

What's Driving the Downward Trend in Employer-Sponsored Health Insurance?

Yu-Chu Shen and Sharon K. Long

Objective. We investigate the factors driving the downward trend in employer sponsored health insurance (ESI) coverage between 1999 and 2002 for low- and middle-income workers, and assess their insurance options in the absence of ESI coverage.

Data. We use the 1999 and 2002 rounds of the National Survey of America's Families (NSAF), supplemented with ESI premiums from the Medical Expenditure Panel Survey, as well as other state- and county-level data from a variety of sources. The sample includes workers between the ages of 19 and 64.

Study Design. We first estimate linear probability models of the probability of having an ESI offer and, for those with an offer, the probability of taking up ESI coverage, using two-stage least square regression on the 2002 worker sample. We then use Oaxaca-Blinder regression-based decomposition methods to identify the factors that explain the changes in ESI offer and take-up between 1999 and 2002.

Principal Findings. We find that while low-income workers are more likely to be uninsured and are most vulnerable to the loss of ESI coverage, many middle-income workers are also in a precarious position when faced with the loss of ESI coverage. Many low- and middle-income workers have few coverage options in the absence of ESI. This is particularly problematic for low-income workers: only 13 percent have a spouse with an ESI offer and the nongroup premium they face increased at a much higher rate than for middle-income workers. Finally, we find that the drop in ESI offers between 1999 and 2002 was driven largely by changes in nature of the workers' jobs, while the drop in ESI take-up was driven largely by rising ESI premiums.

Conclusions. Policies that shore up the ESI system are important for both low- and middle-income workers, as both are vulnerable to a loss of insurance coverage in the absence of ESI. Over time, the potential coverage options available to low- and middle-income workers in the absence of ESI have narrowed as nongroup premiums have increased. While public coverage has provided some protection from that increase for low-income workers, middle-income workers are much less likely to have access to public protection.

Key Words. Employer sponsored health insurance, premiums, low-income workers

Although the majority of Americans receive their health insurance through an employment-based health plan, that number is declining as health insurance premiums rise, the share of the premium that is passed on to employees rises, and fewer firms offer coverage to their workers (Fronstin 2003). The decline in employer-sponsored insurance (ESI) is not limited to low-income workers—the group that is often the focus of public concern and policy debate—but is also occurring among middle-income workers. As we show below, between 1999 and 2002, the share of workers with ESI coverage dropped 3 percentage points for both low-income workers (defined as those with family income less than 200 percent of the federal poverty level [FPL]) and middle-income workers (defined as those with family income between 200 and 400 percent of FPL).

Numerous studies document a widespread decline in ESI in the late 1990s (Cunningham 2002; Fronstin 2003; Holahan 2003; Long and Shen 2004). In addition, many studies focus on the role of premiums in workers' decision to participate in ESI coverage. For example, Cutler (2002) found that the decline of ESI coverage was largely because of a decline in take-up rather than employers deciding to stop offering insurance, and that the decline in take-up was mainly because of rising premiums. Chernew, Frick, and McLaughlin (1997) and Blumberg, Nichols, and Bantthin (2001) also found higher premiums associated with a lower rate of ESI take-up among low-income workers. Aside from the emphasis on ESI premiums, there has been little research providing a systematic analysis of the factors that are behind the current downward trend. Understanding these factors can influence the role of state and federal government in regulating the health insurance market. In a recent paper, Chernew et al. (2005) reported that rising ESI premiums accounted for over half of the decline in overall insurance coverage rate and that changes in economic and demographic factors had little net effect. That study, which focused on 61 large Metropolitan Statistical Areas (MSAs), did not examine whether the determinants differed between the offer decision and take-up decision of insurance coverage.

In this paper, we use data from the National Survey of America's Families (NSAF) to examine the factors driving the changes in the offer and take-up

Address correspondence to Yu-Chu Shen, Ph.D., Assistant Professor of Economics, Naval Postgraduate School, Code GB, 555 Dyer Road, Monterey, CA 93943. Yu-Chu Shen is also a Faculty Research Fellow at the National Bureau of Economic Research. Sharon K. Long, Ph.D., Principle Research Associate, is with the Health Policy Center, The Urban Institute, Washington, DC.

of ESI for low- and middle-income workers between 1999 and 2002—a period of economic boom to recession.

CONCEPTUAL FRAMEWORK

We rely on a standard model of the demand for health insurance coverage (IOM 2001). Individuals choose among:

- ESI coverage through their own employer, if it is available,
- ESI coverage through a spouse or other family member, if it is available,
- coverage in the nongroup market,
- public coverage, if they are eligible, or
- remaining uninsured.

For each individual, their insurance coverage decision will be a function of their personal characteristics (including their health status and health care needs), the coverage options that are available to them, the costs of each of those options (e.g., premiums, deductibles, copays), and their tastes and preferences for insurance. For workers who are offered ESI by their employers, we expect ESI coverage to be lower for those who face higher costs under their ESI plan, have access to coverage through a spouse or other family member, and are eligible for public coverage, all else equal. For workers who do not have an ESI offer, we would expect uninsurance to be higher for those who face higher costs in the nongroup market, are not eligible for public coverage, and do not have the option for coverage via a family member. We provide a detailed model specification in the Methods section.

DATA

This study relies on the 1999 and 2002 rounds of the NSAF, supplemented with state and county-level data from a variety of sources. NSAF provides detailed economic, health, and social characteristics for a representative sample of almost 45,000 families. Of particular relevance to this study, the NSAF oversamples low-income families and has a nationally representative sample of middle-income workers as well. We use the 1999 and 2002 rounds of the

NSAF to study the shift in insurance coverage during this period. Our sample includes workers between the age of 19 and 64.

The overall response rates for the 1999 and 2002 rounds of NSAF were 64 and 52 percent, respectively. For each year, responses to the interviews were weighted to adjust for the oversampling of low-income families, survey nonresponse, and other survey design issues (Brick et al. 2002). Because of the complex design of the NSAF, we rely on a jackknife replication method to obtain accurate variance estimates (Flores-Cervantes, Brick, and DiGaetano 1999).

