET data show increases in availability and enrollment each year since they started including information on these plans.

We assume an average deductible of $1,500 per participant. We then model the reduction in health spending using the health care price elasticity data from the national health insurance experiment data described above.

F. Direct Effects of Managed Care

As discussed above, we estimate the potential savings of managed competition and other system reforms in part based upon the assumption that HMOs are about 12 percent less costly than other FFS plans, including PPOs and POS plans. We made these assumptions based upon a review of the research available on the short-run and long-run effects of managed care.

There are several studies showing that HMOs are less costly than other types of health plans, even after accounting for differences in the demographic and medical characteristics of people who enroll in these plans. For example some studies have shown that HMOs reduce costly hospital inpatient utilization by up to 30 percent or more, but that these savings are partially offset by an increase in hospital outpatient and physician visits.[80] Due to data limitations, there is generally less research available on the savings attributed to less restrictive forms of managed care such as PPOs and POS plans.

A study of insurer data performed by The Lewin Group showed costs for HMO plans to be about 19 percent less than premiums under a managed FFS plan (i.e., an indemnity plan with utilization review). These savings included 15 percent in price discounts and 4 percent in utilization savings (***Figure 53***). The study also showed that premium payments for PPO plans were about 7 percent less than under a managed FFS plan.[81]

We base our estimate of the potential savings under HMOs on the difference between the estimates of savings for HMOs (19 percent) and the estimated savings in POS and PPO plans (7 percent), which is a net savings assumption of 12 percent (this is the same 12 percent savings assumption for HMOs discussed above). We use PPOs and POS plans as the basis of our comparisons because unmanaged FFS coverage has virtually disappeared from the market. In 1999, only about 9 percent of people with employer sponsored health insurance were in a conventional FFS plan, and most of those used some form of care utilization management such as prior authorization and discharge planning. About 63 percent of people with employer coverage were in POS or PPO plans while only about 28 percent were in HMOs.[82]

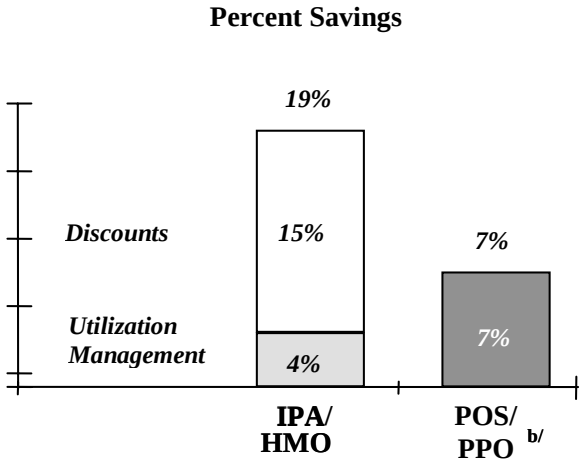
---

[80] Miller, R.H., and Luft, H.S., "Managed Care Plan Performance Since 1980: A Literature Analysis," *Journal of the American Medical Association*, Vol. 271, No. 19, May 18, 1994, pp. 1512-1519.

[81] These estimates are after adjusting for the demographic characteristics of people enrolled in these plans.

[82] "Employer Health Benefits: 1999 Annual Survey", The Kaiser Family Foundation and the Health Research and Education Trust, Washington DC, 1999.

Figure 53
Managed Care Savings Compared to Unmanaged Fee-for-Service under Alternative Forms of Managed Care [a/]



a/ Estimates are based upon AETNA Health Plan data. Estimates are adjusted for differences in the health status and demographic characteristics of people in the various types of plans. Estimates are based upon total expenditures including out-of-pocket costs and administrative cost for plans with comparable patient cost sharing requirements. Data did not permit us to distinguish utilization management and discount savings in point-of-service and preferred provider organization plans.
b/ Data were not available to separately measure discount savings and utilization reductions for PPO and POS plans.
Source: Stapleton, D., "New Evidence on Savings from Network Models of Managed Care," (a report to the Healthcare Leadership Council), The Lewin Group, Washington, DC, May 1994.

G. Long Term Effects of Managed Care

We assume that increases in HMO enrollment would result in a reduction in the rate of growth in health spending. There are several studies showing that increases in managed care enrollment result in a sustained, long-run reduction in the rate of growth in health spending throughout the community. For example, using California hospital cost data, Robinson has shown that the growth in hospital costs was slowed after state law changed to permit selective contracting in 1982.[83] Robinson estimated that a ten percentage point increase in HMO enrollment was associated with a 1.5 percentage point reduction in the annual rate of growth in hospital spending. Also, Zwanziger found that the growth in exclusive provider networks in California was associated with reduced hospital cost growth.[84]

Welch also showed that the growth in Medicare costs is reduced as Medicare HMO market share increases and that savings grow over time.[85] Welch's study found that a 10 percentage point increase in managed care enrollment was associated with a 1.0 percentage point reduction in the annual rate of growth in Medicare costs. Moreover, these results suggest that the price

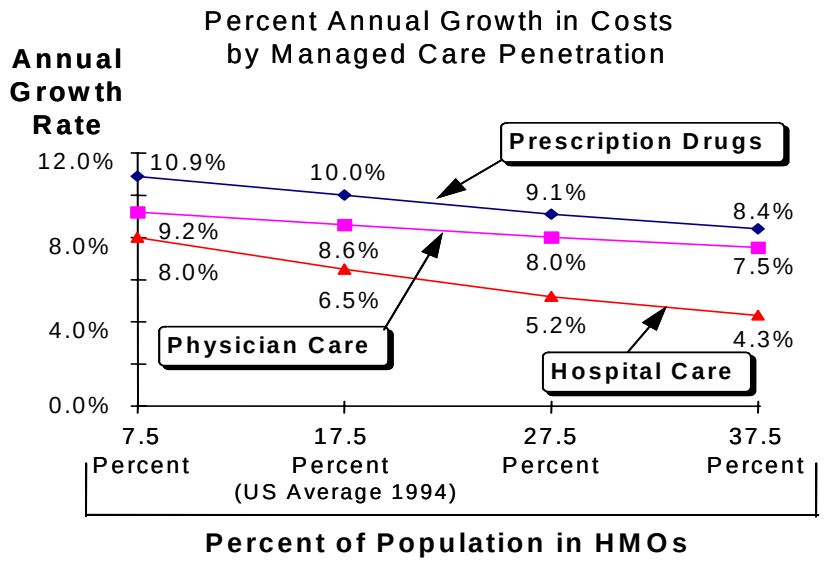
---

[83] Robinson, J.C., "HMO Market Penetration and Hospital Cost Inflation in California," *Journal of the American Medical Association*, 266 (20 November 1991): 2719-23.
[84] Zwanziger and Melnick, "Costs and Price Competition in California Hospitals, 1980-90," *Health Affairs*, Fall 1994.
[85] Welch, W.P., "HMO Market Share and its Effect on Local Medicare Costs," HMOs and the Elderly, Health Administration Press, Ann Arbor Michigan 1994.

competition induced by the selective contracting practices used by managed care plans tends to reduce prices for all insured groups including those who are not covered under the managed care plans. The impact that managed care growth has had on spending for all plans in the community has been called the "spill-over effect."

The Lewin Group conducted a similar study to measure the long-term impact of increases in HMO enrollment on the rate of growth in health spending for hospital services, physicians care and prescription drugs. As shown in ***Figure 54***, our study found that as enrollment in HMOs in a community increases by 10 percent, the annual rate of growth in hospital spending is reduced by 1.3 percentage points. The study also found that a 10 percentage point increase in HMO enrollment was associated with a reduction in the rate of growth in spending for physician's services of 0.6 percent and a 0.9 percent reduction in the rate of growth in prescription drug spending.[86] These savings appear to be attributed to changes in patient utilization and price competition among providers resulting from the selective contracting practices used by managed care plans.

Figure 54
Estimated Impact of Managed Care on Health Spending



Source: The Lewin Group, Inc., "The Cost of Legislative Restrictions on Contracting Practices: The Cost to Governments, Employers and Families," (report to the HealthCare Leadership Council), June 1995.

Based upon this research, we assume that the rate of growth in health spending is reduced as the percentage of people enrolled in HMOs increases. Studies indicate that a 10 percent increase in the number of people enrolled in plans with selective contracting is associated with a reduction in the annual rate of growth in hospital spending of up to 1.5 percent.

---

[86] "Managed Care Savings for Employers and Households: 1990 through 2000", (Report to the American Association of Health Plans (AHP)), The Lewin Group, May 1997.

XIV. CAVEATS

Many of the proposals we have studied have never been attempted on a broad scale in the United States. Consequently there is little data on the likely outcomes of such programs that can be used to estimate their impacts. In particular, programs that substantially restructure the health care financing system (such as single payer proposals) could substantially alter consumer, employer and provider incentives, which could have a significant impact on program costs. Our analyses do not address any potential changes in the quality of care provided under these reform proposals.

Although we attempt to base our analyses on the best data and research now available, the estimates should be considered illustrative of potential program impacts rather than point estimates of actual outcomes. In fact, our analyses indicates that the ultimate impact of these broad-based proposals on government health spending and coverage are very sensitive to assumptions on employer and consumer behavioral responses under the new incentives created by these programs.

Furthermore, we base our estimates on projections of the rate of growth in health spending which are themselves especially sensitive to a number of factors including general economic growth and health care cost trends. For example, it is very difficult to predict state willingness to implement optional expansions in coverage. It is also difficult to predict enrollment behavior among newly eligible groups, many of whom are in substantially different economic and family circumstances than the population currently eligible for public benefits. Consequently, we advise policy makers to recognize that any major health initiative is likely to require continued refinements in program design and financing over time.

Throughout our analyses, we assume that proposals are administratively feasible. However, in many cases such as tax credit and proposals that provide subsidies through a voucher, mechanisms would need to be developed to implement them. Using the tax credit/voucher proposal as an example, there would have to be a way of getting the tax credit to individuals at the time they are purchasing coverage rather than waiting until the following tax filing date in spring to get the credit in a refund from the federal Treasury. This is particularly true for low-income people who cannot afford to "front" the cost of insurance until tax refunds are distributed in the following year.

This problem could be remedied under a program where a uniform tax credit is available to all individuals regardless of income. Under such a system, the insurer could collect the credit from the U.S. Treasury on a monthly basis as partial payment for coverage based on their enrollment ledgers. However, it is unlikely that this approach would be used under a tax credit where eligibility or the amount of the credit varies with income. This is because employers and insurers do not have the information required to determine income eligibility. Moreover, insurers seeking to maximize enrollment would have a conflict of interest in determining whether individuals are eligible for the credit.

Advance payments of the tax credit could be arranged through the employer withholding system as is currently done with the EITC.[87] However, experience with the existing EITC advance payment system suggests that it may not be a very effective means of disbursing advance payments of a health insurance tax credits. This is because the system is sufficiently complex for workers and employers to use that only a small fraction of those who are eligible for the EITC use it. It is doubtful that the advance payment system would be any more effective where health insurance tax credits are concerned. Consequently, it may be necessary to establish an ongoing income eligibility determination process that may operate much like that used in Medicaid.

Experience gained in establishing the Trade adjustment Assistance (TAA) Act could also provide a basis for developing methods for arranging advance payments of these tax credits.

Options for financing health reform proposals vary greatly both publicly and privately. They also could be impacted by federal and state rules regarding approvals that must be required, which can be a risk for the state implementing the reform. Generally, in modeling health reform proposals we take a generalized approach of assuming the appropriate regulatory requirements have been met or approvals provided. In doing so, our fiscal impact analyses would typically provide alternative results depending on whether or not the necessary approvals have been received or regulatory requirements met. Some examples are provided below:

ERISA is a federal law which sets minimum standards for retirement, health benefit, and other welfare benefit plans (e.g., life, disability and apprenticeship plans) in the private industry. While it does not require any employer to establish a plan, it requires that those who establish plans must meet certain minimum standards.

ERISA has also been expanded to include new health laws including the Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA) and The Health Insurance Portability and Accountability Act of 1996. COBRA amended ERISA to provide for the continuation of health care coverage for employees and their beneficiaries, for a limited period, if they lose benefits or if their benefits are reduced (e.g., change jobs). HIPAA amended ERISA to make health care coverage more portable and secure for employees.

In general, ERISA provisions would preempt state laws that attempt to impose employer mandates. Thus, proposals that include employer mandates may run the risk running afoul of ERISA challenge and exposing the state that is proposing the reform to an ERISA challenge. Such proposals include for example: proposals that require employers to provide coverage or pay a tax (i.e., pay-or-play) and proposals that require employers to establish Section 125 cafeteria plans for workers to purchase coverage on a pretax basis.

It is unclear whether these employer requirements would be pre-empted by the Employee Retirement Income Security Act (ERISA). We model the effects of these proposals based on the following assumptions pertaining to ERISA. We assume that such employer requirements

---

[87] Under this advance payment system, the expected amount of the credit is offset against the individual's expected tax payments to allow eligible individuals to receive a greater portion of their gross income in their paycheck. In cases where the refundable EITC amount is greater than the expected tax payment, the difference is available to the individual when needed.

would not be pre-empted by ERISA if challenged in court. Alternatively, we assume that Congress acts to exempt a state that proposes such requirements from ERISA for purposes of implementing the proposal in the particular state.

Many expansions in Medicaid benefits and coverage are eligible for federal matching funds, such as increases in Medicaid and SCHIP eligibility for families, improvements in provider reimbursement and expanded benefits for the existing Medicaid and SCHIP populations. These expansions can be executed by submitting a plan amendment to the Center for Medicare and Medicaid Services (CMS). However, Section 1115 Demonstration waiver waivers are required to obtain federal matching funds to cover non-disabled adults without custodial responsibilities for children, who are not eligible at any income level under the existing programs. Waivers would also required be to provide coverage through premium subsidies for a private health insurance.

One of the rules for granting these demonstration waivers is that the program must not result in an increase in federal funding over what it would have been in the absence of the waiver. Meeting this budget neutrality requirement is likely to be difficult for programs that expand coverage to non-disabled non-custodial adults. However, some of the waivers allowing the state to cover newly eligible children and parents through a more limited benefits package may be easier to obtain since this would be less costly than covering these groups under the Medicaid and SCHIP benefits if covered through a plan amendment. In all of these cases, we present results for both of the proposals with and without an approved demonstration waiver.

Under single-payer proposals, we assume the federal government would provide a state with a lump-sum payment (i.e., block grant) for what the federal government would have spent for the state, under these programs, under current law. For illustrative purposes, we assume that Congress would act to provide these block grants to the state.

ATTACHMENT A:
Estimating a Participation Function for the Medicaid Program

In this analysis, we developed two multivariate models of participation among people who are eligible for public health insurance coverage. The first is a model of enrollment for people who meet the income, eligibility and family composition requirements of the Medicaid program. The second is a model of enrollment in public health coverage programs where the eligible family/person is required to pay a portion of the cost of coverage in the form of a premium.

In general, our approach was to estimate the number of people who meet the income and family structure requirements (e.g., families with children, etc.) of these programs in each state. We then developed a multivariate model of how the percentage of eligible people who enroll varies with age, income, work status and other factors affecting enrollment. These multivariate models are then used in our Medicaid eligibility simulation model (MedSIM) to estimate the number of newly eligible people who would enroll. Thus, our approach is to extrapolate from the enrollment behavior of the currently eligible people to people who would be newly eligible for the program.

A. Medicaid Participation

The available data indicate that there are a large number of people who appear to be eligible for Medicaid who do not enroll. In this analysis, we estimated the percentage of income eligible people who participate in the program by category of eligibility using the March Current Population Survey (CPS), after correcting for under-reporting of Medicaid coverage. Based upon these data, we estimated a multivariate model of how program participation varies by age, income, health status and other socio-economic characteristics. This multivariate model was then used in our simulation models to estimate the proportion of newly eligible people who enroll under the various proposals to expand eligibility for Medicaid.

