THE DEMAND FOR HEALTH INSURANCE IN THE GROUP SETTING: CAN YOU ALWAYS GET WHAT YOU WANT?

MARK V. PAULY

The Health Care Systems Department
The Wharton School, University of Pennsylvania
3641 Locust Walk, Philadelphia, PA 19104-6218
phone: 215.898.5411; e-mail: pauly@wharton.upenn.edu

BRADLEY HERRING

Robert Wood Johnson Foundation Health Policy Scholar
Institution for Social and Policy Studies, Yale University
89 Trumbull Street, New Haven, CT 06520-8207
phone: 203.432.3521; e-mail: bradley.herring@yale.edu

April, 2002

Abstract: To what extent do health benefits obtained in the employment-based setting reflect individual preferences? We examine this question by comparing characteristics of plans obtained in this setting to those obtained in the individual insurance market, using data from the 1996-1997 Community Tracking Study's Household Survey. We also examine the effect of unions on group choice. Our structural models of the demand for insurance using individual-level demographic characteristics indicate that plans obtained in the group setting generally reflect underlying preferences for insurance, although we do observe significantly different effects of ethnicity and unionization.

This research was supported by the Robert Wood Johnson Foundation's Changes In Health Care Financing and Organization (HCFO) Initiative.

I. Introduction.

The great bulk of private health insurance in the United States is obtained in the employment setting. Employers (sometimes in concert with unions) choose whether to offer insurance, what plan to offer, and how many plans to offer. However, in the highly competitive labor markets that characterize the American economy, employees usually have a choice among jobs. At least to some extent, that job choice is influenced by the attractiveness of the money wage/health benefit combination the firm offers. Indeed, the primary reason why a profit-maximizing firm would offer costly health benefits is because workers of a given quality level would then be willing to work for lower money wages. The fundamental modeling (and, we will argue, policy) question is how closely employers are able to match their offerings with employee demand.

At one extreme, there is the Tiebout (1956) model of perfect matching. Goldstein and Pauly (1976) demonstrate that if there are many firms offering different levels and types of health benefits that employees may choose among, and if worker mobility is nearly costless, the equilibrium will be one in which each worker will be matched with a firm offering the health insurance policy the worker would most prefer, given its cost (net of any tax subsidies). The money wage each worker will receive will perfectly reflect the (gross) cost of the policy. That is, in this model, there are two important policy implications: workers get the health insurance they want (perfect matching), and workers pay the cost of that insurance in the form of lower wages (perfect incidence).

Given the difficulty of estimating incidence directly, there is an important byproduct from this model: the observation that workers get the health insurance they want, given its true cost (for reasons other than chance), is consistent with the hypothesis that the incidence falls on wages. If workers who would demand more insurance at a given price actually get it in the group setting, they are behaving as if they actually paid the price, i.e., as if the incidence were on wages. For example, if high-income workers get more coverage than lower income workers, it is plausible that the higher income workers are willing to sacrifice more

wages to get it. The argument is not wholly conclusive, because we do not know how decisions on coverage might be made if workers are not paying for all of it, but were rather paying a constant proportion of the cost. However, if the incidence was on employer profits (rather than wages), there is no obvious reason why employers would provide more coverage when workers have higher incomes. Therefore, testing demand matching is an indirect way of determining incidence.

Note that, in this Tiebout model, many individual firms might choose their insurance offerings in many different ways. For example, some firms might just pick its benefit offerings randomly, but the workers will then adjust as will other firms. The real question is whether unsatisfied demand exists at the margin or, alternatively, whether some employers will not offer plans when workers demand them. "Perfect matching" is a property of the system in equilibrium, and we need not be concerned with the behavior of individual firms.

At the other extreme, workers might be assumed to be assigned to firms and jobs for life. In this case the only reason to offer health insurance is because health insurance may affect health which in turn affects worker productivity. In this model, employers might choose plans that employees dislike; this would be most consistent with the backlash against HMOs or other managed care plans chosen by employers.