As noted earlier, we define low-income workers as those with family incomes below 200 percent of FPL for the prior year, and middle-income workers as those with family incomes between 200 and 400 percent of FPL. The low-income (middle-income) workers represent 20 (33) percent of all workers. We exclude self-employed workers from the analysis because our focus is on workers who have the potential of being offered and taking up ESI coverage. Self-employed workers were 12 percent of the worker sample. Lastly, we exclude a handful of workers who reported having no ESI offer from their current employer but reported that they were ESI policyholders. These are most likely retired workers or workers with COBRA (Consolidated Omnibus Budget Reconciliation Act) coverage.

We supplement the NSAF data with information from other sources on the local labor and health care markets for the individual's state and county of residence, including information on eligibility for public insurance programs, and ESI and nongroup premiums. We use the Medical Expenditure Panel Survey (MEPS) to obtain state level, firm-size specific ESI premium measures. We use the Area Resource File to obtain county characteristics such as population, per capita income, number of physicians per capita, and Medicare payment rates. Managed care penetration data are obtained from Interstudy. We use data from the American Hospital Association (AHA) annual survey, a hospital-level dataset, to construct county-level measures of the supply of hospital beds. Lastly we obtained area hospital wage index and Medicare per capita spending from the Centers for Medicare and Medicaid Services.

METHODS

We begin by showing how insurance coverage, especially ESI offer and take-up, in 2002 compares to coverage in 1999 for all workers and for workers by

income group. We then use Oaxaca–Blinder regression-based decomposition methods (Blinder 1973; Oaxaca 1973) to identify the factors that explain the changes in ESI offer and take-up over this period. Although originally developed to examine gender wage gaps, this method has been used in a number of recent studies looking at changes in insurance coverage over time (e.g., Acs 1995; Shen and Zuckerman 2003) and racial disparities in health care access and use (Hargraves and Hadley 2003).

Using the change in the offer rate between 1999 and 2002 as our example, equation (1) shows the change in the share of workers with an ESI offer (Y) in 2002 and 1999, evaluated at the yearly means of the independent variables, X , and their corresponding effect on offer rate (the coefficient, β).

$$\bar{Y}_{2002} - \bar{Y}_{1999} = \bar{X}'_{2002} \hat{\beta}_{2002} - \bar{X}'_{1999} \hat{\beta}_{1999} \quad (1)$$

By adding and subtracting $\bar{X}'_{1999} \hat{\beta}_{2002}$ and rearranging the terms in (1), we can obtain the following relationship:

$$\bar{Y}_{2002} - \bar{Y}_{1999} = (\bar{X}_{2002} - \bar{X}_{1999})' \hat{\beta}_{2002} + \bar{X}'_{1999} (\hat{\beta}_{2002} - \hat{\beta}_{1999}) \quad (2)$$

The observed change in offer rate thus can be decomposed into two components: the first part of equation (2) represents changes that can be explained by shifts over time in the characteristics of the workers, their jobs and their communities, and the ESI premium that they face; the second part of equation (2) represents changes because of differences in how these observed factors affect a person's probability of having an ESI offer and other factors not captured in the model.¹ We apply the same method of decomposition for the ESI take-up model. We obtain standard errors for the Oaxaca–Blinder decomposition estimates using the unbiased asymptotic variance methods proposed by Jann (2005).

To obtain estimates of the β 's, we estimate a linear probability model of the probability of having an ESI offer (or taking up an ESI offer) using two-stage least square regression on the 2002 worker sample.² We adopt this two-stage approach instead of the usual ordinary least square (OLS) regression so that we can obtain consistent estimates of the effects of Medicaid eligibility and nongroup premiums (details below). We estimate the equation separately for low- and middle-income workers. The offer equation includes all workers in our sample. The take-up equation only includes workers who have an ESI offer.

Building on our conceptual model, the likelihood of a worker having an ESI offer or taking up that offer is assumed to be a function of:

- *Demographic and socioeconomic characteristics of the worker.* We capture a worker's taste and preference for insurance through a set of demographic, socioeconomic, and preference variables. These include age, gender, race/ethnicity, self-reported health status is fair or poor, whether the individual has a health condition that limits his or her ability to work, education, family structure (marital status, number of children), and two self-reported measures of economic hardship (whether the worker's family has difficulty paying bills or experiences food insecurity).³ Preference for insurance is also influenced by the degree of risk aversion. We constructed a risk aversion indicator using a self-reported question that indicates whether the worker is more likely to take risks than the average person. The binary risk aversion indicator takes on a value of 1 if the person reports that he or she is more likely to take risks than the average person and 0 otherwise.
- *Characteristics of the worker's employment.* These measures include whether the individual has worked full-time at the same employer for at least 1 year, whether the individual has worked full-time at the same employer for less than 1 year, and whether the individual has worked part-time at the same employer for at least 1 year (the omitted category is working part-time at the same employer for less than 1 year).
- *Characteristics of the worker's job.* To capture the variation in ESI offer rates across industry and firm size we include seven industry categories and five firm size categories (see Table 2 for a description of each category).
- *The ESI premium faced by the worker.* We include a state-level firm-size specific measure of the ESI premium faced by each worker. For the offer equation, we include the total ESI premium (log transformed) and the share of the total premium (in percentage terms) paid by a typical employer of that firm size in that state. For the take-up equation, we include the worker's contribution toward the ESI premium (log transformed). Details on these premium measures are provided in the Key Variable Construction section.
- *The availability of ESI alternatives to the worker.* Without ESI, an individual's coverage options narrow to obtaining coverage through a family member's job, purchasing nongroup insurance, or enrolling in a public program (for those who are eligible). We capture these

alternative sources of coverage by including indicators of whether the worker is eligible for public programs and the nongroup premium the worker is likely to face in the individual market (log transformed). We provide more details on how we estimate the public eligibility indicator and nongroup premium in the Key Variable Construction section. If the worker has a spouse or a partner, we capture whether the spouse works, whether the spouse works full-time, and whether the spouse has ESI offer. It should be noted that we were not able to capture the availability of an ESI offer from family members other than a spouse. To the extent that young workers could obtain coverage through their parents, we underestimate the availability of ESI-dependent coverage.