The data used in this analysis was the March 1998 CPS, which includes income and coverage data for 1997. The CPS is a representative sample of the population which includes both U.S. citizens and foreign nationals living in the U.S. For each person in each household selected for the survey, these data provide information on key demographic characteristics such as age, sex, race, ethnicity, family type, source of health coverage, state of residence, and health status. These data also provide information on income from various sources, employment status and weeks of employment. These data permit us to identify people who meet the various categories of eligibility such as children, single parent families, two parent families and the aged. They also enable us to estimate monthly family income reflecting changes in employment status during the year.[88]

---

[88] The CPS data report annual income for each individual. We used the MedSIM model to allocate income over the months of the year. For example, annual income from earnings is distributed across the reported number of weeks of employment; unemployment compensation is distributed over the reported number of weeks of unemployment; Workers Compensation is typically allocated over weeks not in the labor force; and income from Social Security, pensions and investments is uniformly allocated across each month.

We used the Lewin Group Medicaid eligibility simulation model (MedSIM) to estimate the number of people who appear to meet the eligibility criteria for the program using these monthly income data and the actual income eligibility criteria used in each state's program. The model first organizes the CPS population into program filing units, which consist of families or specific family subgroups. For example, parents and their children are grouped together as a single family while unmarried adults are typically treated as separate filers even if they are living with others.[89]

The model starts by identifying the filing units that qualify for coverage under the program. Typically, families with children are potentially eligible while non-disabled childless adults generally are not, except in waiver states. The model then determines eligibility for each filing unit on a month-by month basis using the actual income eligibility levels used in their corresponding state of residence.

Using this approach, we estimated the average monthly number of eligible people by category of eligibility. As shown in ***Figure A-1***, we estimate that there were on average, about 43.0 million people who were eligible for the program during 1997.[90] About 14.8 million of these people were eligible under the Aid to Families with Dependent Children (AFDC) and AFDC-related income eligibility criteria while about 8.6 million were eligible under the Supplemental Security Income program (SSI).[91,92] It also includes about 3.1 million people who had incomes between the Aid to Families with Dependent Children (AFDC) program payment standard and the medically needy income eligibility level.

There were another 11.5 million pregnant women and children with incomes above the AFDC and/or medically needy income standards who were eligible under the various expansions in eligibility to the poverty level and beyond adopted by Congress in the early part of the 1990s. In addition, we estimate that about 5.0 million low-income Medicare beneficiaries who are eligible for supplemental benefits under the QMB and SLMB programs under Medicaid.[93]

---

89 Households can include multiple filing units. For example, a single woman with three children who lives with an aged parent would include two filing units: one for the mother and her children; and one for the grandparent.

90 Excludes people in institutions (e.g., nursing homes).

91 These are the income eligibility levels that, before welfare reform, were used to determine eligibility and cash assistance benefits under the Aid to Families with Dependent Children (AFDC) program, now called the Transitional Assistance for Needy Families (TANF) program. People were assumed to meet the disability criteria under the Supplemental Security Income (SSI) program if they are: non-age people who reported they were receiving social security benefits or Medicaid coverage; or non-aged people who reported disability as a reason for being out of the labor force.

92 Includes children age 1 to 5 below 133 percent of the FPL, children ages 6 to 15 below 100 percent of the FPL and pregnant women with incomes below 133 percent the FPL (185 percent of the FPL at the states option).

93 Includes people eligible for Medicaid payment for Medicare co-payments and the Medicare Part-B premium as a Qualified Medical Beneficiary (QMB). Also includes Medicare beneficiaries that qualify for Medicaid payment of their Part-B premium as Special Low-Income Medicare Beneficiaries (SLMBs).

Figure A-1
Estimates of the Number and Percent of People Eligible for and Enrolled in Medicaid on an Average Monthly Basis by Category of Eligibility Using CPS and Program Data in 1997[a/]

		CPS Reported Data: Under-reported		Program Enrollment Data: Fully Reported	
	People Eligible (1,000s)[b/]	People Enrolled (1,000)[c/]	Percent Enrolled	People Enrolled (1,000s)[d/]	Percent Enrolled
AFDC and AFDC-Related[e/]	**14,816**	**9,751**	**65.8**	**12,073**	**81.5**
Children	9,275	6,040	65.1	7,799	84.1
Pregnant Women	541	432	79.9	498	92.0
Other Adults	4,322	3,279	65.6	3,778	87.4
Medically Needy	**3,757**	**2,007**	**65.2**	**2,811**	**74.8**
SSI Population	**8,563**	**4,366**	**51.0**	**6,323**	**73.8**
Aged	3,515	1,185	33.7	2,504	71.2
Disabled[f/]	5,078	3,181	62.6	3,819	75.2
QMB/SLMB Population[g/,h/]	**4,983**	**1,051**	**21.1**	**1,679**	**33.7**
Expansion Groups	**11,507**	**5,621**	**48.9**	**7,853**	**68.3**
Children	10,595	5,123	48.4	7,042	66.5
Pregnant Women	912	498	54.6	811	88.9
TOTAL	**42,978**	**22,796**	**53.0**	**30,739**	**71.5**

a/ Excludes people in institutions. All counts are on an average monthly basis.
b/ The number of people who are eligible for Medicaid was estimated from March 1998 CPS data.
c/ Includes people who reported that they were enrolled in the year prior to March 1998 CPS.
d/ Average monthly enrollment by eligibility group derived from the HCFA 2082 data. Excludes 1.3 million institutionalized Medicaid recipients.
e/ Includes children who qualify under the AFDC income limits but are not receiving cash assistance.
f/ People were assumed to meet the disability criteria if they report illness or disability as the primary reason for not being employed or out of the labor force. We are unable to identify in the CPS children who are eligible for, but not enrolled as SSI disabled children.
g/ Includes people eligible for Medicaid as a supplement to their Medicare coverage including Qualified Medicare Beneficiaries (QMBs) and people eligible for Medicaid coverage of their Medicare Part-B premiums as Special Low-Income Medicare Beneficiaries (SLMBs).
h/ Includes 663,000 disabled people who are age 65 or older. See *Social Security Bulletin*, Winter 1995.
Source: Lewin Group estimates using the Medicaid Eligibility Simulation model (MedSIM) and the 1998 and 1999 Current Population Survey (CPS) data.

The CPS data report that of the 43.0 million people eligible for the program, only about 22.8 million were enrolled in any given month.[94] This is an overall average participation rate of 53.0 percent. The percent participating ranged from a low of 21.1 percent for the QMB and SLMB group to a high of 79.9 percent among pregnant women who are AFDC eligible.

However, the CPS reports substantially fewer Medicaid recipients than actually participated in the program as reported in the Medicaid program data. According to program data, there were an average of about 30.7 million people enrolled in each month during 1997 (excludes people in nursing homes). Thus, the CPS under-reports Medicaid enrollment by about 25 percent. When we compare actual program enrollment to our CPS estimate of the number of eligible people, we get an overall average participation rate of about 71.5 percent.

1. Multivariate Participation Model

We used these simulated eligibility data to estimate a multivariate model that summarizes how the percentage of eligible people enrolling varies with the characteristics of the individual. The data used in this model includes all people simulated to be eligible for the Medicaid program based upon the income eligibility levels used by each state in 1997. We included only the eligibility groups that are expected to be most like the groups that would become covered under the proposed eligibility expansions. These include the AFDC and AFDC-related people, people meeting the medically needy income level (i.e., excluding the spend-down population) and children who became eligible under the various children's eligibility expansions in the early 1990s. The aged and the disabled were excluded because their circumstances are sufficiently unique that we do not believe we can extrapolate from their experience to the newly eligible groups. Eligible people were classified as participants if they indicated in the CPS that they were enrolled under Medicaid (our correction for under-reporting is discussed below).

We estimated a logistic function from these cross-sectional data using the maximum likelihood method. The model is of the form: $\ln\left(\frac{p}{1-p}\right) = z,$ where P is the proportion of eligible people who enroll, and z represents the sum of the products of the estimated coefficients and the corresponding values of the explanatory variables (i.e., age, income, etc.). This approach was used because it has the feature of bounding the model's estimate of the proportion of eligible people with Medicaid between 0.0 and 1.0

In the cross-sectional estimation, the dependent variable is equal to 1.0 if the eligible individual participated in the program and 0.0 if the individual was eligible but not enrolled. The explanatory variables include age, sex, race, ethnicity, self-reported health status, income, and whether or not this family includes a worker. We also included a variable indicating whether the individual is eligible for cash assistance to measure how this dual eligibility affects enrollment. This variable is likely to be a good predictor of enrollment even though the linkage

---

[94] Months of enrollment were derived in four steps. First, the CPS includes a question on the number of months enrolled in Medicaid. Second, we assumed that people who reported employer sponsored coverage were covered during each of the months in which the policyholder was employed (months were derived from the reported number of weeks worked). Third, people who reported Medicare or CHAMPUS coverage, were assumed to be covered all year. Fourth, people reporting non-group private coverage were assumed to be covered under this policy during months when they did not have coverage from some other source.

between cash assistance and Medicaid has been eliminated under welfare reform. In addition, we included variables indicating whether the individual has access to employer coverage through a parent or a spouse (i.e., spouses and parents with employer coverage).

The chi-square statistics for the model indicated that these variables were statistically significant at the 99.9 percent confidence level (***Figure A-2***). We also estimated the same model using the ordinary least squares (OLS) model specification and found that all of the variables were significant at this level except for the Asian status variable which was significant at only the 95 percent confidence level.

Figure A-2
Logistic Estimate of Medicaid Participation Function[a/]

Variable Name	Variable Definition	Parameter Estimate	Pr> Chi-Square
Intercept		1.0597	0.0001
Age 6	Age less than 6	-0.7273	0.0001
Age 12	Age 6 – 12	-0.6338	0.0001
Age 18	Age 13 – 18	-0.8527	0.0001
Age 24	Age 19 – 24	-0.6029	0.0001
Age 34	Age 25 – 34	-1.0297	0.0001
Age 45	Age 35 – 45	-1.0604	0.0001
Poor H	In poor health	1.1464	0.0001
FairH	In fair health	0.9178	0.0001
GoodH	In good health	0.3957	0.0001
Vgood	In very good health	0.2044	0.0001
WorkFam	Worker in family	-0.3383	0.0001
Fincome	Family income/100,000	1.9258	0.0001
Black	Black	0.1602	0.0001
Asian	Asian	-0.0991	0.0001
Hispanic	Hispanic	-0.2242	0.0001
CashElig	Also eligible for cash assistance	0.4432	0.0001
PrivateC	Parent with employer coverage	-1.0829	0.0001
PrivateS	Spouse with employer coverage	-0.6872	0.0001

a/ The omitted age group is age 55 and older.
Source: Lewin Group estimates.

The estimated coefficients for the logit model are difficult to interpret because the logit function is essentially non-linear and is expresses in terms of the natural log probability distribution. However, the direction of the effects can be readily interpreted based on the sign (positive or negative) of the estimated coefficients. We can also examine the relative importance of the variables included in the equations by comparing the size of the various coefficients.

The signs of the estimated coefficients are generally consistent with what we would expect. For example, the likelihood of enrollment is highest for people in poorer health (the omitted value for health status is "excellent" health). Also, people who are eligible for cash assistance have a greater likelihood of enrolling. The probability of enrollment also declines among families with workers, which may reflect the availability of employer-sponsored coverage for some lower-income workers. In addition, the equation shows that the likelihood of enrollment increases with income, which is generally consistent with the idea that income increases, people are more likely to seek coverage as a means of asset protection.

The impact of age on enrollment varies by age group. The equation indicates that the percentage of people enrolled in the program generally declines with age, where age 55 to 64 is the omitted age group. Among the remaining age groups, young adults age 19 to 24 have the highest enrollment rate (i.e., the negative value on the age variable for this group is lower that among other age groups). This may reflect the fact that this age group includes a large share of pregnant women who have a much higher enrollment rate than other eligibility groups (see ***Figure A-1*** above).

This function is built into the MedSIM model and is used to simulate enrollment under various expansions in eligibility. The model first identifies individuals in the CPS data that are eligible under the income and eligibility criteria specified in the policy (e.g., increased income eligibility levels; coverage for non-disabled childless adults). The equation shown in ***Figure A-2*** is then used to estimate the probability (ranging from 0.0 to 1.0) that these individuals would enroll under the program based upon their demographic and economic characteristics. Individuals are then randomly selected to enroll based upon the estimated probability that they would participate. Thus, we extrapolate from the enrollment behavior of currently eligible people under current policy to estimate enrollment for newly eligible groups.

1. *Impact of Premiums on Enrollment*

As policy makers consider increasing the income eligibility levels for Medicaid/SCHIP, an increasing number of proposals have emerged that would require individuals to pay some portion of the cost of the coverage in the form of a premium. For example, under SCHIP, states are permitted to require premiums for children living above 150 percent of the FPL as long as total cost sharing does not exceed five percent of income. Several proposals would also permit states to require such premiums for the adults that they propose to cover under the Medicaid/SCHIP model.

Premium contribution requirements are expected to reduce the percentage of eligible people who enroll. In fact, reduced participation has been reported in states that have established even very small premium requirements including Tennessee and Washington. However, there is little data available on the impact of premium contribution requirements on enrollment.

In this analysis, we developed an equation which measures how participation varies with the amount of the premium contribution using data on people eligible for the programs covering adults under the Washington Basic Health Plan (BHP) and the MinnesotaCare program. The Washington program covers adults through 200 percent of the FPL under their basic health plan program where enrollees are required to pay a premium. Minnesota has a similar program, which covers adults through 275 percent of the FPL, also with a premium requirement.

We estimated a participation function for these two programs using CPS data. The CPS identifies people who are covered under public programs other than Medicaid. Using MedSIM, we were also able to estimate the number of people who are eligible for the programs in these two states using the actual eligibility provisions for these state programs. We determined the premium that each individual would be required to pay using the actual premium schedules used in these two programs. In both states, the amount of the premium payment increases with the income of the family/individual. This analysis includes all people who appear to be eligible for the program regardless of actual insured status.

We used these data to estimate a participation function which measures the impact of premiums on the likelihood of enrollment. To increase sample size, we pooled the Washington and Minnesota CPS data for 1997, 1998 and 1999. We estimated a logistic function similar to that described above which includes a parameter for the premium amount. The results of this estimation are shown in ***Figure A-3***.

Figure A-3
Estimated Logistics Model of Participation for
Public Programs that require a Premium Contribution

Variable Name	Variable Definition	Parameter Estimate	Pr> Chi-Square
Intercept		-0.7482	0.0001
FamIncom	Family Income	0.000012	0.0001
Premium	Premium Contribution Amount (monthly)	-0.0007	0.0001
LY19	Age less than 19	-0.1280	0.0001
LT30	Age 19 – 29	-0.6399	0.0001
LT45	Age 30 – 44	0.000744	0.0001
PoorH	Poor health	1.8335	0.0001
FairH	Fair health	0.7250	0.0001
GoodH	Good health	0.4021	0.0001
Black	Black	0.1746	0.0001
Working	Worker in family	0.1928	0.0001
FamSize1	Family size of 1	-1.3399	0.0001
FamSize2	Family size of 2	0.3053	0.0001

Source: Lewin Group Estimates.