Of course, we know that neither of these models is exactly accurate. Labor mobility is not perfect, but it is not nonexistent either, so probably matching is not perfect, but also exists to some extent. For instance, Monheit and Vistnes (1999) find that workers with weak preferences for health insurance sort themselves into jobs (such as those at small firms) that do not offer coverage. Both Moran et al. (2001) and Bundorf (2002) find that the diversity of workers within a firm increases the breadth of plans offered to workers, but fixed administrative costs limit the extent to which multiple plans may be offered to match all worker preferences. The important empirical question then is: how close are actual markets to either model presented above? That is the question we consider in this paper.

II. The Benchmark Model and the Test.

The strategy we follow in this analysis is simple. We first use data from the individual, or "nongroup," health insurance market to estimate demand for insurance in that market, and we assume that this is the "true" or unbiased demand curve for all persons. Of course, the price of insurance is generally (though not always) higher in the nongroup market than in the group market, but that fact does not limit our ability to estimate a demand curve, with insurance demand defined as a function of the demographic characteristics of buyers. The data we use contains no suitable measure of the price of nongroup insurance and, in any case, that price is not likely to vary across observations. (Insurance premiums vary because of variation in local-area medical care cost, but the true price of insurance, the administrative "loading", varies much less and is not measured in our data.) In order to compare models with the same specification, we therefore also estimate group insurance demand models without a price measure.[1]

We then use this demand curve as a benchmark against which to evaluate the results of the group insurance process. For a person with a given set of characteristics who obtains group insurance, we ask whether the insurance obtained is the same as what would have been predicted from the individual-market demand curve. If, for example, (ignoring interactions) we find that high-income individuals are 50 percent less likely than low-income individuals to demand a managed care plan in the nongroup market, we look to see whether the odds of getting a managed care plan (rather than an indemnity plan) for people at similar income levels differ by the same amount in the group market. In effect, we compare the plan "predicted" from the nongroup demand curve for someone who is actually in the group market with the insurance that person actually gets. If the insurance the person ends up with is approximately the same, that would be evidence in support of the view that the employment-based system is close to the Tiebout model. Implications about incidence and the absence of need to correct or override what employers and employees are doing would then follow.

[1] We have, in work not shown here, estimated demand regressions for group insurance including group size as a price proxy. Although that variable is statistically significant, the coefficients on the other demand variables are not markedly affected.

Formally, we first obtain the "gold standard" insurance demand curve for a sample of individuals in the nongroup insurance market, by estimating a particular measure of the quantity or quality of insurance demanded as a function of the set of individual demographic characteristics. We then estimate the same demand curve on data from the group market.

The most important statistical test is whether there is a significant difference between the vector of coefficients estimated in the nongroup market model and those estimated in the group market analog. If the hypothesis of similarity is rejected, we then examine coefficients on specific variables to determine which differ significantly. In addition, if we reject the hypothesis of similarity, we add variables that characterize the firm or group in which the individual is located to determine if this characteristic (e.g., unionized workforce) is significant. Note that it is appropriate to perform this test only if the general hypothesis of similarity is rejected.

Another relevant test concerns the residuals from either regression. It is possible that all the coefficients might be the same, but some measure of goodness of fit such as the R-squared might differ. For instance, if we found that the R-squared was considerably higher for the individual demanders than for the group demanders, even if the estimated coefficients were the same, we still might conclude that some unmeasured influences have different effects in the group setting relative to the nongroup setting.

A more complex question concerns the interpretation of any impact of group characteristics on the insurance individuals receive. For instance, one might observe that individuals of similar characteristics are more likely to be insured or have a particular type of insurance if they work for a unionized firm, or a firm with a large proportion of high-wage workers. Clearly, if no measured group characteristic is significantly associated with group demand, or if firm characteristics have the same effect on the demands of workers who buy individually as those who buy in groups, we would conclude that group insurance makes no difference. But, for example, what if people who work for unionized firms are more likely to have a particular kind of coverage?