- *Characteristics of the worker's community:* We capture both the characteristics of the health care provider market and the health care costs in the county where the worker lives. These variables include the local area wage index, the managed care penetration rate in county, the number of physicians per capita in the county, the percent of physicians in the county who are in general/family practice, the number of hospital beds per capita in the county, the percent of hospital beds that are in public hospitals in the county, whether county is part of a Metropolitan Statistical Area (MSA), Census region, and 13 NSAF state indicators.

It should be noted that in this model, we are not able to capture job mobility if a firm stops offering ESI coverage. To the extent that workers are able to move to firms that continue to offer ESI, our estimates will overstate the increase in uninsurance as a result of losing an ESI offer. However, we would argue that it is unlikely that significant shares of workers, particularly low-income workers in an economic downturn, would be able to move to new jobs that have ESI coverage.

We also do not have information on the relative generosity of the ESI health plan (e.g., covered services, deductibles, and copayments). A worker might not take an ESI offer if the benefit package and cost-sharing requirements offered was deemed insufficient. We use firm size as a proxy for the generosity of the ESI health plan, as large firms offer somewhat more generous benefits than smaller firms (Kaiser Family Foundation and Health Research and Educational Trust 2002).

KEY VARIABLE CONSTRUCTION

There are five key variables to be constructed for this study: a measure of each individual's current health insurance coverage, a measure of whether the individual's employer offers insurance coverage to workers, the ESI premium faced by the individual, the nongroup premium faced by the individual, and the individual's eligibility for public coverage.

Insurance Status

In constructing the first measure, we use information on reported health insurance coverage at the time of the survey to classify each individual into one of five mutually exclusive groups, ordered hierarchically. The order of the hierarchy is: (1) ESI through own employer, (2) ESI through another family member (e.g., spouse or parent), (3) Medicaid, State Children's Health Insurance Program (SCHIP), or any state-specific program, (4) coverage through the nongroup market, and (5) uninsured. The small number of individuals (1.3 percent in our sample) who reported that they had both ESI and public coverage were classified as having ESI.

ESI Offer

To identify individuals working in a firm that offers ESI coverage, we constructed an offer status indicator that takes the value of 1 if the person reported having ESI through his or her own employer, or if the person answered "yes" to the survey question, "Does your current employer offer health insurance to workers in the same position as yours?" The indicator takes a value of 0 otherwise.⁴

The NSAF offer question seeks information about the type of job that the person holds, not about the person's own particular experience. Consequently, individuals can answer "yes" to the question even if they themselves are not eligible to enroll in their employer's plan. As a result, the offer rate in the NSAF will be higher than those based on data sets that focus on whether a particular individual received an offer. We address this issue by recoding the offer variable in NSAF to 0 for individuals without ESI coverage who report that their firm offers coverage to workers in the same position as theirs, but are likely to be ineligible for that ESI coverage themselves. Those individuals are persons who have been with their current employer for less than 1 year. This edit brings the NSAF offer rate closer to that of other surveys such as CPS. If we were to further restrict the ESI offer to those working full-time, our basic findings are unchanged.

In addition, since the offer question was asked in a consistent way in the 1999 and 2002 NSAF surveys, it provides an accurate measure of changes in offer probabilities over time.

ESI Premiums

It is important to control for the level of ESI premiums in modeling insurance status. Because NSAF does not collect premium information, we rely on other data sources to construct measures of the ESI and nongroup premiums faced by each worker in our sample.

In constructing our measure of ESI premiums, we use data from the Medical Expenditure Panel Survey (MEPS) from 1999 and 2002. Specifically, MEPS publishes state-level information on total premium and premium contribution by workers for different firm size categories (< 10, 10–24, 25–99, 100–999, and 1,000+ workers). We match these premiums to workers in our sample based on their firm size and their state of residence. In other words, the ESI premium assigned to each NSAF worker represents the average ESI premium this worker would likely face given his or her firm size and state of residence. An average ESI premium contribution by workers is constructed using a similar strategy.

For the offer equation, we include the total premium as well as the employer's share of the premium. By using total premium in the offer equation, we are assuming that wages do not adjust to reflect the rising premium. We believe this is a reasonable assumption given that wages are sticky in the short run and our analysis period is relatively short.

One concern with the premium measures is that the variation in premiums across states might reflect variations in both prices and utilization. In order to have premium measures that reflect comparable utilization levels, we develop a state-specific utilization adjustment factor to standardize our premiums. Specifically, we use total Medicare per capita spending (part A+part B) as the basis for the adjustment factor. Studies have shown that differences in the amount and types of care used, rather than population characteristics and prices, are responsible for much of the variation in Medicare per capita spending (see a review in Gold 2004). We assign each state an adjustment factor that is the ratio between the state's average Medicare per capita spending and the median Medicare per capita spending in the nation. We divided our premium by this adjustment factor to get a standardized premium measure.

We recognize that the state and firm-size specific premium is an imperfect proxy for the actual premium that the worker faces. However, this premium measure alleviates the possibility of estimation bias that would result from unobserved individual characteristics affecting both the offer and take-up decisions and the premiums the worker faces. In an alternative specification, we used a county-level measure of average ESI premiums (and contributions) instead of the state level firm-size specific premiums. This measure addresses the potential estimation bias that would arise if job mobility made firm-size specific premiums endogenous to the ESI offer and take-up rates (Gruber 2000).⁵ Our results are robust whether we use the county-level or state-level firm-size specific measure of ESI premiums. A second concern is that premiums are measured at the aggregate level so the estimated standard errors will overstate the precision of our estimates when we estimate the offer and take-up equation at the individual worker level. However, this does not affect our decomposition results as the decomposition estimates do not depend on the estimated standard errors.

Nongroup Premium

Workers might be more likely to take a job with an ESI offer or take up an ESI offer when it is available if their condition is such that they will face a high nongroup premium. Because observed nongroup premiums in the market are not likely to reflect the potential nongroup premiums faced by individuals who do not currently purchase nongroup coverage (Hadley and Reschovsky 2003), we rely on outside sources to estimate the nongroup premiums that would be faced by the workers in our sample. Specifically, we apply the framework for generating nongroup premium estimates developed by Hadley and Reschovsky (2003) for the Community Tracking Survey (CTS) to our NSAF data. Hadley and Reschovsky generated estimates of nongroup premiums for their CTS sample through a two-step process. First, they estimated a model of nongroup premiums using data from the CTS, which collects information on nongroup premiums for the individuals in the sample who have nongroup coverage. Their model captures the effect of worker demographics, family structure, job characteristics, nongroup market regulations in the state, and local market characteristics on the individual's nongroup premium, while controlling for the unobservable factors that led the individuals to select into the nongroup market (i.e., they employed a Heckman selection model).⁶ Second, they then use the coefficient estimates from the model to predict the nongroup premiums that would be faced by all members of their sample (regardless of insurance status).