Based upon this analysis, we estimate that even a small premium requirement substantially reduces the probability of enrolling in the program. For example, the participation rate for an "average adult" would decline from about 65 percent without a premium requirement (as indicated in our analysis of Medicaid enrollment above), to about 39 percent with even a very

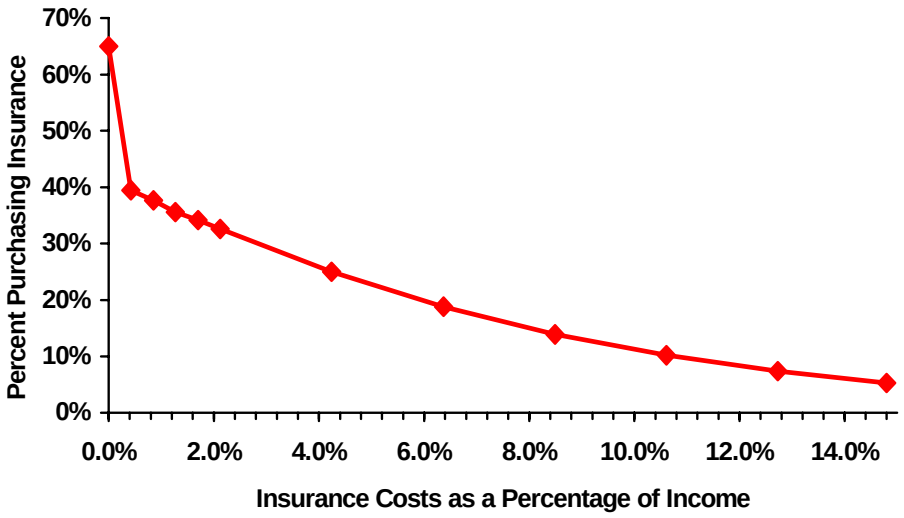
small premium.[95] The likelihood of participating is reduced even more as the premium amount is increased.

The participation function shown in ***Figure A-4*** was used to simulate enrollment for all individuals facing a premium under the various coverage 2000 proposals.

2. Under-reporting

As discussed above, the participation functions described above are estimated from CPS data, which under-reports Medicaid enrollment by about 23 percent. Thus, these functions are likely to under-estimate enrollment under the various eligibility expansions. Consequently, we increased the predicted probabilities of participating by 23 percent under both participation functions.

Figure A-4
Estimated Percentage of People Who Will Take Subsidized Coverage by Premium Cost as a Percentage of Family Income[a/, b/]



a/ Based upon percentage of people eligible to participate in Medicaid who enroll.
b/ Probabilities of enrollment initially based upon the percentage of people without insurance who purchased non-group coverage by family income as a percentage of income.
Source: Lewin Group Estimates.

3. Crowd-out

As discussed above, we estimate that about 40 percent of eligible children with access to employer coverage in the current program would terminate their private coverage and shift to Medicaid. Based on these data, we assume that on average about 40 percent of newly eligible people who have employer-sponsored insurance would enroll under the coverage expansions.

---

[95] We used the Medicaid participation function to estimate the probability of enrollment for an individual with the average value for each of the explanatory variable. The participation function shown in **Figure A-3**, was then used to estimate the percentage of people who would enroll at a given premium level using the same method.

This is less than the average enrollment rate for people with no other source of coverage (estimated to be about 78 percent).

To account for this coverage substitution effect, we calibrated the predicted probability of enrollment from the equations discussed above to show an overall average enrollment level of 40 percent for newly eligible people with employer coverage. This approach adjusts the overall average enrollment rate for this group to the predicted level while permitting enrollment rate variation by income, age and other factors controlled for in our participation functions.[96]

4. People Eligible Under Current Law

In general, we assume that people who are eligible but not enrolled under the current Medicaid/SCHIP program will not enroll under future expansions of Medicaid eligibility. For example, our analysis indicates that on an average monthly basis, there are about 43.0 million people eligible for Medicaid, of whom only about 30.7 million are enrolled under the program (see ***Figure A-1*** above). This leaves about 12.2 million (i.e., 43.0 – 30.7) Medicaid eligible people who are not enrolled.

We assume that these individuals are not induced to enroll in the program due to changes in eligibility that do not affect them. However, we do simulate an increase in enrollment for currently eligible non-participating Medicaid/SCHIP children in cases where their parent(s) become eligible and enrolled under a coverage expansion proposal. We also estimate an increase in enrollment among currently eligible people under proposals that emphasize increased outreach or provide additional subsidies to states as an incentive to increase enrollment. The methods that we use to simulate these initiatives are typically tailored to the individual proposal.

[96] The overall average predicted enrollment rates for people with incomes below 200 percent of the FPL have averaged about 70 percent for uninsured people and 45 percent for people with coverage from other sources.

ATTACHMENT B:
The Impact of Price on the Purchase of Insurance by Individuals

In this analysis, we estimated the impact of health insurance tax credits and/or vouchers on the number of people with insurance coverage. The principle behind these subsidy models is that these various tax subsidies effectively reduce the net cost of health insurance to the individual, which increases the proportion of people purchasing coverage. Therefore, our analysis focused on measuring the change in coverage resulting from a given change in the net after-tax price of insurance.

The key assumption in our analysis is the assumed price elasticity for demand for insurance. Price elasticity is defined as the percentage change in people purchasing coverage given a 1.0 percent change in price. The elasticity estimate that we used in this analysis is based on an analysis of the impact of changes in the employee contribution amount in employer plans on the number of workers and dependents taking coverage conducted by The Lewin Group, Inc., in 1998.[97]

We developed a model of the price elasticity for private insurance using coverage data from the Current Population Survey (CPS) for 1989 through 1996. In this attachment, we describe the data and methods used to develop this price response model.

A. Data and Methods

Our analysis is based on the CPS data for 1989 through 1996. The CPS is a survey of households conducted by the Bureau of the Census. It includes information on employment, earnings, and sources of health insurance coverage. We pooled the CPS data for each year between 1989 and 1996 to create a pooled time-series, cross-sectional database. These data provide much of the information required to measure the impact of changes in demographic and economic factors on the level of employer coverage over time. For example, these data provide the information required to analyze how employer coverage has changed as a result if changes in earnings, industry of employment, and other employment and demographic characteristics of workers.

While the CPS data provide much of the information required to measure factors affecting coverage, they do not provide information on the price of insurance. To correct for this, we imputed the amount of the employee share of premium payments to workers in the CPS who indicated that they have employer coverage on their jobs. We did this based on the average employee share of premiums for single and family coverage reported in the National Medical Expenditures Survey (NMES) for workers with employer coverage. These data were adjusted over time based on the average rates of growth in employee spending as reported in two data sources. These were the KPMG Peat Marwick employer surveys for 1991 through 1996, and the Health Insurance Association of America (HIAA) survey data for employers from 1988 through 1990.[98,99] In addition, we adjusted the share of the premium paid by the worker based on the

---

[97] Sheils, J., Hogan, P., and Manolov, N., "Exploring the Determinants of Employer Health Insurance Coverage," (Report to the AFL-CIO), 1998.

[98] Hewitt Associates 1996, "Salaried Employee Benefits Provided by Major U.S. Employers in 1990 and 1995: A Comparison Study," 1996.

average percentage of premiums for employer coverage paid by the employee as reported in these employer surveys for 1988 through 1996. These premium data are presented below in ***Figure B-2.***

The average premium for employer-sponsored health benefits has been increasing more rapidly for family coverage than for single coverage. Between 1988 and 1996, average premiums for family coverage increased by 111 percent, from $2,530 in 1988 to $5,349 by 1996. Premiums for single coverage increased by only 79 percent over that period, from $1,153 in 1988 to $2,059 in 1996 (***Figure B-1***). This may help explain much of the rapid decline in employer-sponsored insurance for children in these years.

However, the overall average percentage of premiums paid by employees has increased more rapidly for single coverage than for family coverage. The reason for this is that while most firms have long required at least some contribution toward family coverage, many firms did not require a contribution for employee-only coverage until recently. For example, the Bureau of Labor Statistics (BLS) reports that the percentage of workers required to contribute to the cost of single coverage increased from 28 percent in 1980 to 63 percent by 1993. By comparison, the percentage of workers required to contribute to family coverage increased from 49 percent in 1980 to 79 percent in 1993. Thus, the overall average percentage of the premium paid by the worker increased more rapidly for employee-only coverage than for family coverage over the 1988 through 1996 period.

Over the 1988 through 1996 period, average employee contributions for health benefits increased by 283.9 percent for employee-only coverage and 145.6 percent for family coverage. Adjusting for inflation, the real increase in average employee premium contributions over the 1988 through 1996 period was 189.4 percent (14.2 percent annually) for employee-only coverage and 85.1 percent (8.0 percent annually) for family coverage. This reflects both increases in premiums and increases in the share of the premium paid by the worker. The premium contribution amounts that we imputed to the CPS data for the 1989 through 1996 period reflect these estimates of the differential growth in premium contributions for employee-only and family coverage.

---

[99] This was done by solving the multivariate models that we estimated as described above where the means for demographic variables were changed from their 1989 levels to the actual levels in each year while holding all economic variables (such as premiums, earnings levels, and industry of occupation) constant at their 1989 levels. These equations were normalized to actual reported coverage levels in each year to ensure that predicted values are comparable to actual coverage levels.

Figure B-1
Growth in Employee Premium Share for Employer Coverage 1998 Through 1996 [a/]

	Employee-Only Coverage				Family Coverage			
	Average Premium	Percent Paid by Worker [b/]	Average Contribution [c/]	Real Growth in Employee Share [d/]	Average Premium	Percent Paid by Worker [b/]	Average Contribution [c/]	Real Growth in Employee Share [d/]
1988	$1,153	10.2%	$118	- -	$2,530	26.0%	$658	- -
1989	$1,360	13.9%	$189	52.8%	$2,985	25.0%	$746	8.1%
1990	$1,537	14.9%	$229	14.9%	$3,585	28.0%	$1,004	27.7%
1991	$1,738	13.0% [e/]	$226	-5.3%	$4,307	23.0% [e/]	$991	-5.3%
1992	$1,883	16.6%	$313	34.5%	$4,747	25.5%	$1,210	18.5%
1993	$2,040	16.3%	$333	3.0%	$5,232	26.6%	$1,392	11.7%
1994	$2,111	16.2%	$342	0.4%	$5,512	28.4%	$1,565	9.7%
1995	$2,042	19.9%	$406	15.4%	$5,284	29.4%	$1,553	-3.5%
1996	$2,059	22.0%	$453	8.4%	$5,349	30.2%	$1,615	1.0%
Average Annual Growth 1988 - 1996	7.5%	10.1%	18.3%	14.2%	9.8%	1.9%	11.9%	8.0%
Total Percent Growth 1988 – 1996	**78.6%**	**115.7%**	**283.9%**	**189.4%**	**111.4%**	**16.2%**	**145.6%**	**85.1%**

a/ KPMG Peat Marwick, 1991-1996 and HIAA data for 1988-1990.
b/ This is the overall average percentage of the premium paid by the worker, including both covered workers who contribute to the cost of coverage and those who are not required to make an employee contribution.
c/ Estimate reflects the combined effect of premium price increases and increases in the percentage of the premium paid by the worker.
d/ Includes adjustment for inflation.
e/ There are differences in the survey methods used in the HIAA and the KPMG survey designs that make these data less than strictly comparable. This may be the reason for the abrupt drop in the percent of premium paid by workers between 1990 and 1991.
Source: Lewin Group estimates.

Figure B-2
Premiums for Employer Sponsored Health Insurance in 1996

Coverage Type	Industry	Employee Share of Premium								Total Premium							
		Firm Size								Firm Size							
		< 10	10-24	25-99	100-499	500-999	1000+	Gov	Total	< 10	10-24	25-99	100-499	500-999	1000+	Gov	Total
Single	Construction	339	269	327	653	1,104	403	--	402	1,409	2,130	1,181	1,288	2,343	1,506	--	1,464
	Manufacturing	262	65	436	309	376	521	--	405	1,985	1,857	1,732	1,621	1,696	1,819	--	1,756
	Transportation	722	722	340	540	255	274	--	355	1,322	1,313	1,524	1,654	1,844	2,190	--	1,824
	Wholesale	135	135	177	549	119	619	--	387	1,504	2,040	1,683	1,653	2,144	1,781	--	1,757
	Retail	496	467	409	546	977	524	--	518	1,801	2,290	1,637	1,451	1,672	1,699	--	1,742
	Services	214	467	351	491	587	430	--	398	1,906	1,884	1,914	2,003	1,893	2,195	--	2,013
	Finance	108	216	531	795	398	583	--	491	1,947	1,687	1,863	1,834	1,769	1,910	--	1,876
	Federal Gov	--	--	--	--	--	--	616	616	--	--	--	--	--	--	1,346	1,346
	State Gov	--	--	--	--	--	--	187	187	--	--	--	--	--	--	1,377	1,377
	Local Gov	--	--	--	--	--	--	112	112	--	--	--	--	--	--	1,522	1,522
	Other	6	1,058	27	147	63	281	--	52	268	1,512	1,790	1,653	1,780	1,967	--	403
	Total	165	406	373	464	509	475	266	364	1,161	1,900	1,737	1,754	1,826	1,961	1,430	1,651
Family	Construction	730	1,671	521	1,162	2,637	1,023	--	970	3,774	3,618	4,258	5,237	6,215	4,132	--	4,255
	Manufacturing	660	1,624	2,187	1,057	1,107	1,182	--	1,270	3,314	5,213	4,615	4,034	3,884	4,084	--	4,134
	Transportation	853	2,315	648	1,289	1,351	720	--	935	3,101	4,562	4,556	3,920	4,267	4,496	--	4,293
	Wholesale	--	827	1,764	1,447	1,694	1,438	--	1,242	3,096	4,324	4,357	4,044	4,598	4,410	--	4,091
	Retail	746	1,382	2,111	1,655	1,011	1,488	--	1,382	3,612	4,237	4,318	4,028	3,351	4,608	--	4,279
	Services	715	1,638	1,986	1,816	1,950	1,391	--	1,496	3,468	4,836	4,967	4,220	4,636	4,778	--	4,475
	Finance	1,066	2,961	2,289	1,522	1,012	1,531	--	1,564	3,575	4,523	4,699	3,946	4,230	5,699	--	4,934
	Federal Gov	--	--	--	--	--	--	1,224	1,224	--	--	--	--	--	--	4,625	4,625
	State Gov	--	--	--	--	--	--	953	953	--	--	--	--	--	--	4,695	4,695
	Local Gov	--	--	--	--	--	--	849	849	--	--	--	--	--	--	4,751	4,751
	Other	253	3,351	607	934	731	1,001	--	483	1,124	5,619	3,582	4,474	2,723	2,723	--	3,374
	Total	594	1,564	1,746	1,392	1,475	1,251	961	1,218	2,775	4,602	4,578	4,144	4,248	4,248	4,705	4,355

Figure B-2 (continued)
Premiums for Employer Sponsored Health Insurance in 1996

Marginal Cost	Industry	Employee Share of Premium								Total Premium							
		Firm Size								Firm Size							
		< 10	10-24	25-99	100-499	500-999	1000+	Gov	Total	< 10	10-24	25-99	100-499	500-999	1000+	Gov	Total
Marginal Cost of Buying Family Coverage	Construction	391	1,402	194	509	1,532	620	--	568	2,366	1,487	3,076	3,949	3,872	2,626	--	2,791
	Manufacturing	398	1,559	1,751	748	730	661	--	864	1,329	3,355	2,833	2,414	2,188	2,264	--	2,378
	Transportation	846	1,593	308	749	1,096	446	--	580	1,779	3,249	3,032	2,423	2,423	2,306	--	2,469
	Wholesale	--	692	1,586	898	1,575	818	--	854	1,592	2,284	2,673	2,454	2,454	2,629	--	2,334
	Retail	251	915	1,702	1,109	34	964	--	865	1,811	1,946	2,681	1,679	1,679	2,909	--	2,537
	Services	500	1,171	1,636	1,325	1,362	960	--	1,098	1,562	2,952	3,054	2,744	2,744	2,583	--	2,462
	Finance	958	2,745	1,758	727	614	949	--	1,074	1,628	2,837	2,837	2,461	2,461	3,789	--	3,058
	Federal Gov	--	--	--	--	--	--	608	608	--	--	--	--	--	--	3,279	3,279
	State Gov	--	--	--	--	--	--	767	767	--	--	--	--	--	--	3,318	3,318
	Local Gov	--	--	--	--	--	--	737	737	-	--	--	--	--	--	3,229	3,275
	Other	247	2,296	580	787	667	720	--	431	856	4,107	1,792	2,820	943	2,959	--	2,917
	Total	429	1,158	1,373	928	966	776	696	854	1,614	2,702	2,842	2,390	2,422	2,605	3,275	2,705

Source: Lewin Group analysis of KPMG Peat Marwick survey of employers for 1996.