Such a finding would surely be consistent with an hypothesis that unionization affects group insurance demand, an hypothesis that one of us has in fact suggested (Goldstein and Pauly, 1976). The decisive worker whose preferences the union takes into account (possibly longer-term union members) may well not prefer the same insurance as employers would choose to offer the same set of workers. But might evidence for a unionization effect at the firm level also be consistent with a view that unionization per se makes no difference, but rather that people with strong demands for insurance choose to work for firms with unions? The problem is that the firm or group characteristics attached to a given person are endogenous. How can we deal with this? It is a self-selection problem, but there are no obvious identifying variables at the firm or worker level. But rather than characterize a worker by the unionization status of his firm (which is likely to be endogenous), one could use a measure of the extent of unionization in the worker's industry in the region; this latter variable is more plausibly regarded as exogenous.

III. Estimating the Individual Demand Equation with the CTS Data.

There are two primary aspects of insurance demand we can examine in this study. The first aspect of insurance demand is the degree of "restrictiveness" of the insurance plan chosen by insured persons. The two samples used here are all adults insured in the nongroup market and all adults insured in the group market. The second aspect of insurance demand is whether any coverage is obtained. For this analysis, we use samples of the "potential" nongroup and group markets; the composition of these samples is described further below.

We use data from the 1996-1997 Community Tracking Study's (CTS) Household Survey. This nationally-representative survey contains health insurance coverage, employment status, and demographic characteristics for a relatively large sample of over 60,000 individuals.[2] We choose the CTS since it is both

[2] The CTS data samples individuals across 60 different randomly-chosen Metropolitan Statistical Areas and collections of rural counties in the U.S. The unique sampling methodology enables local-level identification while ensuring respondent confidentiality and is done in a way so that the resulting sample is nationally representative; for more detail, see Kemper et al. (1996).

the largest and most recent sample of nongroup purchases. It is also quite comprehensive: Insured survey respondents answered several questions regarding their plans' restrictions, and a so-called "Followback" Survey of most of the household's insurers was conducted for both confirmation and even more plan detail.

Dependent Variables: We look at four different measures of the demand for insurance for adults. The first measure is the actual plan type chosen. Specifically, we estimate an ordered logit for the sample of insured adults, where the options (in order) are FFS, PPO, POS, and HMO; this plan typology is the one identified in the CTS Followback Survey. The notion is that, if a person were at the margin of desiring a more restrictive plan, the next best choice to a FFS plan would be a PPO, a POS plan to a PPO, and an HMO to a POS.

However, plans of the same type (e.g., HMO) may differ considerably in the restrictions on care; see, for example, Hacker and Marmor, 1999. The second measure we use, therefore, is the provider restrictions reported by the respondent. There are four restrictions included in the survey: whether the plan has a directory of doctors, whether the plan requires individuals to sign up with a certain primary care physician, whether a referral is required to see an out-of-network specialist, and whether a referral is required to see an specialist within the network. Here, we estimate an OLS regression for the number of restrictions the insured report (zero to four). Because self-reports are not always accurate, the third measure we examine is the number of provider restrictions collected from plans in the Followback Survey.

The fourth measure is whether the individual obtains any coverage. Here we estimate a logit regression for the odds of having any insurance for two samples of all adults who *could* obtain such coverage. For the demand for nongroup coverage, our sample of so-called "potential" buyers is all adults without public insurance who are in households where no one is employed, or where any employed person either works part-time or is self-employed. For the employment-based group demand equation, the sample is all employees and dependents who are in households where someone is a full-time wage-earner.

However, this way of splitting the sample is somewhat imprecise. While all people who work as employees are potential candidates for relatively inexpensive tax-subsidized group insurance coverage, we find that a small fraction choose to work for firms that do not offer such coverage and yet decide to buy nongroup coverage. Perhaps matching is imperfect, the individuals strongly dislike the group coverage offered, or the people are behaving irrationally. However, only about 15 percent of families of full-time workers obtain no group coverage and, of those, only 18 percent buy nongroup coverage, so the total fraction in this class is only about two percent. We therefore delete these individuals from potential group market sample.