In estimating nongroup premiums for our sample, we use the coefficient estimates from Hadley and Reschovsky's model and replicate their second step using NSAF data to obtain estimates of the nongroup premiums that would be faced by each NSAF worker in our sample.⁷

Simulating Eligibility for Public Programs

Our measure of eligibility for Medicaid, SCHIP, and other public programs is obtained from a micro-simulation model developed at the Urban Institute (Davidoff et al. 2004). Eligibility for each worker is based on the program rules for Medicaid, SCHIP and, if relevant, other state programs in place in the worker's state of residence during the relevant years.⁸ Because the individual's eligibility for public coverage may be endogenously related to the take-up decision (biasing OLS estimates), we adopt the approach by Cutler and Gruber (1996). Specifically, we use the percent of a standard adult population that would have been eligible for Medicaid under each state's rules as the instrument for the individual's eligibility in a two-state least squares model. The instrumental variables approach will provide consistent coefficient estimates for our decomposition.

RESULTS

In 2002, 83 percent of all working adults were covered through ESI, with most of those workers covered through their own employer (Table 1). Seventy-nine percent of the workers received an ESI offer from their employer and 65 percent had ESI coverage from that employer, for an ESI take-up rate of about 82 percent.⁹ Of the remaining workers, very few relied on public coverage (2.4 percent) or nongroup coverage (2.8 percent), leaving about 12 percent uninsured.

Not surprisingly, the pattern of insurance coverage was quite different for workers at different income levels in 2002. Low-income workers with family incomes less than 200 percent of the FPL were much less likely than higher income workers to have an ESI offer from their current employer (55 percent) and less likely to take-up an offer when it was available (76 percent). As a result, many fewer low-income workers had ESI coverage (51 percent). Although public coverage and nongroup coverage were higher (10 percent and almost 4 percent, respectively) for the low-income workers, their uninsurance rate was quite high, at 35 percent, in 2002.

Table 1: Insurance Status for Working Adults Aged 19–64, by Income Group

	All Working Adults	Working Adults by Income Group			
		<200% FPL	200–400% FPL	400–600% FPL	> 600% FPL
<i>Insurance status in 2002 (%)</i>					
Insured	87.8	64.3	87.3	95.6	97.6
ESI coverage	82.6	50.6	83.1***	92.4***	95.4***
Own ESI	64.5	41.9	65.8***	70.9***	72.7***
Other ESI	18.2	8.7	17.4***	21.5***	22.7***
Public coverage	2.4	10.2	1.3***	0.3***	0.0***
Nongroup coverage	2.8	3.5	2.9	2.9	2.2**
Uninsured	11.8	35.1	12.3***	4.0***	2.1***
Employer offered ESI in 2002 (%)	78.8	55.4	78.6***	85.5***	89.5***
Take-up rate for ESI offer (%)	81.8	75.7	83.7***	82.9***	81.2***
Sample size	28,607	7,074	9,710	6,270	5,553
<i>Change in insurance status from 1999</i>					
Insured	0.3	-0.1	-2.2**	1.3	0.5
ESI coverage	-0.9	-3.0***	-3.3***	0.0	-0.1
Own ESI	-1.6**	-1.6	-4.2***	-1.0	-1.0
Other ESI	0.8	-1.4	1.0	1.0	0.9
Public coverage	0.5**	2.7***	0.3	0.1	-0.2
Nongroup coverage	0.5**	0.0	0.6	0.9	0.6
Uninsured	-0.3	0.1	2.2**	-1.3	-0.5
Change in employer offers of ESI	-0.3	-0.5	-2.5***	0.0	0.1
Take-up rate for ESI offer	-1.8***	-2.2	-2.6***	-1.2	-1.2
Sample size	60,021	14,973	20,624	13,194	11,230

Source: 1999 and 2002 National Survey of America's Families.

Note: Income is defined as family income over the past year. Insurance coverage is defined as of the day of the survey.

*, **, ***Significantly different from workers with income <200% of FPL at the .10 (.05) (.01) level.

+, **, ***Significantly different from 0 at the .10 (.05) (.01) level.

ESI, employer-sponsored insurance; FPL, federal poverty level.

Among higher income workers there are clear gains in coverage as income rises. The likelihood of an ESI offer increases with income, as does the ESI take-up rate. Among middle-income workers with family income between 200 and 400 percent of the FPL 83 percent have ESI coverage, compared with over 95 percent for workers in the highest income group (workers with family income above 400 percent of the FPL). Consistent with those patterns, uninsurance also drops rapidly with income: 12 percent of the middle-income workers were uninsured in 2002 versus only 2 percent of the highest income workers.

How Did Insurance Coverage Change between 1999 and 2002?

There were significant changes in insurance coverage for workers between 1999 and 2002, although only for the two lowest income groups. ESI coverage dropped about 3 percentage points for both the low- and middle-income workers. For low-income workers, the drop in ESI coverage was split fairly evenly between drops in own ESI coverage and ESI coverage through other family members. For these workers, the decline in ESI coverage was offset almost entirely by an increase in public coverage, leaving uninsurance unchanged between 1999 and 2002 for the low-income workers.

In contrast, the drop in ESI coverage for middle-income workers was due to a significant reduction in own ESI coverage (more than 4 percentage points), offset by a small increase in ESI coverage through a spouse or other family member (1 percentage point). The middle-income workers in 2002 were much less likely than similar workers in 1999 to have an ESI offer (down 2.5 percentage points) and, when they had an offer, to take-up ESI coverage (down 2.6 percentage points).¹⁰ With the drop in ESI coverage among these middle-income workers between 1999 and 2002, their uninsurance increased by 2.2 percentage points. Thus, while uninsurance remained much more common among low-income workers, the share of middle-income workers facing uninsurance increased over the period because of a significant drop in their ESI coverage.