Using the CPS data for 1989 through 1996, we estimated three separate multivariate models of employer-sponsored health insurance coverage for workers, dependent spouses, and dependent children. The first multivariate model estimates the probability that a worker is covered by an employer plan. The explanatory variables include demographic characteristics that are correlated with coverage such as age, race, ethnicity, marital status, and whether the individual is the family head. The model also includes employment-related variables such as industry and occupation of the worker, the size of the employing firm, the full-time/part-time status of the worker, and worker earnings. We also included a variable indicating whether individuals are covered under Medicaid to measure the impact of expanded coverage under Medicaid on employer coverage levels. In addition, we included the imputed amount of the employee share of the premium, which over time reflects changes in both premium amounts and the percentage of the premium paid by the worker.[100]

The second multivariate model estimates the likelihood that spouses of covered workers will have coverage as a dependent spouse. The explanatory variables used in the model include age, race, ethnicity, family income, and an estimate of the incremental cost of electing the family coverage option. The incremental cost of coverage was calculated by taking the difference between the average family premium and the average employee-only coverage premium for a given firm size/industry group. The third model, which is similar to the model of spousal coverage, estimates the likelihood that children of parents who have employer coverage will be covered as dependents.

These multivariate models were estimated using a logit estimation methodology, which is ideally suited to estimate models where the dependent variable is bounded between zero and one. These models provide a basis for measuring the impact of the price of insurance and various economic and demographic factors on the level of coverage for workers and dependents over the 1989 through 1996 period, given the level of employment in these years. They also provide a basis for projecting coverage levels in future years under alternative assumptions concerning premium growth, employee contribution shares, and other economic factors in future years.

1. *Multivariate Analysis*

As discussed above, we developed multivariate models that show how the proportion of people with employer coverage changes as demographic and economic factors change over time. We did this by estimating logistic functions of the form $\ln\left(\frac{p}{1-p}\right) = z,$ where p is the proportion of people with employer coverage, and z represents the sum of the products of the estimated coefficients and the corresponding values of the explanatory variables (i.e., earnings, age, etc.). This approach has the unique feature of bounding the model's estimates of the proportion of people with employer coverage to between 0.0 and 1.0. In general, the explanatory variables that we included in these employer coverage models were statistically significant at the 99.5 percent confidence level.

---

[100] In addition, we included time variables that were used to account for changes in the CPS health insurance questionnaire over the 1988 through 1996 period.

As discussed above, the estimated coefficients for the logit model are difficult to interpret because the logit function is essentially non-linear. However, the direction of effects can be interpreted based on the sign (positive or negative) of the estimated coefficients. For example, the workers equation generally indicates that Blacks, Hispanics and Asians are less likely to have coverage than is the average population ***(Figure B-3).*** These estimates also show that coverage levels go down as the employee contribution amounts increase and that coverage increases as income rises. In general, the direction of the effects estimated for the various explanatory variables is as expected. However, it is difficult to discern the magnitude of these effects from the coefficients.

To measure the magnitude of the effects of these variables, we solve the estimated equations under selected variations in the explanatory variables. Solving the equation simply means computing the proportion of people with coverage by use of the estimated coefficients and various assumptions on the mean values of the explanatory variables.[101] For example, we can obtain the average coverage levels in 1996 by solving these equations for that year using the actual means for the explanatory variables in that year.[102] We can then test the sensitivity of estimated coverage levels to changes in the employee premium contribution amount by varying the assumed premium level from the 1996 value and calculating the change in the estimated coverage level. Similarly, the sensitivity of coverage to changes in other explanatory variables can be estimated using this method.

---

[101] The estimated equations are solved as $p = \frac{1}{1+e^{-z}}$, where *p* equals the proportion of people with employer coverage, and *z* is the sum of the products of the assumed values of the explanatory variables and their respective coefficients.

[102] We normalized the model estimates to the actual levels of coverage in each year to assure comparability with actual data.

Figure B-3
Estimated Parameters for Logistic Health Insurance Coverage Equations [a/]

Worker Coverage Equation [b/]	
Variable	**Parameter Estimate**
Intercept	-2.2193 *
Black	-0.2473 *
Hispanic	-0.4089 *
Asian	-0.2549 *
Married Family Head	0.0324 *
Spouse of Family Head	-0.4789 *
Age/100	5.1666 *
Age/100 Squared	-4.3975 *
Earnings/100,000 [c/]	3.1224 *
Full-Time Worker	1.2653 *
Premium Amount/1000 [d/]	-0.7579 *
Covered by Medicaid	-1.1174 *
Covered by Medicare	-0.5279 *
High-Coverage Occupation [e/]	0.4636 *
High-Coverage Industry [f/]	0.3112 *
Firms with Fewer than 25 Workers	-1.7485 *
25 - 99 Workers	-0.6366 *
100 to 999 Workers [j/]	-0.2090 *
Time	0.0614 *
Time Squared	0.1029 *

Dependent Spouse Equation [g/]	
Variable	**Parameter Estimate**
Intercept	2.1809 *
Age	0.00395 *
Black	-0.6189 *
Hispanic	-0.5798 *
Asian	-0.3743 *
Family Income [h/]	1.4446 *
Premium Amount [i/]	-0.4978 *
Covered by Medicaid	-1.2692 *
Time	0.6190 *
Time Squared	0.1067 *

Dependent Children Equation [g/]	
Variable	**Parameter Estimate**
Intercept	2.4909 *
Age	-0.0252 *
Black	-0.5849 *
Hispanic	-0.6667 *
Asian	-0.3106 *
Family Income [h/]	1.4545 *
Premium Amount [i/]	-0.3005 *
Covered by Medicaid	-1.5798 *
Time	0.0203
Time Squared	0.3098 *

	R-Squared
Worker Equation	0.4161
Dependent Spouse Equation	0.0713
Dependent Children Equation	0.1146

* Significant at the 99.5 percent level.
a/ Note that the logit is a non-linear estimation technique. The parameters are not directly interpreted as derivatives. If *p* is proportion covered, the derivative with respect to a continuous variable *xi* is bi(p)(1-p), where *bi* is the parameter, and the elasticity is bi(1-p)xi.
b/ The equation estimates the likelihood that an employed person has employer-based coverage.
c/ Includes annual earnings reported by the worker in 1996 dollars.
d/The employee share of premiums for covered workers was imputed to the CPS based upon individual's reported industry, firm size and state of residence. Amounts in 1996 dollars. Reflects both price increases and increases in the percentage of the premium paid by the employee.
e/ Identifies workers employed in a high-coverage occupation. A high-coverage occupation is defined as one where the average percentage of workers with coverage is greater than the overall average percentage of workers with coverage.
f/ Identifies workers employed in a high-coverage industry. A high-coverage industry is defined as one where the average percentage of workers with coverage is greater than the overall average percentage of workers with coverage.
g/ The universe of people included in the analysis is dependents of workers who do not have coverage on their own jobs.
h/ Total income of all family members in 1996 dollars.
i/ Includes the incremental cost to the employee of electing the family coverage option in 1996 dollars. Reflects both premium price increases and increases in the share of the premiums paid by the employee.
j/ Firms with 1,000 or more workers are the omitted firm size group.
Source: Lewin Group estimates using a pooled cross-section of individuals from the March Current Population Surveys for 1988 through 1996.

ATTACHMENT C:
The Impact of Price on the Employer Decision to Provide Coverage

In this analysis, we estimated the impact of providing subsidies to employers to provide insurance coverage. The purpose of the subsidies would be to reduce the net cost of providing coverage, thus increasing their willingness to provide insurance for their workers. We did this by estimating multivariate models of the employer decision to sponsor coverage and the impact of price on coverage. We also estimated multivariate models of enrollment in employer-sponsored plans for employees which measure how the employee willingness to enroll in an employer plan varies with the employee premium contribution requirement.

A. Employer Coverage Decision

We developed a multivariate model of the employer decision to offer coverage which reflects the impact of price on the employer's purchase decision. We used the 1997 RWJF survey of employers which provides data on a representative sample of establishments. Data include both firms that offer insurance and workforce characteristics of establishment. Data include both firms that offer insurance and those who do not. It also provides information on the characteristics of the health plans offered by each employer including premium costs and the share of the premium paid by the employer. These data were used to estimate a multivariate model that shows how the likelihood that a firm will offer coverage varies with wage level, workforce composition, firm size, industry, and other firm characteristics.

The multivariate model also measured how the likelihood of offering coverage changes with the amount of premium. While the RWJF data include premium information for firms that offer coverage, no data is provided on the premiums faced by firms that do not offer coverage. To measure the price effect we imputed premiums to non-insuring firms with a multivariate model of how premium levels vary with the workforce and firm characteristics that we estimated from the 1997 RWJF data on insuring firms. We used these imputed premium amounts to measure how the likelihood of offering coverage varies with price and other variables. We used the Probit form of estimation to reflect the fact that the likelihood of offering coverage is bounded between 0.0 and 1.0.

The model was specified in a way that permits us to measure how the price elasticity varies by size of firm ***(Figure C-1 and C-2)***.[103] The implicit price elasticity varied between –0.46 percent for firms with under 10 workers and –0.07 percent for firms with over 1,000 workers. This indicates that small employers are more sensitive to premium levels than larger firms. These estimates are statistically significant at the 99 percent confidence level. These estimates are similar to those estimated elsewhere in the literature.[104] These estimated coefficients were then used to simulate the decision to offer coverage under various proposals to reduce the cost of insurance to the employer.

---

[103] The premium specification was similar to that presented in" Blumberg, L. And Nichols, M. "Decisions to Buy Private Health Insurance: Employers, Employees the Self-employed, and Non-working Adults in the Urban Institute's Health Insurance Reform Simulation Model (HIRSM)", (Excerpts from Final Report to DOL/PWBA), The Urban Institute, August 2000.

[104] Glied, S., et al. "Modeling Health Insurance Expansions", (Report to the Robert Wood Johnson Foundation), June 26,2001.

Figure C-1
Probit Model of Probability for a Firm to Offer Health Insurance- Single Premium [a/]

Parameter Description	Symbol X(i)	Type	Estimate B(i)	Standard Error	Chi-Square	Pr > ChiSq
Intercept	X1		1.1352300	0.0091030	15552.52	<.0001
Single Monthly Premium	X2	Continuous	-0.0027316	0.0000425	4130.39	<.0001
Firm Size 100 to 1000 Employees	X3	Dummy	-0.4194800	0.0113500	1365.68	<.0001
Firm Size 20 to 100 Employees	X4	Dummy	-0.9622600	0.0099877	9282.19	<.0001
Firm Size 10 to 20 Employees	X5	Dummy	-1.5476800	0.0099332	24276.35	<.0001
Firm Size under 10 Employees	X6	Dummy	-2.0692400	0.0086312	57475.19	<.0001
Interaction	X2*X3	Continuous	0.0001065	0.0000589	3.27	0.0706
Interaction	X2*X4	Continuous	0.0012258	0.0000521	554.20	<.0001
Interaction	X2*X5	Continuous	0.0018673	0.0000519	1295.08	<.0001
Interaction	X2*X6	Continuous	0.0007509	0.0000440	291.42	<.0001
Firm Unionized	X7	Dummy	0.3517400	0.0036454	9309.80	<.0001
More than 5 Years in Business	X8	Dummy	0.4287300	0.0015341	78104.47	<.0001
Percent of Workers receiving wage under $5	X9	Continuous	-0.0120100	0.0000309	151495.03	<.0001
Percent of Workers receiving wage $5 - $7	X10	Continuous	-0.0110000	0.0000240	209965.51	<.0001
Percent of Workers receiving wage $7 - $10	X11	Continuous	-0.0072521	0.0000224	105155.27	<.0001
Percent of Workers receiving wage $10 - $15	X12	Continuous	-0.0030310	0.0000234	16748.91	<.0001
Average Annual Payroll / 100,000	X13	Continuous	0.1372600	0.0024537	3129.29	<.0001
Construction Industry	X14	Dummy	0.2302500	0.0028721	6427.17	<.0001
Mining Industry	X15	Dummy	0.4484400	0.0028324	25066.03	<.0001
Transportation Industry	X16	Dummy	0.4150000	0.0035467	13691.14	<.0001
Wholesale	X17	Dummy	0.6269300	0.0034148	33705.21	<.0001
Retail Sale	X18	Dummy	0.1371000	0.0024656	3091.80	<.0001
Finance	X19	Dummy	0.3524400	0.0024411	20845.30	<.0001
Professional	X20	Dummy	0.3186600	0.0023705	18070.35	<.0001
Percent Fulltime Workers in the Firm	X21	Continuous	0.5342100	0.0017919	88880.95	<.0001
Percent Workers under age of 30	X22	Continuous	0.0014556	0.0000253	3312.89	<.0001
Percent Workers age 30 - 40	X23	Continuous	0.0017185	0.0000238	5219.79	<.0001
Percent Workers age 40 - 50	X24	Continuous	0.0022870	0.0000241	8976.94	<.0001
Percent Female Workers in the Firm	X25	Continuous	0.0023658	0.0000180	17217.2075	<.0001

a/ PR=F where F is a cumulative function of normal distribution. Manufacturing is the omitted industry variable.
Source: Lewin Group estimates using the 1997 employer survey data developed for the Robert Wood Johnson Foundation (RWJF).

Figure C-2
Probit Model of Probability for a Firm to Offer Health Insurance –Family Premium[a/]

Parameter Description	Symbol X(i)	Type	Estimate	Standard Error	Chi-Square	Pr > ChiSq
Intercept	X1		1.1819300	0.0097016	14842.20	<.0001
Family Monthly Premium	X2	Continuous	-0.0011623	0.0000178	4263.29	<.0001
Firm Size 100 to 1000 Employees	X3	Dummy	0.1069500	0.0131100	66.51	<.0001
Firm Size 20 to 100 Employees	X4	Dummy	-0.9400000	0.0107900	7588.21	<.0001
Firm Size 10 to 20 Employees	X5	Dummy	-1.4442400	0.0108200	17800.79	<.0001
Firm Size under 10 Employees	X6	Dummy	-2.0718700	0.0093773	48816.64	<.0001
Interaction	X2*X3	Continuous	-0.0011353	0.0000265	1838.02	<.0001
Interaction	X2*X4	Continuous	0.0003919	0.0000219	320.12	<.0001
Interaction	X2*X5	Continuous	0.0004429	0.0000222	396.59	<.0001
Interaction	X2*X6	Continuous	0.0002267	0.0000186	148.05	<.0001
Firm Unionized	X7	Dummy	0.3400700	0.0036430	8714.36	<.0001
More than 5 Years in Business	X8	Dummy	0.4256600	0.0015354	76851.18	<.0001
Percent of Workers receiving wage under $5	X9	Continuous	-0.0120400	0.0000309	151727.40	<.0001
Percent of Workers receiving wage $5 - $7	X10	Continuous	-0.0108900	0.0000240	206218.06	<.0001
Percent of Workers receiving wage $7 - $10	X11	Continuous	-0.0072241	0.0000224	104205.63	<.0001
Percent of Workers receiving wage $10 - $15	X12	Continuous	-0.0031086	0.0000234	17590.65	<.0001
Average Annual Payroll / 100,000	X13	Continuous	0.1406200	0.0024538	3283.99	<.0001
Construction Industry	X14	Dummy	0.2376600	0.0028731	6842.48	<.0001
Mining Industry	X15	Dummy	0.4453900	0.0028344	24692.02	<.0001
Transportation Industry	X16	Dummy	0.3997100	0.0035509	12671.17	<.0001
Wholesale	X17	Dummy	0.6248500	0.0034142	33495.30	<.0001
Retail Sale	X18	Dummy	0.1298300	0.0024673	2768.93	<.0001
Finance	X19	Dummy	0.3579600	0.0024442	21448.18	<.0001
Professional	X20	Dummy	0.3110900	0.0023686	17249.49	<.0001
Percent Fulltime Workers in the Firm	X21	Continuous	0.5246900	0.0017941	85533.04	<.0001
Percent Workers under age of 30	X22	Continuous	0.0018288	0.0000250	5371.03	<.0001
Percent Workers age 30 - 40	X23	Continuous	0.0020192	0.0000236	7321.60	<.0001
Percent Workers age 40 - 50	X24	Continuous	0.0024601	0.0000241	10382.69	<.0001
Percent Female Workers in the Firm	X25	Continuous	0.0022849	0.0000180	16101.31	<.0001

a/ PR=F where F is a cumulative function of normal distribution. Manufacturing is the omitted industry variable.
Source: Lewin Group estimates using the 1997 employer survey data developed for the Robert Wood Johnson Foundation (RWJF).