It also turns out that a relatively larger fraction of people in families where no one is a full-time employee still obtain what is labeled as group coverage. This could be a combination of group coverage obtained earlier, coverage from an alternative group mechanism, or coverage from one's employer even though only employed part-time. This set constitutes about 43 percent of the actual potential candidates for nongroup coverage in our employment-type classification. We show analyses both including and excluding this subpopulation who end up with group coverage; we label these nongroup potential samples as "A" and "B," respectively.

Explanatory Variables: We are primarily interested in individual-level demographic characteristics related to the demand for insurance. These include income, age, gender, education, health status, and ethnicity; we focus on a limited set of simple measures so we may subsequently compare the observed effects for the nongroup and group samples.[3] Family income is expressed as percentage of the federal poverty line to adjust for family size and composition, and the log of this value is used in the estimation. Since income is correlated with each of the other demographic measures (as well as presumably endogenous to the generosity of health insurance), we present models both excluding and including income. Health status is

[3] For the nongroup versus group comparisons, we are not primarily interested in the effect of price on the demand for insurance; the CTS data does not in any case allow us to generate a very good measure of the true price. Technically, we would want to adjust any premium measure for the characteristics of coverage (cost sharing, type of plan) *and* the expected benefits the person would get, given some (exhaustive) nominal plan specification. For the "demand for restrictions" regressions, the relevant price measure would be the effect of a restriction on the premium, something we definitely do not have measures of and which does not vary across observations in a systematic way.

identified by whether the survey respondent reported being in either fair or poor health.[4] Finally, we consider four categories for ethnicity: Caucasian, Asian, African American, and Hispanic.

Descriptive statistics for the nongroup and group insured samples are shown in Table 1, and descriptive statistics for the potential nongroup and group market samples are shown in Table 2. These mean values indicate that the plans obtained in the nongroup market are generally less restrictive than those obtained in the group market. Nongroup plan average 1.5 to 1.8 restrictions on care while group plans average 2.0 to 2.4 restrictions on care; FFS plans comprise 27 percent of nongroup plans but only 13 percent of group plans. However, the demographic characteristics are not very different between the nongroup and group insured samples. As shown in Table 2, the insurance rates are considerably higher in the group market relative to the nongroup market—attributed to both the tax subsidy and lower administrative loading in the former case. Moreover, income levels are considerably lower in the potential nongroup samples since they contain the unemployed and part-time workers. Individuals in the potential nongroup sample also appear to be somewhat more likely to be in poorer health and are more likely to be minorities.

Since the great bulk of people who obtain private health insurance do so in an employment-based group rather than individually, the group sample size is many times larger than that of the nongroup sample. Sample size alone can affect the measured significance level of regression coefficients as well as adjusted measures of goodness-of-fit. Indeed, the significance of the coefficients estimated for our large group sample (presented below) decreases considerably when we estimate models restricting the sample size to that of the nongroup sample. We are therefore somewhat lenient in the significance threshold of the nongroup results and the difference in effects between the nongroup and group samples.

Results: Consider first the "restrictiveness" of the plans chosen by those who are insured. Table 3-1 shows results for the ordered logit model for the plan type, Table 3-2 shows the OLS regression for the self-

[4] We also transformed the self-reported health measure (excellent, very good, good, fair, or poor) into a univariate measure of expected expense. Following a procedure outlined in Herring and Pauly (2001) using the 1996 Medical Expenditure Panel Survey, we construct a ratio of expected medical expense based on age, gender, location and health status divided by expected medical expense from only age, gender, and location. Since, the results using this ratio are similar to those using a binary variable for fair or poor health status, we present the latter for simplicity.

reported number of plan restrictions, and Table 3-3 shows the OLS regression for the Followback number of plan restrictions. The top panel of each table shows results excluding income, while the bottom panel shows results including income. In each of these cases, a Chow (1976) Test indicates that the structure of the coefficients for the nongroup and group components are significantly different.[5] For this reason we present each measure's results for the two samples separately. The final column in each of these tables shows the statistical significance of the one-tail comparison between each estimated coefficients from the two samples.