For workers with higher incomes (incomes above 400 percent of the FPL), there was virtually no change in overall ESI coverage and actually a slight reduction in uninsurance. Therefore for the rest of our analysis, we focus on the low- and middle-income workers who faced changes in their insurance status over the period.

Table 2: Characteristics of the Working Adults Aged 19–64, by Income Group (Percentages, Except as Noted)

<i>Characteristics</i>	<i>2002</i>		<i>Change Since 1999</i>	
	<i>< 200% FPL</i>	<i>200–400% FPL</i>	<i>< 200% FPL</i>	<i>200–400% FPL</i>
Demographics				
Age (years)	34.9	38.1***	0.5	0.4
Male	48.0%	53.1%***	–0.3	0.3
Race/ethnicity				
White, non-Hispanic	51.5%	69.7%***	–1.6	–3.2+++
Black, non-Hispanic	17.1%	12.6%***	–1.3	1.7 ⁺
Hispanic	27.1%	12.4%***	2.9 ⁺⁺	1.5 ⁺⁺
Other, non-Hispanic	4.3%	5.3%	0.1	0.1
Is a citizen	81.5%	92.5%***	–2.2 ⁺⁺	–1.7 ⁺⁺
Education				
High school or less	62.5%	46.8%***	2.5 ⁺	1.3
Some college	27.1%	32.8%***	–2.2 ⁺⁺	–0.4
Bachelors degree or more	10.4%	20.4%***	–0.2	–0.8
Family type				
Single adult, no children	28.4%	27.7%	–1.2	1.8
Single adult, with children	28.0%	13.4%***	–0.4	0.5
Married adult, with children	35.0%	42.0%***	–0.3	–3.4+++
Married adult, no children	8.6%	16.9%***	14.0	2.0 ⁺
Risk averse	52.8%	56.6%***	–5.6 ⁺⁺⁺	–5.1 ⁺⁺⁺
Employment				
Part-time worker	24.3%	14.0%***	3.0 ⁺⁺	1.6 ⁺⁺
Full-time worker	75.7%	86.0%***	–3.0 ⁺⁺	–1.6 ⁺⁺
Has worked at least 1 year at current employer	63.4%	78.3%***	–1.6	–4.4+++
Employer size				
<25 workers	40.0%	29.6%***	3.3 ⁺⁺	3.4+++
25–99 workers	20.4%	19.0%	–1.1	–0.4
100–499 workers	17.2%	20.9%***	–0.5	–0.6
500 or more workers	8.4%	12.5%***	–1.8 ⁺	–1.7 ⁺
Government worker and other	13.3%	17.7%***	–0.3	–1.0
Industry				
Construction	7.7%	7.9%	0.2	1.3 ⁺
Manufacturing	14.8%	17.9%**	–3.6 ⁺⁺⁺	–1.9 ⁺
Transportation/communication/ utilities	4.6%	7.2%***	–0.7	–0.1
Wholesale/retail trade	25.8%	18.9%***	3.0 ⁺⁺⁺	2.5 ⁺⁺
Finance/insurance/real estate	2.9%	4.8%***	–0.5	–1.8 ⁺⁺⁺
Services	36.5%	35.9%	0.7	0.4
Agriculture/forestry/public administration	7.4%	7.2%	0.7	–0.6

continued

Table 2: Continued

Characteristics	2002		Change Since 1999	
	< 200% FPL	200–400% FPL	< 200% FPL	200–400% FPL
Average ESI premium in worker's county of residence				
Total premium for single policy (dollars)	2,759	2,786	703 ⁺⁺⁺	696 ⁺⁺⁺
Worker contribution for single policy (dollars)	438	458 ^{**}	133 ⁺⁺⁺	143 ⁺⁺⁺
Total premium for family policy (dollars)	7,054	7,137	2,019 ⁺⁺⁺	2,118 ⁺⁺⁺
Worker contribution for family policy (dollars)	2,012	1,977	520 ⁺⁺⁺	524 ⁺⁺⁺
Spouse employment (for those with a spouse)				
Full-time worker	40.5%	58.9% ^{***}	– 0.4	– 4.0 ⁺⁺
Part-time worker	12.6%	12.2%	0.4	– 1.7 ⁺
Potential insurance options				
Spouse's employer offers ESI	13.2%	30.9% ^{***}	– 0.7	– 2.1 ⁺
Eligible for public coverage	19.0%	5.2% ^{***}	5.6 ⁺⁺⁺	3.0 ⁺⁺⁺
Nongroup premium (dollars)	3,223.00	3,948.00 ^{***}	824.56 ⁺⁺⁺	410.87 ⁺⁺⁺
Sample size	7,084	9,716	14,996	20,632

Source: 1999 and 2002 National Survey of America's Families

Note: Income is defined as family income over the past year. Insurance coverage is defined as of the day of the survey.

*, **, ***Significantly different from workers with income <200% of FPL at the .10 (.05) (.01) level.

+, ++, +++Significantly different from 0 at the .10 (.05) (.01) level.

ESI, employer-sponsored insurance; FPL, federal poverty level.

Changes in Worker Characteristics between 1999 and 2002

The level of ESI coverage in 2002 reflects the probability that the workers' employers offer coverage and the probability that the workers take up that coverage. Changes over time in ESI coverage could occur because of changes in the characteristics of workers or their jobs, changes in employer's likelihood of offering ESI or changes in the individual's likelihood of taking up an offer when it is available. We begin by examining shifts in the characteristics of workers and their jobs over the 1999–2002 period.

As shown in Table 2, we do see an increase in the share of workers with characteristics that are known to be associated with a lower likelihood of ESI coverage (Shen and Zuckerman 2003). These include increases in the shares of low- and middle-income workers who are of Hispanic origin, who are non-

citizens, and who have low levels of educational attainment. Similarly, we see an increase in the share of workers in jobs that have a lower likelihood of ESI coverage (Chollet 1994; Gruber 2000). Between 1999 and 2002, there were increases in the shares of low- and middle-income workers who were working part-time, who had been at their job for less than 1 year, and who were working for small firms. There was also a shift away from jobs in manufacturing industries to jobs in wholesale and retail trade, which are less likely to offer ESI coverage to their workers.