We also used the RWJF data to explore how price affects the likelihood that an employer who offers coverage to full-time workers would also offer coverage to part-time and seasonal workers. We did this using the RWJF data on firms that offer coverage, which indicates whether part-time and seasonal workers are eligible. This analysis was relatively straight forward because the premium amounts faced by the firm are reported in the data for those that they now cover. However, the analysis showed no relationship between premium amounts and coverage for part-time seasonal workers.

The estimated elasticities for part-time workers were small, statistically insignificant, and of the wrong sign. Consequently, we assume that changes in premiums due to tax credits or other price changes have no impact on coverage for part-time and seasonal workers.

B. Employer Premium Contribution

We also estimated the percentage of the premium that would be paid by employers in firms that are induced to offer coverage. This was done by estimating another multivariate model of the percentage of the premium paid by employers for firms in the RWJF data that reported offering coverage. We used the Probit technique which bounds the predicted value between 0.0 and 1.0. The model shows how the percentage of the premium paid by the employer varies with firm and workforce characteristics for single and family coverage ***(Figure C-3 and Figure C-4).***

C. Worker Take-up in Firms Induced to Provide Coverage

Once firms in the HBSM/HRET data are selected to offer coverage, we simulate enrollment among workers assigned to these plans. The enrollment decision is simulated with a multivariate model of the likelihood that eligible workers will take coverage offered to them based upon data reported in the 1996 MEPS data for people offered coverage through an employer. The model measures how take-up varies with the characteristics of the individual as well as the employee premium contribution required by the employer.

This required imputing a premium amount to people in firms offering coverage based upon premium contribution data reported in the HRET employer data by firm size and industry. Unfortunately, the publicly available MEPS household data do not provide premium data. The methods used to impute the employee share of the premium are the same as those used in our analysis of the price elasticity of coverage for individuals described in ***Attachment B.*** The premium amounts are presented in ***Figure B-3*** above.

We used a specification of the model to estimate a multivariate model of the likelihood that a worker will take coverage when offered. The resulting equation measures how the likelihood of taking coverage varies with age, earnings, family income, gender, marital status, and self-reported health status and premium ***(Figure C-5)***. Using this equation we simulate the worker's decision to enroll in the employer plan when offered based upon the characteristics of the individual and the amount of the employee premium contribution required of workers enrolling in the plan.

Figure C-3
Probit Model of the Employer Contribution Percentage for Single Coverage [a/]

Parameter Description	Symbol x(i)	Type	Estimate b(i)	Standard Error	Chi-Square	Pr > ChiSq
Intercept	X1		1.0635000	0.0082591	16580.99	<.0001
Single Premium - Employer's Portion	X2	Continuous	0.0006769	0.0000127	2853.20	<.0001
Firm Size 100 to 1000 Employees	X3	Dummy	0.0093249	0.0030689	9.23	0.0024
Firm Size 20 to 100 Employees	X4	Dummy	0.0540900	0.0028280	365.88	<.0001
Firm Size 10 to 20 Employees	X5	Dummy	0.1304200	0.0032687	1592.10	<.0001
Firm Size under 10 Employees	X6	Dummy	0.3863600	0.0026676	20976.12	<.0001
Firm Unionized	X7	Dummy	0.3314000	0.0047108	4949.03	<.0001
More than 5 Years in Business	X8	Dummy	-0.0203400	0.0030390	44.78	<.0001
Percent of Workers receiving wage under $5	X9	Continuous	-0.0010571	0.0000643	270.70	<.0001
Percent of Workers receiving wage $5 - $7	X10	Continuous	-0.0023023	0.0000414	3089.91	<.0001
Percent of Workers receiving wage $7 - $10	X11	Continuous	-0.0018611	0.0000364	2612.59	<.0001
Percent of Workers receiving wage $10 - $15	X12	Continuous	-0.0002530	0.0000392	41.62	<.0001
Construction Industry	X13	Dummy	-0.0202600	0.0050930	15.82	<.0001
Mining Industry	X14	Dummy	0.0619600	0.0045587	184.75	<.0001
Transportation Industry	X15	Dummy	0.0644100	0.0054632	139.01	<.0001
Wholesale	X16	Dummy	0.1081100	0.0052115	430.30	<.0001
Retail Sale	X17	Dummy	0.0106400	0.0043080	6.10	0.0135
Finance	X18	Dummy	0.0479800	0.0041840	131.50	<.0001
Professional	X19	Dummy	0.2306100	0.0042192	2987.41	<.0001
Percent Fulltime Workers in the Firm	X20	Continuous	-0.1051400	0.0046357	514.44	<.0001
Percent Workers under age of 30	X21	Continuous	-0.0024916	0.0000450	3068.55	<.0001
Percent Workers age 30 - 40	X22	Continuous	-0.0007894	0.0000453	303.65	<.0001
Percent Workers age 40 - 50	X23	Continuous	-0.0005518	0.0000480	132.38	<.0001
Percent Female Workers in the Firm	X24	Continuous	-0.0007213	0.0000308	548.20	<.0001

a/ Probit model where percent of employer's share of premium = 100*F(x'b), where F is cumulative function of normal distribution. Manufacturing is the omitted industry variable.
Source: Lewin Group estimates using the 1997 employer survey data developed for the Robert Wood Johnson Foundation (RWJF).

Figure C-4
Probit Model of the Employer Contribution Percentage for Family Coverage [a/]

Parameter Description	Symbol x(i)	Type	Estimate b(i)	Standard Error	Chi-Square	Pr > ChiSq
Intercept	X1		0.8320500	0.0070841	13795.04	<.0001
Family Premium - Employer's Portion	X2	Continuous	-0.0000014	0.0000044	0.10	0.7532
Firm Size 100 to 1000 Employees	X3	Dummy	-0.1080000	0.0027123	1585.48	<.0001
Firm Size 20 to 100 Employees	X4	Dummy	-0.1877200	0.0024807	5726.59	<.0001
Firm Size 10 to 20 Employees	X5	Dummy	-0.0473400	0.0028357	278.70	<.0001
Firm Size under 10 Employees	X6	Dummy	0.2582800	0.0023137	12461.28	<.0001
Firm Unionized	X7	Dummy	0.4360400	0.0039553	12153.64	<.0001
More than 5 Years in Business	X8	Dummy	-0.0402400	0.0025658	245.98	<.0001
Percent of Workers receiving wage under $5	X9	Continuous	0.0011292	0.0000558	409.17	<.0001
Percent of Workers receiving wage $5 - $7	X10	Continuous	-0.0017007	0.0000362	2206.68	<.0001
Percent of Workers receiving wage $7 - $10	X11	Continuous	-0.0019506	0.0000308	4007.54	<.0001
Percent of Workers receiving wage $10 - $15	X12	Continuous	-0.0008509	0.0000323	692.19	<.0001
Construction Industry	X13	Dummy	-0.0809900	0.0044491	331.35	<.0001
Mining Industry	X14	Dummy	0.0741100	0.0040136	340.90	<.0001
Transportation Industry	X15	Dummy	0.0278800	0.0047486	34.46	<.0001
Wholesale	X16	Dummy	0.0879600	0.0045230	378.22	<.0001
Retail Sale	X17	Dummy	0.0026022	0.0038378	0.46	0.4977
Finance	X18	Dummy	0.0103100	0.0036894	7.81	0.0052
Professional	X19	Dummy	-0.0096160	0.0036634	6.89	0.0087
Percent Fulltime Workers in the Firm	X20	Continuous	-0.0362600	0.0038390	89.19	<.0001
Percent Workers under age of 30	X21	Continuous	-0.0031489	0.0000383	6770.81	<.0001
Percent Workers age 30 - 40	X22	Continuous	-0.0011276	0.0000378	888.58	<.0001
Percent Workers age 40 - 50	X23	Continuous	-0.0015711	0.0000396	1574.58	<.0001
Percent Female Workers in the Firm	X24	Continuous	-0.0009704	0.0000260	1395.81	<.0001

a/ Probit model where percent of employer's share of premium = 100*F(x'b), where F is cumulative function of normal distribution. Manufacturing is the omitted industry variable.
Source: Lewin Group estimates using the 1997 employer survey data developed for the Robert Wood 0son Foundation (RWJF).

Table C-5
Logit Model of Percentage of Workers Who Take Employer Coverage When Offered

Parameter	Estimate	Standard Error	Chi-Square	Pr>Chi-Square
Intercept	3.3526	0.9216	13.2335	0.0003
AgeDiv100	-10.2099	4.4527	5.2576	0.0219
AgeD100Sqrd	16.1319	5.6351	8.1955	0.0042
Earnings/100,000	5.1518	0.8647	35.4958	<.0001
Family Income/100,000	1.4725	0.4266	11.9128	0.0006
Premium	-1.0136	0.3501	8.3840	0.0038
Male	0.0249	0.1475	0.0285	0.8659
Married	0.0161	0.1578	0.0104	0.9187
White	0.4713	0.4057	1.3498	0.2453
Black	0.0892	0.4353	0.0420	0.8377
Hispanic	-0.6236	0.4108	2.3042	0.1290
Fair to Poor Health	0.0509	0.3818	0.0177	0.8940

Source: Lewin estimates using the 1996 Medical Expenditures Panel Survey (MEPS) data.

ATTACHMENT D:
Take-up Equations for Workers with and Without Access to Employer Coverage

In this analysis, we needed to be able to estimate the impact that requiring employers to facilitate, but not pay for, insurance coverage for their workers would have on enrollment in voluntary coverage expansion proposals. It is widely believed that providing workers with an automatic procedure for taking insurance through employment would lead to higher levels of coverage. This is supported by the fact that about 86 percent of workers in firms that are offered coverage at work enroll while only about 27 percent of workers who do not have access to employer sponsored coverage purchase non-group coverage. The proposition that employer facilitation could increase coverage is supported by data showing that enrollment rates in 401(k) retirement accounts are substantially higher than take-up rates for Individual Retirement Accounts (IRAs) among people who do not have access to a 401(k) plan at work.

These data are difficult to interpret because the populations offered coverage through work generally have a different socio-economic profile than do those who do not have access to coverage at work. Workers in firms that offer coverage are typically in higher income groups, are older and have higher education than do workers in non-insuring firms. Consequently, it was necessary to standardize the data for these socio-economic characteristics so that we can isolate the effect of the employer's facilitation role from other factors affecting coverage levels.

To do this, we estimated two Logit models of take-up rates for two groups of workers:

- The first is for workers in firms that offer insurance; and
- The second is for workers in firms that do not offer coverage.

We estimated these equations using the 1996 MEPS data which forms the basis of our baseline household data in HBSM. These data identify workers and indicate whether they are offered coverage at work. These data can be used to divide workers into workers offered coverage and workers not offered coverage. The MEPS data also provide information on sources of coverage including whether they took the coverage offered at work and whether they are purchasing non-group coverage.

The first equation includes only workers who are offered coverage at work. The dependent variable in the first equation is whether the worker accepted the coverage offered by their employer (covered =1; not covered=0).

The second equation is restricted to workers who are not offered coverage at work. The dependent variable in the second equation was whether the worker is covered under non-group coverage (covered=1;not covered=0).

To the extent possible, we used the same explanatory variables in both equations. These include age, gender, earnings level, marital status, race/ethnicity, education and coverage from other sources. We also include some of the characteristics of the firms they work in including firm

size and whether they are working in a high coverage industry, which we define to be an industry with an overall coverage level in excess of the average across all industries.

In addition, we imputed employee premium amounts for employer coverage which we included as an explanatory variable in the equation for workers offered insurance. Premium data is not provided in the MEPS. Even if it were, we would still need to impute premiums for workers who declined their employer's coverage. The methods we used to impute these premiums are the same as those used in our price response analysis of employer coverage described in ***Attachment B***. The premium amounts are presented in ***Figure B-3*** above.

We used average employee contribution amounts by firm size and industry for 1996 from KPMG employer survey data as the basis of our premium imputations. MEPS workers in firms that offered coverage were assigned the average employee contribution amount for the firm size and industry group reported by the worker in the MEPS data. Our approach was to assign the contribution amount for single coverage to all workers including those with family coverage. (The increment of cost for family coverage would have been added if we developed separate equations on take-up of family coverage. The effect that dependents have upon the worker's decision to take coverage should be picked up by the head of family variable included in the equation. The estimated Logit equation for workers offered coverage at work is presented in ***Figure D-1***.

We did not include premiums in the equation for workers without access to employer coverage because we do not currently have a way of imputing premiums to this group. Instead, we used the equation estimated here together with a price elasticity estimate of -0.52, which is the price elasticity used in the model to simulate take-up in premium assistance programs for workers at the average income level for workers who are not offered coverage at work. The estimated Logit equation for people not offered coverage through work is presented in ***Figure D-2***.

These estimates may mask certain factors that have a significant impact on the likelihood of taking coverage. For example, much of the difference in take-up rates between workers with access to employer coverage and workers without also could be attributed to a tendency for workers who desire health benefits to seek-out employers who offer them. Unfortunately, there appears to be no way to isolate these "sorting" effects with the currently available data.

Figure D-1
Logit Model of Employer Plan Enrollment for Workers Offered Employer Coverage

Parameter	Estimate	Chi-Square	Pr > Chi-Square
Intercept	1.4040	9.4113	0.0022
AgeDiv100	0.4446	0.0019	0.9653
AgeD100 Squared	1.0242	0.2711	0.6026
Earnings	1.1593	29.8888	< .0001
Premium	-0.8242	16.1385	< .0001
Male	0.4655	31.1739	< .0001
White	0.3249	4.1684	0.0412
Black	0.4255	4.7329	0.0296
Hispanic	0.2915	3.6202	0.0571
Firm size < 10	0.1489	3.3234	0.0683
Firm size 10 to 24	-0.4074	3.6409	0.0564
Firm size 25 to 99	-0.4482	9.3101	0.0023
Firm size 100 to 499	0.1804	1.2019	0.2729
Firm size 500 to 999	0.0775	0.7949	0.3726
MedicareCvg	-0.7370	4.6146	0.0317
MedicaidCvg	-0.9492	13.2593	0.0003
High Covg. Industry	0.4819	28.5185	< .0001
Married Head of Household	-0.5840	42.8661	< .0001
Spouse Head of Household	-1.3072	156.6361	< .0001
Less than HS	-0.2178	5.7704	0.0163
Some College	-0.0654	0.0241	0.8765
College Graduate	0.1957	7.0978	0.0077

Source: Lewin estimates using the 1996 Medical Expenditures Panel Survey (MEPS) data.

Figure D-2
Logit Model of Non-group Enrollment for Workers Not Offered Employer Coverage

Parameter	Estimate	Chi-Square	Pr > Chi-Square
Intercept	2.2653	7.9531	0.0048
AgeDiv100	-16.9720	20.3590	< .0001
AgeD100 Squared	20.5693	18.2513	< .0001
Earnings	0.4020	2.1436	0.1432
Premium	-0.5473	12.2107	0.0005
Male	0.2257	0.0124	0.9114
White	-1.1737	8.6118	0.0033
Black	-1.4138	11.8087	0.0006
Hispanic	0.7117	5.8554	0.0155
Firm size < 10	-0.5811	7.7608	0.0053
Firm size 10 to 24	0.6562	1.3700	0.2418
Firm size 25 to 99	0.1809	0.0188	0.8909
Firm size 100 to 499	-0.0780	0.0612	0.8045
Firm size 500 to 999	-0.7004	0.8437	0.3584
High Covg. Industry	-0.0591	0.1263	0.7223
Married Head of Household	0.2037	0.6347	0.4256
Spouse Head of Household	-0.00375	0.6445	0.4221
Less than HS	-0.3512	7.2285	0.0072
Some College	0.3471	1.8959	0.1685
College Graduate	1.1030	16.8697	< .0001

Source: Lewin estimates using the 1996 Medical Expenditures Panel Survey (MEPS) data.