Generally, the signs and magnitudes of coefficients are consistent across the three models. The most interesting difference in coefficients between the nongroup and group samples is with the ethnicity variables. In the "gold standard" individual regression, African-Americans, Asians, and (non-Hispanic) Caucasians have the same demand for coverage restrictions, while Hispanics (holding income constant) prefer plans with more restrictions. In the group demand regressions, however, all minorities are generally treated the same; African-Americans and Asians tend to get heavily restricted plans even though they would apparently have been willing to pay to avoid them. Hispanics, in contrast, appear to receive less restrictive plans than they prefer. The intercept terms are significantly different suggesting that individuals prefer less-restrictive plans than they actually obtain in the group market.

Interestingly, higher education is associated with being in a more restrictive plan, as measured by the Followback data. That is, higher education is associated with a higher number of Followback restrictions and an increasingly greater likelihood of being in a PPO, POS, or HMO. (None of these coefficients differ between the subsamples however.) One possibility is that less-educated people mistakenly *think* that there are more restrictions than there really are; perhaps they prefer more restrictive plans but are unable to accurately select them. To examine more closely, we estimate an OLS regression for the number of discrepancies between the self-reported restrictions and the Followback restrictions. As shown in Table 4, income and education are both significantly negative, supporting the notion of confusion among the low-

[5] The Chow Test for the ordered logit model is performed for a simple OLS model using the values 1, 2, 3, and 4 (corresponding to FFS, PPO, POS, and HMO) as the dependent variable. Similarly, the Chow Test for the simple logit model of *any* insurance coverage presented below uses a simple OLS linear probability model.

income/low-educated. Higher income is associated with fewer self-reported restrictions, but it is not associated with either of the Followback measures. However, regional binaries that were included in the model for the number of discrepancies were also significant. This suggests that the Followback Survey (conducted a year later) may have introduced errors into the restrictions variables; fewer discrepancies were found in the Northeast which is where the administrators of the survey are located. Nevertheless, the overall conclusion is that, whatever the effects of income and education on the demand for plan restrictions, these effects do not differ by insurance choice setting.

Overall, the goodness-of-fit is not dramatically different (and is relatively low) across the two samples. The R-squared term for the self-reported number of plan restrictions is slightly lower for the group sample while this term for the Followback number of plan restrictions is slightly higher for the group sample. For the ordered logit model for plan type, the predicted probabilities from the model (including the measure of income) were concordant or tied with the observed responses for 57.5 percent of the nongroup sample and 56.1 percent of the group sample.

Now we consider the likelihood of obtaining any coverage. Table 3-4 shows the odds ratios from the separate logit models estimated for the potential nongroup and group market samples. Recall that we consider two sample specifications ("A" and "B") for the potential nongroup market. Almost all of the explanatory variables are significantly related to the likelihood of obtaining insurance; those who obtain insurance tend to be older, female, more educated, high income, healthier, and not a minority. The goodness-of-fit is higher than that for the "restrictiveness" models; the percent concordant (or tied) for the predicted and observed probabilities is 80.0 percent for nongroup sample "A," 80.9 for nongroup sample "B," and 81.7 percent for the group sample.

There are two significant effects that are consistently different for the nongroup and group samples. One difference is again related to ethnicity. African Americans are less likely than non-minorities to obtain nongroup insurance but this difference is not as large for the likelihood of obtaining group insurance. This implies that African-Americans are insured through the group setting more often than they actually desire.

The second difference we observe is for income. The positive effect that income has on the likelihood of obtaining insurance is larger for the group sample relative to the nongroup samples. However, this result is probably not related to a mismatch in the demand for insurance per se. The tax subsidy, which incrementally lowers the net price of insurance as income rises, is the more likely cause. That is, the larger coefficient in the group regressions represents a combination of the effect of income per se and an effective lowering of net price because of the progressivity of taxes. Similarly, the significant difference for the intercept term for the nongroup "B" to group comparison likely reflects lower administrative loading in the group market. We also observe a differential effect for health risk between the nongroup "B" and group samples suggesting high-risk individuals are less likely to obtain coverage in both group and nongroup markets. These effects of risk are not significantly different comparing nongroup demand for the "A" sample and group demand, but are larger in the nongroup "B" sample.[6]