Not surprisingly, the ESI premiums increased substantially between 1999 and 2002. Total ESI premium for single (family) policy was increased by \$700 (\$2,100), to about \$2,800 (\$7,100) in 2002. The worker's share of the ESI premium also rose rapidly, with the worker contribution for a single (family) policy increasing by about \$140 (\$520), to \$450 (\$2,000) in 2002.

The economic downturn has negatively affected the ESI offer from spouse and the affordability of nongroup premiums. For low-income workers, only 13 percent had a spouse with an ESI offer in 2002, and the nongroup premium they were likely to face increased by \$824 to \$3,223. In contrast, 31 percent of middle-income workers can obtain coverage through a spouse and they face an increase in nongroup premium by \$411. Expansions in public coverage somewhat offset these negative effects. The share of low-income (middle-income) workers who were eligible for public insurance was 5.6 (3.0) percentage points greater in 2002.

What Explains the Change in ESI Coverage during This Period?

In Table 3, we use regression-decomposition methods to determine the extent to which the changes in ESI coverage that occurred between 1999 and 2002 are explained by the changes in premiums and in the characteristics of the workers and their jobs over the period, as opposed to other unobserved factors (the regression coefficients for the models that underlie our decomposition results are included in the Appendix). We examine changes in the probability of an ESI offer and changes in ESI take-up for those with an offer. As the change in the probability of having an ESI offer for low-income workers was less one percentage point, we do not attempt the regression decomposition for that outcome for those workers.

The first row of Table 3 shows the total difference in the probability of workers' having an ESI offer or taking up ESI coverage between 1999 and 2002. The next two rows separate the total differences into that which can be attributed to differences in observed factors over time and that which is due to

Table 3: Regression-Based Decomposition of Changes in ESI Offer and ESI Take-up between 1999 and 2002 for Working Adults Aged 19–64, by Income Group

	ESI Offer (200–400% FPL)			ESI Take-up (<200% FPL)			ESI Take-up (200–400% FPL)		
	Changes in Probability	SE	Percent Variation	Changes in Probability	SE	Percent Variation	Changes in Probability	SE	Percent Variation
Total difference between 1999 and 2002	-2.2		100	-2.2		100	-2.6		100
Difference because of changes in factors other than worker and job characteristics	-0.9	1.0	41	0.5	1.6	-22	0.2	1.0	-7
Difference because of changes in worker and job characteristics	-1.3	0.9	59	-2.7	1.3	122	-2.8**	0.8	107
Difference because of changes in worker and job characteristics	-1.3	0.9	100	-2.7	1.3	100	-2.8**	0.8	100
Demographic and preference characteristics [†]	-0.5*	0.3	39	-0.1	0.6	5	0.0	0.4	1
Employment characteristics [‡]	-1.8**	0.3	137	0.0	0.2	1	0.0	0.1	0
Job characteristics [§]	-0.8**	0.2	64	-0.9**	0.3	33	-0.4**	0.1	15
Availability of alternative insurance sources [¶]	1.8**	0.4	-135	-0.3	0.6	10	-0.1	0.5	4
State-level firm size specific premium	0.2	0.7	-13	-1.9**	0.8	72	-2.1**	0.5	74
County of residence	-0.1	0.1	8	0.5**	0.2	-20	-0.1	0.1	5

Source: 1999 and 2002 National Survey of America's Families.

Note: Income is defined as family income over the past year. Insurance coverage is defined as of the day of the survey. Since there was not a significant change in the probability of having an ESI offer for low-income workers between 1999 and 2002, we do not attempt a decomposition for that outcome here.

*, **, ***Significantly different from zero at the .10 (.05) level.

[†]Includes age, sex, health status, disability status, education, family structure, economic hardship, risk aversion indicator, race.

[‡]Includes whether individual works full-time, whether individual has worked part-time at same employer for 1 year or more, or whether individual has worked full-time at same employer for 1 year.

[§]Includes industry type and number of employees in the firm.

[¶]Includes eligibility indicator for public program, log (nongroup premiums), whether spouse works, whether spouse works full-time, whether spouse has ESI offer.

^{||}Includes MSA wage index, HMO penetration rate in county, number of MDs per capita in the county, percent of MDs in the county who are general/family practice, number of hospital beds per capita in the county, percent hospital beds that are public in the county, whether county is a MSA region, and 13 NSAF state dummies.

changes in other factors. The bottom half of the table separates the differences because of changes in observed factors into the component parts: differences because of changes in demographic characteristics, changes in employment and job characteristics, changes in the alternative insurance options, changes in total ESI premiums (for the likelihood of having an ESI offer) or the workers' contribution to ESI premiums (for ESI take-up by workers with an offer), and changes in other characteristics of the worker's county of residence.

We find that the reduction in the probability of an ESI offer for middle-income workers is driven largely by changes in the observed characteristics of workers and their jobs and, to a lesser extent, by demographic/preference characteristics. Changes in the characteristics of the worker and their job include reductions in the share of workers who are working full-time, reductions in job tenure, a shift away from manufacturing jobs, and a shift toward jobs in smaller firms. In fact, changes in employment and job characteristics alone accounted for an even greater reduction in the probability of an ESI offer than was observed (-2.6 percentage points versus the -2.2 percentage points), while changes in demographic characteristics accounted for a -0.5 percentage point reduction.

The negative effects on an ESI offer of the changes in worker and job characteristics between 1999 and 2002 were mitigated substantially by the changes in alternative insurance sources available to the workers. If workers in 2002 had the same alternative insurance sources available as in 1999 (i.e., same share of spouses with ESI offer, same level of nongroup premium, same share of workers eligible for public insurance), we would have predicted a 1.8 percentage point increase in the ESI offer rate. This result is driven by the fact that our regression model predicts that workers in 2002 were more likely to work for firms that offer coverage if their spouse did not have an ESI offer or if they faced a high nongroup premium, a prediction that is consistent with the conceptual framework. As a result, the decline in the share of workers with a spouse with an ESI offer and the increase in the nongroup premiums that the workers faced between 1999 and 2002 would be associated with an increase in the share of workers with an ESI offer, all else equal. Although ESI premiums increased over the period of our study, employers reduced their share of premium contributions to offset their burden. Therefore ESI premium change had a negligible effect on whether the worker had an ESI offer.