ATTACHMENT E:
Analysis of the Impact of the FMAP on State Medicaid Spending

The purpose of this study is to conduct an empirical examination of the how state Medicaid spending may be affected by the federal matching ration (FMAP) both in the aggregate and separately for adults and children. It is expected that this analysis will be helpful in several ways. First, it will be possible to take the estimated effects and use them in quantitative policy analysis based on econometric models of state spending. Using the empirical estimates reported here it may be possible to assess the impact on state Medicaid spending in the aggregate and for adults and children separately of policy initiatives that change the matching ratios. Secondly, the results reported here will also advance what has been reported in the literature on the effects of the matching ratio on Medicaid spending.

A. Brief Literature Review

Various authors have studied the impact of the federal-state matching ratio on state spending on Medicaid. Granneman (1983) found an elasticity of 0.78 using data from 1977 to 1980. Chernick (1999) found an elasticity of about 0.65 for the period 1983-1995. He also found that Food Stamps induce states to substitute Medicaid benefits for cash assistance. Craig (1993) found the same type of substitution.

Baicker (1999) has examined the response of states to federal mandates to expand Medicaid coverage to more low-income families. She concluded that states cut back on other welfare spending by an amount approximately equal to the extra costs of the federal mandates. However, Chernick (2000) also noted as an alternative explanation of this result that states may have merely relabeled and transferred spending to Medicaid to qualify the spending for federal matching. Merriman (2002) provided an analytic model of this "supplantation" phenomenon.

Chernick (2000) commented that "disproportionate share" funds allowed states to obtain additional federal money with little increase in their own fiscal effort. To the extent that the disproportionate share funds were provided to states to compensate for the costs of new mandates, the fiscal relationship between the federal government and the states has become more complex than simply setting a matching price and specifying eligible expenditures.

Chernick (2000) also observed that state spending on Medicaid appears to be more sensitive to changes in the matching rate than state spending on cash assistance. Mandates to expand coverage in Medicaid coupled with the matching rate subsidy effect appears to have been effective in expanding state Medicaid spending on the poor.

B. Econometric Model

We specified and estimated a simple linear econometric model using state per capita spending on Medicaid as the dependent variable. While the model was intended to reflect theoretical considerations regarding which factors were likely to affect state Medicaid spending, the model was not rigorously derived from economic theory. The results were extremely robust suggesting that the model captures the essence of the determinants of state Medicaid spending.

The model was specified as:

$S = \beta_0 + \beta_1 SS + \beta_2 Y + \beta_3 AGE + \beta_4 POV$

where

SS = state share based on the FMAP

Y= state per capita Medicaid spending

AGE= fraction of the state population 65 and over

POV= state poverty rate

Our expectations were that the state share would act like a price variable and have a negative effect on spending. In other words, if state share was 100 percent, the state would pay the full cost; as the state share dropped from 100 percent the "price" would be lower as the federal government assumes part of the burden. It was also expected that state per capita income would be positively related to state spending, reflecting state fiscal capacity. Finally, the state's fraction of population age 65 and over and the state's poverty rate were expected to have positive effects, as indicia of the need of the state for Medicaid spending.

In one version of the model, time was introduced as a series of binary variables to capture the time pattern of changes in state spending.

The basic model was changed in the separate analysis of Medicaid spending on adults and children, respectively by omitting the age variable.

C. Data

The data used in this study were drawn from a number of sources, as described below:

Medicaid Data

We used several sources for annual time series of state spending on Medicaid.

For the period 1990-1995, administrative data were taken from *A Report of the Kaiser Foundation on the Future of Medicaid Expenditures and Beneficiaries: National and State Profiles and Trends, 1990-1995 ("Report")*, Table 61 (Total Medicaid Expenditures, 1990-1995). These data were taken from The Urban Institute calculations based on HCFA-64 reports. See *Report* at 159-163.

For the period 1997-2001, administrative data were drawn from CMS published data available online.

For the period, 1980-2000, survey data on state payments to medical vendors taken from the U.S. Census Bureau's Census of Governments was used as a proxy for state Medicaid spending.

The Medicaid data were adjusted for medical costs using the annual Consumer Price Index for medical expenditures.

State Per Capita Income

Annual data on state per capita income was taken from the Bureau of Economic Analysis (BEA), and adjusted for price deflation using the Gross Domestic Product (GDP) general price deflator.

State Share

State share data were based on published FMAP data from 1980 to 2001.

Percent Over 65

Data on percent of state population over age 65 were taken from the Census Bureau's published data.

State Poverty Rates

Data on state poverty rates were taken from the Census Bureau's state poverty rate series.

D. Results

Per Capita Total Medicaid Spending

1. Kaiser Data 1990-1995

The results based on data from 1990-1995 (Kaiser data) are reported in Tables 1.1 and 1.2. All of the key independent variables, including the state share, have estimates coefficient of the expected sign that are statistically significant at the .01 level. In the model with year binary variables, the coefficients indicate that spending increases over time. The elasticity of per capita spending with respect to the state share was estimated at the means to be 0.83 and 0.52, respectively for the models without and with time dummies, respectively.

Figure E-1
Regression Analysis of Total Medicaid Spending, 1990 – 1995
Model 1A
Adj. R^2=0.45, N = 305

Variable/Statistic	Variable Mean	Coefficient	Standard Error	T-Statistic
Intercept		-1102.51	111.97	9.85**
State Share	39.00	-11.26	2.67	4.21**
Per Capita Income	23520	0.0650	0.0061	10.63**
Age Over 65	12.63	19.95	4.94	4.04**
Poverty Rate	13.65	21.10	2.95	7.15**

** Significant at the .01 level

Figure E-2
Regression Analysis of Total Medicaid Spending, 1990 – 1995
Model 1B
Adj. R^2=0.52, N = 305

Variable/Statistic	Variable Mean	Coefficient	Standard Error	T-Statistic
Intercept		-913.08	109.68	8.32**
State Share	39.00	-7.10	2.59	2.75**
Per Capita Income	23520	0.0537	0.0060	8.98**
Age Over 65	12.63	18.49	4.61	4.01**
Poverty Rate	13.65	22.06	2.78	7.92**
D:1990	0.167	-206.63	33.67	6.14**
D:1991	0.167	-126.85	33.82	3.75**
D:1992	0.167	-72.65	33.14	2.19
D:1993	0.167	-60.15	33.19	1.81
D:1994	0.167	-20.01	32.81	0.61

** Significant at .01 level

2. CMS Data 1997-2001

The results based on data from 1997-2001 (CMS data) are reported in Figures E-3 and E.4. Once again all of the key independent variables have estimated coefficients of the expected sign that are statistically significant at the .01 level. In the model with year binary variables, there is no clear time pattern of spending. The elasticity of per capita spending with respect to state share was estimated to be 0.69 and 0.78, for the models without and with year dummy variables, respectively.

Figure E-3
Regression Analysis of Total Medicaid Spending, 1997-2001
Model 1A
Adj. R^2=0.49, N = 254

Variable/Statistic	Variable Mean	Coefficient	Standard Error	T-Statistic
Intercept		-987.57	133.19	7.41**
State Share	39.49	-11.77	2.29	5.13**
Per Capita Income	27373	0.0549	0.0041	13.39**
Age Over 65	12.65	20.88	6.01	3.47**
Poverty Rate	11.76	30.64	4.14	7.40**

** Significant at the .01 level

Figure E-4
Regression Analysis of Total Medicaid Spending, 1997-2001
Model 1B
Adj. R^2=0.50, N = 254

Variable/Statistic	Variable Mean	Coefficient	Standard Error	T-Statistic
Intercept		-943.30	134.39	7.02**
State Share	39.49	-13.24	2.55	5.19**
Per Capita Income	27373	0.0574	0.0046	12.59**
Age Over 65	12.65	20.68	5.96	3.47**
Poverty Rate	11.76	28.77	4.29	6.71**
D:1997	0.20	4.95	39.81	0.12
D:1998	0.20	-40.18	37.20	1.08
D:1999	0.20	-17.53	36.23	0.48
D:2000	0.20	-92.52	35.73	2.59

** Significant at the .01 level

3. Census Data on Payments to Medical Vendors: 1980-2000

The results based on data from 1980-2000 (Census payments to medical vendors) are reported in Figures E-5 and E-6. The coefficients are once again statistically significant at the .01 level. The time pattern from the model including time variables shows a decline in per capita spending during the 1980s, an increase in the early 1990s, followed by a decline in the late 1990s. The overall elasticity of per capita state spending with respect to the state share was estimated to be 1.03, and 0.84, for the models without and with time variables, respectively.

We also estimated separate regressions for the 1980-1990, and 1991-2000 period without the time dummy variables. These produced very different magnitudes for the coefficients, but the coefficients were still of expected sign. These results are reported in Figures E-5 and E-6. The

elasticity of the per capita spending with respect to state share was estimated to be 0.36 for the earlier period and 0.73 for the later period. The elasticity of 0.73 for the later period is close to the elasticities estimated using the same model structure from the Kaiser data (1990-1995) (0.83) and from the CMS data (1997-2001) (0.69). The consistency of these results is compelling evidence that the elasticity has increased over time, and that for the more recent periods has been in the 0.7 to 0.8 range.

Figure E-5
Regression Analysis of Payments to Medical Vendors 1980-2000
Model 1A
Adj. R^2 = 0.61, N =1071

Variable/Statistic	Variable Mean	Coefficient	Standard Error	T-Statistic
Intercept		-591.02	43.57	13.57**
State Share	39.86	-9.04	0.63	14.28**
Pre Capita Income	22586	0.0431	0.0011	38.17**
Age Over 65	12.18	13.75	1.87	7.37**
Poverty Rate	13.39	12.05	1.17	10.33**

** Significant at the .01 level

Figure E-6
Regression Analysis of Payments to Medical Vendors 1980-1990
Model 1A
Adj. R^2 = 0.36, N =561

Variable/Statistic	Variable Mean	Coefficient	Standard Error	T-Statistic
Intercept		-386.39	44.18	8.74**
State Share	40.37	-1.93	0.66	2.92**
Pre Capita Income	20272	0.0224	0.0015	14.87**
Age Over 65	11.73	11.54	1.63	7.08**
Poverty Rate	13.81	6.78	1.09	6.25**

** Significant at the .01 level

Figure E-7
Regression Analysis of Payments to Medical Vendors 1991-2000
Model 1A
Adj. R^2 = 0.42, N =510

Variable/Statistic	Variable Mean	Coefficient	Standard Error	T-Statistic
Intercept		-552.99	71.29	7.76**
State Share	39.31	-9.18	1.26	7.27**
Pre Capita Income	25140	0.0414	0.0025	16.47**
Age Over 65	12.67	11.33	3.29	3.44**
Poverty Rate	12.92	17.45	1.94	8.99**

**Significant at the .01 level

Per Capita Adult and Child Medicaid Spending 1990-1995

Using the Kaiser data on Medicaid spending per adult and child beneficiary, and the number of adult and child beneficiaries, we were able to create a time series of data on Medicaid spending on adults and children. It was necessary to drop observations for three states: Arizona, Tennessee and Hawaii because of missing data for those states.

4. Adults

The results for per capita adult beneficiary spending are reported in Figures E-8 and E-9. The estimated coefficients on state, per capita income and poverty rates all had the expected sign and were statistically significant at the .01 level. The elasticity of per capita spending on adults to the state share was estimated to be 0.71 from the model without year dummies. This compares with an estimated elasticity of 0.83 for the per capita total spending.

Figure E-8
Regression Analysis of Adult Medicaid Spending, 1990 – 1995
Model 1A
Adj. R^2=0.32, N = 287

Variable/Statistic	Variable Mean	Coefficient	Standard Error	T-Statistic
Intercept		-54.75	10.23	5.35**
State Share	39.02	-1.03	0.30	3.45**
Per Capita Income	23,521	0.0051	0.0007	7.48**
Poverty Rate	13.64	2.32	0.32	7.11**

** Significant at the .01 level.

Figure E-9
Regression Analysis of Adult Medicaid Spending, 1990 – 1995
Model 1B
Adj. R^2=0. 0.37, N = 287

Variable/Statistic	Variable Mean	Coefficient	Standard Error	T-Statistic
Intercept		-44.64	10.57	-4.22 **
State Share	39.02	-0.77	0.30	-2.57**
Per Capita Income	23,521	0.0044	0.00070	6.31**
Poverty Rate	13.64	2.33	0.32	7.27**
D:1990	0.167	-14.44	3.95	-3.66**
D:1991	0.167	-5.39	3.97	-1.36
D:1992	0.167	-2.26	3.89	-0.58
D:1993	0.167	0.37	3.90	0.09
D:1994	0.167	0.42	3.85	0.11

**Significant at the .01 level

5. Children

The results for per capita child beneficiary spending are reported in Figures E-10 and E-11. The estimated coefficients on the state share, per capita income and the poverty rate are all statistically significant. The estimated elasticity of per capita spending on children with respect to the state share is 0.86. This is slightly higher than that estimated for adults for the same period using the same methodology, but about the same as estimated for per capita total spending for the same period (0.83).

Figure E-10
Regression Analysis of Child Medicaid Spending, 1990 – 1995
Model 1A
Adj. R^2=0.47, N = 287

Variable/Statistic	Variable Mean	Coefficient	Standard Error	T-Statistic
Intercept		-139.79	14.25	9.81**
State Share	39.02	-1.77	0.41	4.29**
Per Capita Income	23,521	0.0100	.0010	10.52**
Poverty Rate	13.64	3.95	0.45	8.69**

** Significant at the .01 level

Figure E-11
Regression Analysis of Child Medicaid Spending, 1990 – 1995
Model 1B
Adj. R^2=0.56, N = 287

Variable/Statistic	Variable Mean	Coefficient	Standard Error	T-Statistic
Intercept		-109.09	13.75	-7.94**
State Share	39.02	-1.02	0.39	-2.62**
Per Capita Income	23,521	0.0080	0.00090	8.81**
Poverty Rate	13.64	4.16	0.42	9.98**
D:1990	0.167	-35.21	5.14	-6.85**
D:1991	0.167	-24.70	5.16	-4.78**
D:1992	0.167	-19.11	5.06	-3.78**
D:1993	0.167	-9.65	5.07	-1.90
D:1994	0.167	-4.09	5.01	-0.82

** Significant at the .01 level

E. Conclusions

There are several conclusions from our analysis:

- A simple linear econometric model fits the Medicaid spending data reasonably well over the period 1980 to 2001, and various sub-periods within that range.
- Based on such a model, per capita Medicaid spending appears to be negatively related to state share, and positively related to per capita personal income, fraction of population aged 65 and over, and the state poverty rate.
- Based on separate analyses for the 1980-1990 and 1991-2000 periods, the magnitude of the effects is different, but not their direction. The elasticity of per capita spending with respect to state share is about twice as great for the 1991-2000 period (0.73) as it is for the 1980-1990 period (0.36).
- For periods after 1989, the elasticity of per capita total Medicaid spending with respect to state share is about 0.7 to 0.8.
- Omitting the age variable, the model also fits data for per capita adult and child spending on Medicaid for the period 1990-1995, with the elasticity of per capita spending with respect to state share being 0.71 for adults and 0.86 for children.

ATTACHMENT F:
Summary of SCHIP Crowd-out Literature Review

Twelve years ago, Cutler and Gruber (1996) examined the effects of Medicaid expansion, and suggested the substitution of private for public insurance (i.e., "crowd-out"), might be quite larger than expected.[105] Until recently, much of the research on the effect of public coverage expansions focused on 1980s and early 1990s Medicaid expansions, including re-examination of the original Cutler and Gruber study.