IV. The Effect of Unionization on Group Demand.

Here we examine whether unionization is associated with the level of coverage obtained for those in the group market. We therefore reexamine the four different measures of the demand for insurance discussed above, but now include an exogenous measure of unionization in the regression. Although the CTS data does not indicate union status for workers, whether a worker is actually a member of a union would be endogenous in any case, as noted above. We are therefore interested in obtaining a measure of the local-level prevalence of unions in the worker's particular industry. (We assume that individuals choose their job-specific skill level—applicable to a particular industry—independent of their preference for health insurance.) Twelve separate industries are identified in the CTS. The local-level measure of unionization for the worker's particular industry is obtained from the 1996 Current Population Study (CPS). We determine the proportion of workers in unions for the twelve industries identified in the CTS for each of the

[6] Our earlier work (Pauly and Herring, 1999) found no significant impact of risk on coverage for large firms but did find a similar negative impact for small firms. That work found no effect of risk in the nongroup market but the sample was smaller and limited to people who were employed. Another important difference is that our earlier work used a measure of prior period risk, whereas these results, which measure health status at the same time as insurance coverage

nine Census Divisions in the U.S.[7] This local-level unionization for one's industry is the exogenous measure of union status we use for our analysis. The mean for this unionization measure across all individuals is 0.0.160, and its standard deviation is 0.159.

It may still be the case that people who work in unionized industries and/or regions have special tastes for health insurance. For this reason, we first estimate the effect of our unionization measure on the demand for insurance in the nongroup market sample. The impact that unions have on affecting *group* choice is then measured as the difference of the coefficients for the group sample relative to the nongroup sample. We include the income measure in this set of regressions testing the effect of unionization.

Results: Tables 5-1, 5-2, 5-3, and 5-4 shows the demand for insurance results (using the four different dependent variables) for the two samples as a function of the local-level unionization for one's industry. The results indicate that unionization has two effects. The first is that unionization causes *relatively* fewer managed care restrictions to be obtained by those obtaining group insurance. That is, our unionization measure has a significantly positive effect on nongroup restrictions (reflecting an independent effect of underlying tastes) but has an insignificant effect on group restrictions; the difference in these two coefficients is statistically significant. The second effect of unionization is on the likelihood of obtaining any coverage. The coefficients for this measure in the nongroup and group models are both significantly positive, but the magnitude of the group sample's coefficient is significantly larger than that for the nongroup sample. Individuals whose industry is more heavily unionized in the local area are significantly more likely to be insured. These two results are consistent with the hypothesis that unions select more generous insurance benefits than would be chosen otherwise. Unionization did not affect the signs or magnitudes of the other influences on demand in any of the regressions.

---

is queried, may be telling us that people who become sick (even given some annual family income) are more likely to lose coverage than those who stay well. These risk-related differences bear further investigation.

[7] Since only a fraction of workers in the CPS have data on unionization status (as a part of the earnings questionnaire), sample size considerations prohibit us from determining MSA-level measures of unionization by industry.

IV. Discussion.

Most of the significant and obvious influences on insurance choice have approximately the same effect in the group setting as in the "gold standard" individual choice setting. This result is consistent with the hypothesis that individuals with different preferences tend to sort into firms with different benefit structures. The economic variables seem to affect demand approximately equally; matching on these variables appears to be fairly good.

The main difference attributable to the group setting has to do with ethnicity. In group insurance, Hispanics end up with less restrictive plans than they prefer, while Asians and African Americans tend to end up with more restrictive group plans than they prefer. This may reflect a mistaken perception by employers that all minorities are alike. It may reflect less information for minority workers about benefits offered. If more restrictions lead to lower premiums, one might also interpret this result as evidence of discrimination, but of a subtle type: Hispanics appear to receive lower wages when they would really prefer more restrictive health insurance, while Asians and African Americans receive higher wages when they would really prefer less restrictive health insurance.