By contrast, for ESI take-up for both the low- and middle-income workers, changes in the ESI premium contributed by workers was the largest factor in explaining the changes between 1999 and 2002, followed by changes in job

characteristics. For low-income workers, we would have predicted a 1.9 percentage point reduction in ESI take-up based on the changes in ESI premiums alone. Changes in the nature of the jobs (such as industry type and employer size) accounted for another 0.9 percentage point reduction in ESI take-up. The availability of an alternative insurance source accounted for an additional 0.3 percentage points of the reduction. That difference is mitigated somewhat by changes in health care market characteristics of the county of residence, and other unobserved market factors.

For middle-income workers, changes in the observed factors would predict a 2.8 percentage point drop in ESI take-up between 1999 and 2002, whereas the observed drop in ESI take-up is 2.6 percentage points. Similar to the low-income worker sample, changes in ESI premiums alone would account for 74 percent of the explained variation (predicting 2.1 percentage points drop in ESI), and job characteristics would account for another 15 percent of the explained variation (predicting another 0.4 percentage point reduction).

SUMMARY AND CONCLUSIONS

The recent economic downturn shifted many workers from full-time to part-time work, from work in manufacturing to wholesale/retail trade, and from long-term jobs to jobs with shortened tenure. At the same time, premiums in both the ESI market and the nongroup market rose substantially. These changes all contributed to the downward trend of ESI coverage over the 1999 and 2002 period.

We draw several conclusions from this study. First, while low-income workers are more likely to be uninsured and are most vulnerable to the loss of ESI coverage, many middle-income workers are also in a precarious position. Uninsurance for middle-income workers increased between 1999 and 2002, reflecting a loss in ESI coverage and a decline in the share of workers with coverage options outside of ESI. Second, many low- and middle-income workers have few coverage options in the absence of ESI. This is particularly problematic for low-income workers: only 13 percent of them have a spouse with an ESI offer and the nongroup premium they faced increased at a much higher rate than that for middle-income workers. Third, the reduction in ESI offers for middle-income workers between 1999 and 2002 was driven largely by changes in nature of their jobs, while changes in ESI take-up for both low-

and middle-income workers were driven largely by the rising ESI premiums and to a lesser extent by changes in the nature of the jobs over this period.

There are three key limitations to this study. First, while we have made an attempt to address the endogeneity of various insurance options by using instrumental variables methods for public eligibility, using selection-corrected nongroup premiums, and using firm-level rather than individual-level ESI premiums, it is likely that our estimates retain some degree of bias. Second, we do not capture any increases in job mobility that might occur if a firm stopped offering ESI coverage. While we believe that this is likely to be small given that we focus on lower income workers whose alternative job options are much more limited than highly skilled workers, it nevertheless remains a limitation of our model. Third, as noted earlier, we obtain estimates of the standard errors of our decomposition results using a method proposed by Jann (2005). While we focus on the point estimates in our discussion, it should be noted that the confidence intervals around some of our statistically significant estimates are quite wide. Replicating the analysis using a survey with larger sample sizes (such as the CPS) would be a useful extension of this work.

With these caveats in mind, our findings suggest that policies that shore up the ESI insurance system are important for both low- and middle-income workers, as both are vulnerable to a loss of insurance coverage in the absence of ESI. Over time, the potential coverage options available to low- and middle-income workers in the absence of ESI have narrowed as nongroup premiums have increased. While public coverage has provided some protection from that increase for low-income workers, middle-income workers are much less likely to have public protection. Further, as states scale back their Medicaid programs in response to on-going fiscal problems (most notably, Missouri, Oregon, and Tennessee), public coverage is disappearing as an option for some low-income workers as well. With the continuing rise in premiums for both ESI and nongroup coverage (KFF/HRET, 2004) and the call for substantial cutbacks in Medicaid as part of an effort to reduce the federal deficit and address state budget gaps, it is likely that, in the absence of policies to address the erosion in private coverage, uninsurance will continue to increase for both low- and middle-income workers.¹¹

ACKNOWLEDGMENTS

This research was funded by the Robert Wood Johnson Foundation and majority of the work was done while Dr. Shen was at the Urban Institute. The

opinions expressed are those of the authors and do not represent the views of their affiliated institutions, their trustees or sponsors.

NOTES

1. Note that we can also use 1999 regression coefficients to obtain similar decomposition results (this is what Oaxaca and Binder called the index number problem). We chose 2002 as the basis for the regression model because we would like to capture current behavior.
2. As with previous studies decomposing changes in insurance coverage, we estimate linear regression models rather than the logistic or probit models that are more commonly used for binary dependent variables because the linear model simplifies the use of the decomposition method. As the coefficients from the linear probability model provide consistent parameter estimates for models with binary dependent variables, the estimates from our decomposition approach will also be consistent (Acs 1995).
3. We are limited in our ability to control for the full range of health and disability measures that are likely to affect both eligibility for public coverage and the nongroup premium that an individual would face. NSAF provides only relatively limited measures of health and disability status.
4. In addition, for a handful of workers who reported that they were ESI policyholders and that they had worked at their current employer for at least 2 years, but did not report having ESI through their own employer, we recoded them to indicate ESI coverage through their own employer.
5. We generate average county-level ESI premiums by multiplying the state-level average premium for a specific firm size by the share of workers in that firm size in each county (obtained from County Business Pattern Files), and summing across all firm size categories for each county.
6. Specifically, Hadley and Reschovsky use the following demand-side variables to identify their selection model (i.e., those were excluded in their second stage premium equations): whether a person has a spouse covered by Medicare, whether a person is a risk taker, race and ethnicity, a measure of the generosity of the state's Medicaid/State Children's Health Insurance Program (SCHIP) eligibility rules for low-income children, interacted with the presence of children and low income, and the distance to the nearest safety-net provider.
7. We would like to thank Jack Hadley and Jim Reschovsky for providing their coefficient estimates and other technical assistance to help us in generating our estimates of nongroup premiums.
8. We would like to thank Amy Davidoff and Alshadye Yemane for providing the eligibility measures.
9. It should be noted that the take-up measure here could capture an increase in the rate of worker declinations of offer, an increase in the likelihood that employers are offering coverage to some workers but not others holding similar positions, or a combination of both. Unfortunately, there are no data that can be used to assess