The introduction of the State Children's Health Insurance Program (SCHIP) in 1998 provided new federal financing for public insurance expansions to higher income families than in the previous Medicaid expansions. A review of the literature today reveals a range of crowd-out estimates of 0 to 60 percent for these SCHIP expansions using various data sources and analytical techniques.[106]

In 2007, the Congressional Budget Office (CBO) also performed a literature review on SCHIP crowd-out. They found the most reliable estimates available suggest that the reduction in private coverage among children is between one quarter and one half of the increase in public coverage resulting from SCHIP. For every 100 children who enroll as a result of SCHIP, there is a corresponding reduction in private coverage of between 25 and 50 children.[107]

The following presents four categories of studies that were reviewed in the literature: SCHIP econometric analyses, SCHIP custom survey estimates, Medicaid econometric analyses, and employer dumping evaluations. A summary of these studies are presented in ***Figures F-1 through F-3*** below.

A. SCHIP Econometric Analyses

Of the literature reviewed, we found that the estimation of crowd-out effects is very sensitive to the methodology and the data set. The majority of the literature examined use varying data sets from the 1990s-2000s to perform econometric evaluations. The studies we reviewed used a similar definition of crowd-out, which was usually defined as the reduction in private coverage as a percent of the increase in public coverage.

The most recent study by Gruber and Simon (2008) performs both descriptive cross-tabulation and eligibility estimation, using the 1996 and 2001 panels of the Survey of Income and Program Participation (SIPP). They find significant evidence of crowd-out, with a rate of roughly 60 percent. Gruber and Simon (2008) model crowd-out as a family phenomenon, as they suggest

---

[105] Cutler, D., Gruber, J., 1996. Does Public Health Insurance Crowd-out Private Insurance? Quarterly Journal of Economics 111, 391-430.

[106] The Lewin Group survey of econometric analyses within the literature.

[107] Congressional Budget Office (CBO), 2007. The State Children's Health Insurance Program. http://www.cbo.gov/ftpdocs/80xx/doc8092/05-10-SCHIP.pdf.

that crowd-out estimates are much larger when family wide effects of eligibility are accounted for, incorporating spillover onto other family members of eligibility expansions.[108]

Dubay and Blumberg (2006) looked at SCHIP enrollment patterns between 1996 and 2000, using the 1996 through 2000 panels of the SIPP, in order to differentiate reductions in uninsurance and crowd-out as components of the increase in public coverage that resulted from the implementation of the SCHIP program. Like several prior econometric analyses on Medicaid expansion, Dubay and Blumberg (2006) use a difference-in-differences approach to examine substitution to find virtually no evidence of crowd-out.[109] This approach compares changes in coverage for the group affected by eligibility expansions with a control group.

Bansak and Raphael (2006) use the 1998 and 2002 Current Population Survey (CPS) Annual Social and Economic Supplement to find that between one-quarter and one-third of the increase in public coverage is offset by a decline in public coverage.[110] LoSasso and Buchmueller (2004) use the CPS as well, for the years 1997-2001, with the Cutler-Gruber (1996) instrumental variables approach of comparing eligible to ineligible children over time. LoSasso and Buchmueller (2004) estimate a rate of crowd-out of private insurance of roughly 50 percent and also find that imposing a waiting period as an anti-crowd out measure has been effective in reducing crowd-out.[111] Hudson, Selden, and Banthin (2005) also use the Cutler-Gruber approach, with data from the 1996-2002 Medical Expenditure Panel Survey (MEPS).

They find generally large estimates of crowd-out with variation depending on the methodology. Using the differences-in-trends analysis, they find a range of crowd-out of 19 to 56 percent depending on the control group used. Using an instrumental variable analysis, the crowd-out range shifts to 39 to 70 percent, depending on the use of linear and non-linear analytical techniques.[112] However, their models produced very imprecise measures of crowd-out, and they caution against both using these estimates as a policy measure and from interpreting any estimate of crowd-out as a definitive measure.

The earliest econometric analysis on SCHIP crowd-out, Cunningham, Hadley, and Reschovsky (2002), uses a difference-in-differences approach similar to Dubay and Blumberg (2006). Using periodic data (1996-1997, 1998-1999) of the Community Tracking Study, a longitudinal study designed to track changes in the health care system and insurance coverage, they find that

---

[108] Gruber, J., Simon, K., 2008. Crowd-out 10 Years Later: Have Recent Public Insurance Expansions Crowded out Private Health Insurance? Journal of Health Economics 27 (2), 201-217.

[109] Dubay, L., Blumberg, L., 2007. The Impact of SCHIP on Insurance Coverage in Its Infancy: An Analysis Using the SIPP. (working paper, Washington, D.C.: Urban Institute).

[110] Bansak, C., Raphael, S., 2006. The Effects of State Policy Design Features on Take-up and Crowd-out Rates for the State Children's Health Insurance Program. Journal of Policy Analysis and Management. 26 (1), 149-175.

[111] Lo Sasso, A., Buchmueller, T., 2004. The Effect of the State Children's Health Insurance Program on Health Insurance Coverage. Journal of Health Economics 23 (5), 1059-1082.

[112] Hudson, J., Selden, T., Banthin, J., 2005. The Impact of SCHIP on Insurance Coverage of Children. Inquiry-Excellus Health Plan 42 (3), 232-235.

about 38 percent of the increase in public coverage was directly attributed to SCHIP-related decreases in private insurance coverage.[113]

B. SCHIP Custom Survey Estimates

In addition to econometric analyses of SCHIP expansion, several analysts have conducted state-wide and multi-state surveys to assess the impact of SCHIP implementation. Sommers, Zuckerman, Dubay, and Kenney (2004) provide the most comprehensive evaluation of the SCHIP program to date. They examine a federally mandated survey of 16,700 SCHIP enrollees to determine the extent to which SCHIP was substituted for private coverage at the time of SCHIP enrollment among children in ten states (California, Colorado, Florida, Illinois, Louisiana, Missouri, New Jersey, New York, North Carolina, and Texas).

These states were selected to include a large proportion of all low-income uninsured U.S. children, wide geographic representation, and all three SCHIP program structures (separate non-Medicaid programs, Medicaid expansions, and states with a combination of the two). They find that 28 percent of all recent enrollees had private coverage at some point in the six months prior to enrolling in the program. However, 14 of the 28 percent cited changes in employment and loss of employer coverage as the reason. Of the remaining 14 percent whose private coverage ended, 7 percent cited affordability, 2 percent preferred SCHIP benefits, and 5 percent cited other reasons.[114]

In a 2003 evaluation of the Florida KidCare program, Nogle and Shenkman (2004) analyze administrative data and 19,951 telephone surveys conducted over five years. They find that 18 percent of newly enrolled children had family coverage available to a parent through their employer. Furthermore, for families of established enrollees, about 16 percent had access to family coverage through their employers.[115]

Allison (2003) performs a similar evaluation for the state of Kansas from a survey conducted in 2001 and followed-up in 2002. The survey of 1,342 children under 19 years who were newly enrolled in SCHIP in Kansas asked questions about the child's and other household member's insurance coverage in 12 months prior to SCHIP enrollment. Allison (2003) found half of the children entering SCHIP (51%) were eligible to enroll in job-based health insurance through at least one parent, although this option may not have been affordable.[116]

---

[113] Cunningham, C., Hadley, J., Reschovsky, J., 2002. The Effects of SCHIP on Children's Health Insurance Coverage: Early Evidence from the Community Tracking Study. Medical Care Research and Review 59 (4), 359-383.

[114] Sommers, A., Zuckerman, S., Dubay, L., Kenney, G., 2005. Substitution of SCHIP for Private Coverage: Results from a 2002 Evaluation in Ten States. Health Affairs 26 (2), 529- 537.

[115] Nogle, J., Shenkman, E., 2004. Florida KidCare Program Evaluation Report, 2003. http://www.ichp.ufl.edu/documents/KidCareReportYear5Final.pdf.

[116] Allison, R. A., St. Peter, R. F., Cheng-Chung, H., LaClair, B., 2003. Do Children Enrolling in Public Health Programs Have Other Options? Findings from the HealthWave Evaluation Project. Kansas Health Institute.

C. Medicaid Evaluations

As previously mentioned, much of the literature on crowd-out comes from analysis of the late 1980s, early 1990s expansion of Medicaid. The original Cutler and Gruber (1996) study found that during the Medicaid expansions of the 1987-1992 period, a crowd-out rate of between 31 to 40 percent existed.[117]

Later Medicaid econometric studies (Ham and Shore-Sheppard (2005); Shore-Sheppard (2005)) attempt to replicate the original Cutler-Gruber study, varying methodology and data sets used. Both studies estimate that no crowd-out existed.[118]

Other Medicaid analyses (Card and Shore-Sheppard (2005); Aizer and Grogger (2003); Yazici and Kaestner (2000); Blumberg, Dubay and Norton (2000)) use similar methodology and data sets (CPS, SIPP) as the SCHIP evaluations, finding crowd-out ranges of 0 to 50 percent.[119]

D. Employer Dumping Evaluations

Employer-based substitution, the process by which employers explicitly reduce or eliminate health benefits with the expectation that these benefits would be provided to their workers and their dependents under the public program, is often cited as a cause of crowd-out. Several studies attempt to analyze the effect of SCHIP expansion on employer health insurance decisions. Buchmueller (2006), however, finds no evidence that employers responded to SCHIP by either dropping health insurance altogether or by dropping coverage for the dependents of employees. Using the 1997-2001 Medical Expenditure Panel Survey – Insurance Component (MEPS-IC), a large nationally representative survey of private sector establishments, they also find that employers whose workers were likely to have been affected by the introduction of SCHIP did respond to the program by raising family employee contributions relative to those for single coverage.[120]

Gabel, Whitmore and Pickreign (2008) also examine employer response to SCHIP in Massachusetts, based on the Robert Wood Johnson Foundation/National Opinion Research Center Massachusetts Employer Benefits Survey. They find that less than 3 percent of Massachusetts employers with 3-50 employees were planning on dropping coverage within the

---

117 Cutler, D., Gruber, J., 1996.

118 Ham, J., Shore-Sheppard, L., 2005. The Effect of Medicaid Expansions for Low-Income Children on Medicaid Participation and Private Insurance Coverage: Evidence From the SIPP. Journal of Public Economics 8, 57-83; and Shore-Sheppard, L.D., 2005. Stemming the Tide? The Effect of Expanding Medicaid Eligibility On Health Insurance. NBER Working Paper No. W11091.

119 Aizer, A., Grogger, J., 2003. Parental Medicaid Expansions and Child Medicaid Coverage. NBER Working Paper #9907; Blumberg, L.J., Dubay, L., Norton, S.A., 2000. Did the Medicaid Expansions for Children Displace Private Insurance? An Analysis using the SIPP. Journal of Health Economics 19 (1), 33-60; Card, D., Shore-Sheppard, L., 2004. Using Discontinuous Eligibility Rules to Identify the Effects of the Federal Medicaid Expansions on Low Income Children. Review of Economics and Statistics 86 (3), 752-766; and Yazici, E., Kaestner, R., 2000. Medicaid Expansions and the Crowding Out of Private Health Insurance among Children. Inquiry 37 (Spring 1), 23-32.

120 Buchmueller, T., Cooper, P., Simon, K., Vistnes, J., 2005. The Effect of SCHIP Expansions on Health Insurance Decisions by Employers. Inquiry - Excellus Health Plan. 42 (3), 218.

next year. In addition, only 5 percent of these firms indicated that it was very or somewhat likely that the firm would restrict eligibility in the next year.[121]

[121] Gabel, J., Whitmore, H., and Pickreign, J., 2008. Report From Massachusetts: Employers Largely Support Health Care Reform, And Few Signs Of Crowd-Out Appear. Health Affairs 27 (1), w13-w23.

Figure F-1

Summary of Literature on Crowd-Out resulting from expansions in Medicaid and SCHIP Eligibility

SCHIP Econometric Evaluations

Authors	Date	Article	Definition of Crowd-Out	Estimate	Methodology/Data Used	Notes
J. Gruber, K. Simon	2008	Crowd-out 10 Years Later: Have Recent Public Insurance Expansions Crowded Out Private Health Insurance?	Number of privately insured falls by 60% as much as the number of publicly insured rises.	60%	1996-2001 SIPP	Crowd-out available by income level, family eligibility, SCHIP v. Medicaid. Cost-sharing and family eligibility
C. Bansak, S. Raphael	2006	The Effects of State Policy Design Features on Take-Up and Crowd-Out Rates for the State Children's Health Insurance Program	Rate of crowd out = absolute value of (decline in private health insurance coverage / program take-up rate)	25-33%	1998 and 2002 Current Population Survey	Crowd-out measure is based on the corresponding change in private coverage rates.
L. Dubay, L. Blumberg	2006	The Impact of SCHIP on Insurance Coverage of Children in Its Infancy: An Analysis using the SIPP	Substitution of private insurance for SCHIP	0%	1996 panel of the Survey of Income and Program Participation (SIPP)	Participants were observed every four months, from December 1995 to February 2000, for a total of 12 waves. Used a differences-in-differences approach, and divide SIPP individuals into treatment and control groups. (1) children 50-100% > SCHIP eligibility (2) parents of SCHIP eligible (3) near-eligible parents and children whose income was 50-100% above SCHIP eligibility. Only traces of the crowd-out effect were isolated to children who began the panel with Medicaid coverage.

Authors	Date	Article	Definition of Crowd-Out	Estimate	Methodology/Data Used	Notes
J.L.Hudson, T.M. Selden, J.S. Banthin	2005	The Impact of SCHIP on Insurance Coverage in Children	Reduction in any private insurance coverage / Increase in public insurance coverage	19%-56%: Using difference-in-trends analysis (varying central groups) 39% -70%: Using instrumental variable analysis (linear v. non-linear trends)	1996-2002 Medical Expenditure Panel Survey (MEPS) data	Models produced very imprecise measures of crowd-out; best was +/- 20%. Estimate precision error remains an important concern for these results. Anti-crowd-out provisions were found to significantly effect crowd-out.
A.T. LoSasso, T. Buchmueller	2004	The Effect of the State Children's Health Insurance Program on Health Insurance Coverage	Reduction in private insurance coverage/ Increase in public insurance coverage	46.6%; incorporates the potential mis-measurement associated with some public insurance wrongly reported as non-group insurance and use group insurance instead as the measure of private coverage.	1997–2001 data from Current Population Survey (CPS); children less than 18 yrs old under 300% FPL	Sample consists of children less than 18 years old. 5 years of data yield a sample size of 172, 409 children. Use instrumental variables approach similar to that of Cutler and Gruber.
P. Cunningham, J. Hadley, J. Reschovsky	2002	The Effects of SCHIP on Children's Health Insurance Coverage: Early Evidence from the Community Tracking Study	(Decrease in private) - (Decrease in private assuming no change in eligibility) / Increase in Medicaid and other state coverage	38%	Community Tracking Study 1996-1997, 1998-1999; Sample of 6,700 children age 19 or younger w/ incomes <200% FPL	Use difference-in-differences approach (estimate substitution by comparing changes in coverage for the group affected by eligibility expansions with a control group). Included premium changes over time as well.