Considering the relative complexity of the task of linking benefits to preferences, our judgment is that the matching is fairly good. People who want generous, costly plans tend to get them. People who choose more restrictive plans or no insurance at all when they have an individual choice also appear to select jobs with the same limits, presumably offset by higher wages. Since we do not measure wages directly, our results would also be consistent with the view that employers offer lower demand people both lower benefits and lower wages—but then one has difficulty explaining why they offer more generous benefits to other workers when they earn relatively high wages.

There still surely can be some individual workers trapped into mismatches: either higher wages but less generous benefits than they want, or higher benefits but lower wages in other settings. Our results are not consistent with the caricature of employers callously forcing restrictive managed care or no insurance on

workers who really want more permissive insurance, but there are some cases of imperfection, especially as related to ethnicity. Steps to close the gaps in matching should be explored.

References.

Bundorf, M., 2002, "Employee Demand for Health Insurance and Employer Health Plan Choices," *Journal Of Health Economics* 21.1, 65-88.

Chow, G.C., 1976, "Tests of Equality between Sets of Coefficients in Two Linear Regressions," *Econometrica*, 28, 591-605.

Goldstein, G., and M. Pauly, 1976, "Group Health Insurance as a Local Public Good," in *The Role of Health Insurance in the Health Services Sector*, R. Rosett, ed. New York: NBER.

Hacker, J., and T. Marmor, 1999, "The Misleading Language of Managed Care," *Journal of Health Politics, Policy and Law* 24.5, 1033-1044.

Herring, B., and M. Pauly, 2001, "Premium Variation in the Individual Health Insurance Market," *International Journal of Health Care Finance and Economics* 1.1, pp. 43-58.

Kemper, P., et al., 1996, "The Design of the Community Tracking Study: A Longitudinal Study of Health System Change and its Effects on People," *Inquiry* 33, 195-206.

Monheit, A., and J. Vistnes, 1999, "Health Insurance Availability at the Workplace: How Important are Worker Preferences?" *Journal of Human Resources* 34.4, 770-785.

Moran, J., et al., 2001, "Preference Diversity and the Breadth of Employee Health Insurance Options," *Health Services Research* 5, 911-934.

Pauly, M., and B. Herring, 1999, *Pooling Health Insurance Risks.* Washington, D.C.: AEI Press.

Tiebout, C., 1956, "A Pure Theory of Local Expenditures," *The Journal of Political Economy* 64.5, 416-424.

TABLE 1
Descriptive Statistics:
Insured Individuals in the Nongroup and Group Markets

Variable	*Full Sample*	*Nongroup Sample*	*Group Sample*
All family members are unemployed	0.074	0.155	0.068
Family contains only a part-time worker	0.032	0.096	0.027
Family contains only a self-employed worker	0.062	0.448	0.034
Family contains a full-time wage-earner	0.832	0.301	0.871
Self-reported restrictions:			
Plan has a directory of doctors	0.800	0.617	0.813
Plan requires certain primary care physicians	0.548	0.380	0.561
Referral required for out-of-network specialist	0.363	0.299	0.368
Referral required for a network specialist	0.636	0.500	0.647
Number of self-reported restrictions	2.348	1.795	2.389
Followback restrictions:			
Plan has a directory of doctors	0.879	0.774	0.886
Plan requires certain primary care physicians	0.455	0.280	0.468
Referral required for out-of-network specialist	0.353	0.288	0.357
Referral required for a network specialist	0.297	0.200	0.304
Number of Followback restrictions	1.984	1.542	2.017
Plan is a FFS	0.135	0.266	0.125
Plan is a PPO	0.354	0.395	0.350
Plan is a POS	0.140	0.032	0.148
Plan is an HMO	0.372	0.306	0.377
Family income divided by FPL	4.287	4.449	4.275
Age	39.97	41.64	39.85
Female	0.510	0.518	0.509
Education	13.77	13.96	13.76
Fair or poor self-reported health	0.079	0.067	0.080
Caucasian	0.795	0.841	0.791
Asian	0.040	0.046	0.039
African American	0.091	0.041	0.095
Hispanic	0.075	0.073	0.075
Number of observations	20,617	1370	19,247

Source: 1996-1997 Community Tracking Study Household Survey.
Notes: Samples include all insured adults ages 18 to 64 with no public insurance.