- whether a change in the probability of eligibility has occurred during this time period. While the Current Population Survey had been conducting an employee benefits supplement to their February survey in odd numbered years that could have answered this question, that supplement has been discontinued.
10. Given the ESI offer question that our analysis is based on, the decline in take-up calculated here could be attributable, at least in part, to a change in the likelihood of eligibility for an employer offer of ESI. If employers became more likely over this period to offer coverage to only certain workers in a particular establishment, then this would also be reflected as a decline in take-up, since take-up is computed as the probability of have ESI coverage given a positive response to the survey's offer question.
 11. The Secretary of the U.S. Department of Health and Human Services established a Medicaid Commission in May 2005 that has provided recommendations on options to achieve \$10 billion in Medicaid savings (see <http://www.cms.hhs.gov/faca/mc/details.asp>).

REFERENCES

- Acs, G. 1995. "Explaining Trends in Health Insurance Coverage between 1988 and 1991." *Inquiry* 2 (1): 102-10.
- Blinder, A. S. 1973. "Wage Discrimination: Reduced Form and Structural Estimates." *Journal of Human Resource* 8: 436-55.
- Blumberg, L. J., L. M. Nichols, and J. S. Banthin. 2001. "Worker Decisions to Purchase Health Insurance." *International Journal of Health Care and Finance Economics* 1 (3-4): 305-25.
- Brick, J. M., D. Ferraro, T. Strickler, C. Rauch, and J. S. Passel. 2002. "Weighting Procedure for the 2002 NSAF." NSAF Methodology Report no. 3. Washington Urban Institute and Child Trends.
- Chernew, M., D. M. Cutler, and P. S. Keenan. 2005. "Increasing Health Insurance Costs and the Decline in Insurance Coverage." *Health Services Research* 40 (4): 1021-39.
- Chernew, M., K. Frick, and C. G. McLaughlin. 1997. "The Demand for Health Insurance Coverage by Low-Income Workers: Can Reduced Premiums Achieve Full Coverage?" *Health Services Research* 32 (4): 453-70.
- Chollet, D. 1994. "Employer-Based Health Insurance in Changing Work Force." *Health Affairs* 13(1): 315-26.
- Cunningham, P. J. 2002. "Declining Employer-Sponsored Coverage: The Role of Public Programs and Implications for Access to Care." *Medical Care Research and Review* 59 (1): 79-98.
- Cutler, D. 2002. "Employee Costs and the Decline in Health Insurance Coverage." National Bureau of Economic Research Working Paper Series No. 9036.
- Cutler, D., and J. Gruber. 1996. "Does Public Insurance Crowd Out Private Insurance?" *Quarterly Journal of Economics* 111 (2): 391-430.

- Davidoff, A., A. Sommers, J. Lesko, and A. Yemane. 2004. "Medicaid and State-Funded Coverage for Adults: Estimates of Eligibility and Enrollment." Report to the Kaiser Commission on Medicaid and the Uninsured. Available at www.kff.org.
- Flores-Cervantes, I., J. M. Brick, and R. DiGaetano. 1999. "1997 NSAF Variance Estimation." NSAF Methodology Report no. 4. Washington, DC: Urban Institute and Child Trends.
- Fronstin, P. 2003. "Uninsured Rose in 2002 as Number of Americans with Employment-Based Health Benefits Declined." *EBRI Notes* 24 (11, November): 1–6.
- Gold, M. 2004. "Geographic Variation in Medicare Per Capita Spending: Should Policy-Makers Be Concerned?" Robert Wood Johnson Foundation Research Synthesis Report no. 6. Princeton, NJ: The Robert Wood Johnson Foundation.
- Gruber, J. 2000. "Health Insurance and the Labor Market." In *Handbook of Health Economics*, edited by A. J. Culyer and J. P. Newhouse. Amsterdam: Elsevier.
- Hadley, J., and J. D. Reschovsky. 2003. "Health and the Cost of Nongroup Insurance." *Inquiry* 40 (3): 235–53.
- Hargraves, J. L., and J. Hadley. 2003. "The Contribution of Insurance Coverage and Community Resources to Reducing Racial/Ethnic Disparities in Access to Care." *Health Services Research* 38 (3): 809–29.
- Holahan, J. 2003. *Changes in Employer-Sponsored Health Insurance Coverage. Snapshots of America's Families III, No. 3*. Washington, DC: The Urban Institute.
- Institute of Medicine (IOM). 2001. *Coverage Matters: Insurance and Health Care*. Washington, DC: National Academy Press.
- Jann, B. 2005. "Standard Errors for the Blinder–Oaxaca Decomposition." Available at http://repec.org/dsug2005/oaxaca_se_handout.pdf.
- Kaiser Family Foundation and Health Research and Educational Trust (KFF/HRET). 2002. "Employer Health Benefits: 2002 Annual Survey" [accessed May 18, 2005]. Available at <http://www.hret.org/hret/publications/content/2002.pdf>
- Kaiser Family Foundation and Health Research and Educational Trust (KFF/HRET). 2004. "Employer Health Benefits: 2004 Annual Survey" [accessed June 5, 2005]. Available at <http://www.hospitalconnect.com/hret/publications/content/chart.pdf>
- Long, S. K., and Y. Shen. 2004. "Low-Income Workers with Employer-Sponsored Insurance: Who's at Risk When Employers Drop Coverage?" *Medical Care Research and Review* 61 (4): 474–94.
- Oaxaca, R. 1973. "Male–Female Wage Differentials in Urban Labor Markets." *International Economic Review* 14 (3): 693–709.
- Shen, Y., and S. Zuckerman. 2003. "Why Is There State Variation in Employer-Sponsored Insurance?" *Health Affairs* 22 (1): 241–51.

SUPPLEMENTARY MATERIAL

The following supplementary material for this article is available online:

APPENDIX: Regression Results of ESI Offer and Take-up Model for 2002 Workers.