Figure F-2

SCHIP Custom Surveys

Authors	Date	Article	Definition of Crowd-Out	Estimate	Methodology/Data Used	Notes
Congressional Budget Office	2007	The State Children's Health Insurance Program	Reduction in private coverage as a percent of increase in public program enrollment	25-50%	Review of relevant literature.	CBO estimates based on review of literature.
A. Sommers, S. Zuckerman, L. Dubay, G. Kenney	2005	Substitution Of SCHIP For Private Coverage: Results From A 2002 Evaluation In Ten States	Percent of recently enrolled children who had private coverage prior to SCHIP enrollment	Estimate 14% 14% Due to change in employment 7% Due to affordability 2% Preferred SCHIP benefits 5% Other 28% Total	1) Survey of 16,700 SCHIP enrollees fielded in 10 states in 2002 as part of a congressionally mandated evaluation funded by the DHHS; and 2) State administrative data that report Medicaid and SCHIP enrollment histories	Study considered only transitions from private coverage to SCHIP as being potential sources of substitution. Does not include substitution from Medicaid to SCHIP. Survey also was performed in 2002; might not reflect current situation. 28% of new enrollees in SCHIP had employer-sponsored coverage in the preceding 6 months, and 14% could have retained that coverage.
J. Nogle, E. Shenkman	2004	Florida KidCare Program Evaluation Report, 2003	Percent of newly enrolled children where family coverage is available to a parent through their employer	18%	Administrative data and telephone surveys. 19,951 surveys conducted over 5 years.	For families of established enrollees, about 16 percent had access to family coverage through their employer.
A.R. Allison et al.	2003	Do Children Enrolling in Public Health Insurance Have Other Options	Percent of new SCHIP enrollees who were eligible to be enrolled in job-based insurance through a parent.	51%	Survey of 1,324 children under 19 who were newly enrolled in SCHIP in Kansas. Survey conducted in 2001 and follow-up in 2002.	Survey asked questions about child's and other household member's insurance coverage in 12 months prior to SCHIP enrollment. Found 70% of newly enrolled children were insured in year prior to SCHIP enrollment. Also asked parents about their current coverage and if child was eligible for private insurance as a dependent.

Figure F-3

Medicaid Econometric Evaluations

Authors	Date	Article	Definition of Crowd-Out	Estimate	Methodology/Data Used	Notes
J. Ham, L. Shore-Sheppard	2005	The Effect of Medicaid Expansions for Low-Income Children on Medicaid Participation and Private Insurance Coverage: Evidence From the SIPP	Private Insurance/ Public Insurance	0%	1985-1995 SIPP	Replicate Cutler-Gruber using SIPP data, instead of CPS data.
L.D. Shore-Sheppard	2005	Stemming the Tide? The Effect of Expanding Medicaid Eligibility on Health Insurance	Private Insurance/ Public Insurance	0%	March Current Population Survey (CPS) 1988-1996 (All children age 18 and under)	Replicates the Cutler-Gruber findings, but finds they are sensitive to the set of controls in the model. When controlling for differential time trends by age of child, crowd-out estimates fall to zero. -- Accounts for age-specific time trends in insurance coverage & incorporates the effects of state-optional expansions.
D. Card, L. Shore-Sheppard	2005	Using Discontinuous Eligibility Rules to Identify the Effects of the Federal Medicaid Expansions on Low Income Children	Private Insurance/ Public Insurance	Bel. Pov. eligible for <100: 0% Bel. pov, elig. for 100-133: 50% 100-133: 0%	1990-1993 SIPP	Compare changes in insurance coverage of children around income and age limits for eligibility.
A. Aizer, J. Grogger	2003	Parental Medicaid Expansions and Child Medicaid Coverage	Coefficient on private coverage equation (no crowd-out calculations)	Statistically insignificant effect on private coverage for mothers and for children	1995-2002 CPS	Compare change in insurance, for those above AFDC eligibility vs. below, in states with adult expansion, before vs. after expansion.
E. Yazici, R. Kaestner	2000	Medicaid Expansions and the Crowding out of Private Health Insurance Among Children	Private Insurance/ Public Insurance	55-59%, 5-24%	1988 and 1992 NLSY	Compare changes in insurance coverage of children becoming eligible to those not becoming eligible.

Authors	Date	Article	Definition of Crowd-Out	Estimate	Methodology/Data Used	Notes
L.J. Blumberg, L. Dubay, S.A. Norton	2000	Did the Medicaid Expansions for Children Displace Private Insurance? An Analysis using the SIPP	% of children made eligible losing private relative to gaining public	4%	1990 SIPP Panel	Compare changes in insurance coverage of children made eligible by expansions to those not made eligible.
Cutler and Gruber (original study)	1996	Health Insurance Eligibility, Utilization of Medical Care, and Child Health	1) The reduction in private insurance relative to the growth in public insurance (private insurance/public insurance) 2) 1-(uninsured/public insurance)	31%-40%; 50% w/ family spillovers	1987-1992 Current Population Survey (CPS)	Does not include crowd-out due to firm decisions to drop insurance or reduce employer contributions.

Figure F-4
Employer Dumping Evaluations

Authors	Date	Article	Definition of Crowd-Out	Estimate	Methodology/Data Used	Notes
J. Gabel, H. Whitmore, J. Pickreign	2008	Report From Massachusetts: Employers Largely Support Health Care Reform, And Few Signs Of Crowd-Out Appear	Dropping of coverage or restricting eligibility		RWJF/NORC Massachusetts Employer Benefits Survey; compared to 2007 Kaiser/HRET Employer Health Benefits Survey	Less than 3 percent of Mass. employers with 3-50 workers said that it was very or somewhat likely that they would drop coverage in the next year. Only 5 percent of these firms indicated that it was very or somewhat likely that the firm would restrict eligibility in the next year.
T. Buchmueller et al.	2006	The Effect of SCHIP Expansions on Health Insurance Decisions by Employers			1997-2001 Medical Expenditure Panel Survey- Insurance Component (MEPS-IC)	Find no evidence that employers responded to SCHIP by dropping insurance coverage altogether.

ATTACHMENT G:
Estimation of Average Monthly Uninsured with from the Current Population Survey with Correction for Under-Reporting of Medicaid and SCHIP Enrollment

For state-level analyses, we generally use the Current Population Survey data which has been expanded to provide a sufficient number of observations to simulate medical assistance and other income-tested programs on a state-by-state level. These data are the source of the annual Bureau of the Census estimates of the number of uninsured in the US. These data also provide estimates of the number of uninsured in each of the 50 states and the District of Columbia.

While the CPS provides the most current data on insurance coverage, it under-reports the number of people covered under the Medicaid program by nearly 40 percent, which causes these data to over-estimate the number of uninsured in the US. Consequently, we corrected the CPS data for under-reporting of Medicaid coverage to provide a more accurate count of the number of people without coverage. Also, these data do not show how sources of coverage change over the year, which is necessary to identify people who are uninsured only part of the year. In this section, we describe the data sources and methodology that we used to estimate the number of uninsured in the US and by state.

A. The Current Population Survey (CPS) Data

The CPS is based upon a representative sample of US residents in each of the 50 states and the District of Columbia. These data provide information on the sources of health insurance coverage for each member of each household selected for the survey. The CPS also provides detailed information on income, family relationship, employment status, citizenship status, and other demographic characteristics. These data permit us to estimate the number of uninsured people by state for various socio-economic groups.

The survey asks people to indicate whether they had insurance in the prior year from each of several sources. Those who do not report being covered by any of these sources in the prior year are classified as "uninsured." Thus, the way the survey is conducted, it reports the number of people uninsured all year. The CPS 2006 estimate reports that 46.4 million people were uninsured all year in 2005 (i.e., the year prior to the March survey).

Some analysts have assumed that the CPS is actually reporting the number of people without insurance at the time of the survey, rather than their coverage status in the prior year. However, it is difficult to believe that all survey respondents are failing to answer the questions as asked, particularly after the Bureau of the Census has revised the survey questions to improve reporting. There are also patterns in the reporting of coverage from more than one source that is generally consistent with people reporting their coverage in the prior year.[122] Consequently, our

[122] Another reason for assuming that people are reporting their sources of coverage in the prior year is that the CPS reports over three times as many people with coverage from more than one source than do other surveys that collect data on a point-in-time basis, such as the Survey of Income and Program Participation (SIPP). This result is consistent with people reporting their coverage sources from the prior year, reflecting that people are often covered under one coverage source for part of the year and another source during the rest of the year.

approach in this study was to accept survey responses as indications of coverage in the prior year.

We also allocated this coverage over the 12 months in 2005 to estimate coverage levels on both an annual and an average monthly basis.

B. Correcting for Under-Reporting of Medicaid and SCHIP

A major draw back of the CPS is that it appears to dramatically under-report the number of people with Medicaid coverage, which causes it to overstate the number of uninsured. The 2006 CPS reports that there are about 40.8 million people who were covered under Medicaid or SCHIP in 2005 (***Figure G-1***). This is substantially lower than the estimated 58.3 million people who were actually enrolled in these programs in 2005, of whom about 56.2 million are receiving full Medicaid benefits (e.g., excludes ineligible immigrants receiving emergency services, or aged covered for the Medicare Part-B premium subsidy only).[123]

We corrected the CPS for under-reporting of Medicaid using The Lewin Group Health Benefit Simulation Model (HBSM). HBSM is a micro-simulation model of the US health care system that is designed to estimate the number of people eligible under proposed expansions in coverage under these programs. The model first allocates earnings over the number of weeks each individual worked during the prior year, and then allocates employer coverage to these weeks. We use these simulated monthly data to estimate income in each month, which we then used to simulate eligibility for Medicaid and SCHIP using the program eligibility levels actually used in their state of residence. For those who report being covered by these programs in 2005, we distribute their coverage under Medicaid/SCHIP across the months where the individual appears to have been eligible.[124]

We also use these estimates of monthly eligibility for Medicaid as the basis for correcting these data for the under-reporting of Medicaid.[125] As discussed above, the model identifies people who meet the income eligibility criteria in their state in each month, which reflects the allocation of annual earnings across periods where people are working. We then select a portion of these people to be reclassified as Medicaid or SCHIP enrolled. The model does this in a way that accounts for changes in eligibility over the year as people move into and out of employment from month-to-month.

---

123 Congressional Budget Office Budget projections.10.211.5

124 The CPS also collects data on the number of months each individual was covered under Medicaid during the year, which we use to determine the total months of coverage in the year.

125 The first step is to reclassify children reporting that they have non-group coverage as SCHIP enrolled in cases where the parents are not covered, and the child appears to be eligible for SCHIP. This is to account for the fact that individual SCHIP programs are often named and designed in a way that resembles private insurance, which is thought to result in some people reporting that they have private non-group coverage. This affects less than two percent of people reporting non-group coverage.

Figure G-1
Comparison of Estimated Number of Uninsured Using the 2006 Current Population Survey (CPS) with and without Corrections for Under-Reporting (millions) [a/]

	CPS With Corrections	Official CPS		CPS With Corrections	Official CPS
Number of Uninsured			**Medicaid Coverage [b/]**		
Uninsured all year	31.4	46.4	Ever covered in year	56.2	40.8
Average monthly	44.2	n/a	Average monthly	44.5	n/a
Ever uninsured in year	59.8	n/a	Covered all year	36.0	n/a
Medicaid eligible not enrolled (monthly)	7.9	n/a			
Employer Coverage			**Other Coverage Sources Ever in Year**		
Ever in year	175.9	161.1	Medicare	40.1	40.1
Average monthly	163.2	n/a	Retiree – Medicare	7.0	7.0
Covered all year	147.9	n/a	Retiree – Non-Medicare	3.7	3.7
			Non-Group - Medicare	10.2	11.5
			Non-Group – Non-Medicare	8.5	12.9
			CHAMPUS/Other	10.7	11.2

a/ Estimates were developed by distributing the reported number of months of Medicaid coverage over the year and by distributing employer coverage over the reported number of weeks worked in the year.
b/ Excludes enrollees with only partial benefits.
Source: Lewin Group analysis of the 2006 current population survey CPS data, with corrections for under reporting of Medicaid coverage.

The imputation process first adjusts the number of people with Medicaid or SCHIP coverage to match program data on the number of people enrolled in the program some time during the year. These imputations are done separately for families, children, the aged and other eligibility groups.[126] We then adjust the number of months of enrollment assigned to these individuals so that these data also replicate program data for average-monthly enrollment in these programs.[127] By matching the CPS to both ever-enrolled and the average-monthly totals, we avoid overstating Medicaid enrollment on an average monthly basis. The resulting data show average monthly enrollment in Medicaid and SCHIP for 2006 of 44.5 million people (***Figure G-2***).

C. Person-Years of Uninsured People

As discussed above, the CPS reports the number of people who were without coverage from any source during all 12 months of the prior year. However, this definition omits those who

[126] In states that do not provide data on average monthly enrollment, it must be estimated from other sources such as the survey of income and program participation (SIPP).
[127] These data must be estimated in states that do not maintain separate counts of average monthly enrollment.

were uninsured for only a portion of the year. This not only understates the number of uninsured, it would also lead us to under-estimate the cost of covering these people under various proposals to expand insurance coverage. Thus, the most appropriate measure of the uninsured for policy purposes is the average monthly number of uninsured, which also can be thought of as "full-time equivalent" counts of the number of person-years without insurance.

As discussed above, we develop an allocation of reported coverage from each source over the 12 months of 2005. We allocated employer wages and health insurance coverage over the periods of work reported in the CPS, and allocated Medicaid coverage over months where these individuals appear to be income eligible. We assume that people reporting coverage from Medicare, CHAMPUS/TriCare or non-group coverage are insured by these sources all year. This enables us to estimate the number of people without insurance coverage in each month.

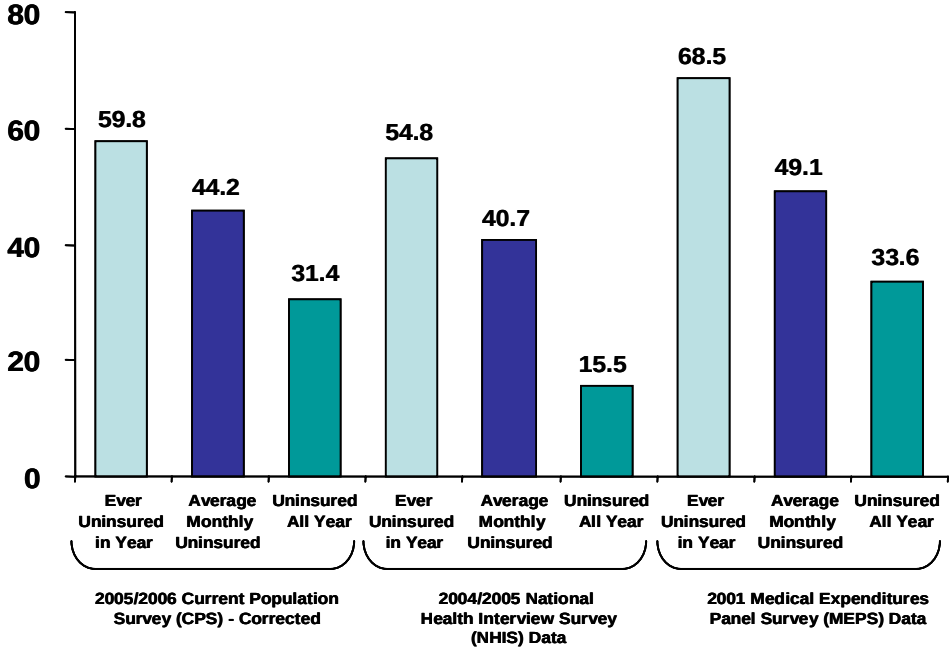
Using the 2006 CPS data with corrections for under-reporting of Medicaid coverage, we estimate that 31.4 million people were without coverage throughout 2005. This compares with the unadjusted estimate if the number of uninsured reported by the Bureau of the Census of 46.4 million people were uninsured all year. About 59.8 million are uninsured sometime during the year. There was an average of about 44.2 million people without coverage in any given month during 2005, which is equal to about 15.3 percent of the US population.

D. Comparisons with Other Data Sources

The resulting counts of the number of uninsured in the CPS nationally (with corrections for under-reporting) result in estimates of uninsured person-years that are generally within 10 percent of what is reported in other national surveys that report the number of the uninsured at a given point in time, such as the Medical Expenditures Panel Survey (MEPS) data, the National Health Interview Survey, and the SIPP.

Figure G-2 compares our estimates with estimates of the number of uninsured using other data sources. Although estimates differ across these surveys, they generally confirm that between 40 and 50 million Americans are without coverage in any given month.

Figure G-2
Comparison of Uninsured Estimates from Three Household Surveys (millions)



Source: Lewin Group analysis of survey data.