TABLE 2
Descriptive Statistics:
"Potential" Samples for Nongroup and Group Insurance

Variable	*Full Sample*	*Nongroup Sample A*	*Nongroup Sample B*	*Group Sample*
Individual has private insurance	0.793	0.605	0.308	0.851
All family members are unemployed	0.123	0.497	0.480	0.000
Family contains only a part-time worker	0.044	0.178	0.166	0.000
Family contains only a self-employed worker	0.080	0.325	0.354	0.000
Family contains a full-time wage-earner	0.753	0.000	0.000	1.000
Family income divided by FPL	3.755	3.372	2.780	3.883
Age	38.84	41.71	38.78	37.92
Female	0.495	0.534	0.522	0.482
Education	13.28	12.89	12.49	13.40
Fair or poor self-reported health	0.107	0.165	0.182	0.088
Caucasian	0.734	0.702	0.647	0.745
Asian	0.041	0.045	0.046	0.040
African American	0.108	0.120	0.139	0.103
Hispanic	0.117	0.133	0.168	0.112
Number of observations	33,347	7852	4199	24,858

Source: 1996-1997 Community Tracking Study Household Survey.
Notes: Samples include all adults ages 18 to 64 with no public insurance.
Nongroup Sample A includes individuals who obtain group coverage.
Nongroup Sample B excludes individuals who obtain group coverage.

TABLE 3-1
Demand for Insurance Results: Nongroup Versus Group Comparisons
Ordered Logit for Plan Type Selected by the Insured

Variable	*Nongroup Sample Odds Ratio*	*Group Sample Odds Ratio*	*P-value for One-tail Comparison*
Age	0.997	0.992***	0.116
Female	1.080	1.051*	0.399
Education	1.032	1.029***	0.438
Fair or poor self-reported health	1.053	0.963	0.345
Caucasian	n/a	n/a	n/a
Asian	1.312	1.283***	0.463
African American	0.688	1.565***	0.001***
Hispanic	3.807***	2.338***	0.017**
Intercept 1[a]	-1.247***	-0.645***	0.051*
Intercept 2[a]	-1.088***	0.008	0.001***
Intercept 3[a]	0.661*	1.781***	0.001***
-2 Log L	3224.1	49027.8	n/a
Number of observations	1370	19,247	n/a

Including Income Measure:

Variable	*Nongroup Sample Odds Ratio*	*Group Sample Odds Ratio*	*P-value for One-tail Comparison*
Log family income divided by FPL	1.055	1.030	0.330
Age	0.996	0.992***	0.120
Female	1.086	1.053*	0.382
Education	1.029	1.026***	0.449
Fair or poor self-reported health	1.066	0.968	0.333
Caucasian	n/a	n/a	n/a
Asian	1.328	1.286***	0.447
African American	0.705	1.575***	0.002***
Hispanic	3.870***	2.353***	0.016**
Intercept 1[a]	-1.507***	-0.773***	0.053*
Intercept 2[a]	-1.349***	-0.120	0.003***
Intercept 3[a]	0.402	1.653***	0.003***
-2 Log L	3223.1	49025.4	n/a
Number of observations	1370	19,247	n/a

Source: 1996-1997 Community Tracking Study Household Survey.
[a] Odds ratios for the intercept terms are inapplicable. The value presented in the table is the actual intercept.
Notes: Samples include all insured adults ages 18 to 64 with no public insurance.
The dependent variable equals 1 for FFS, 2 for PPO, 3 for POS, and 4 for HMO.
P-values: Statistical significance at 0.01 or better (***); between 0.01 and 0.05 (**); between 0.05 and 0.10 (*).

TABLE 3-2
Demand for Insurance Results: Nongroup Versus Group Comparisons
OLS Model for the Insured's Self-Reported Number of Plan Restrictions

Variable	*Nongroup Sample Coefficient*	*Group Sample Coefficient*	*P-value for One-tail Comparison*
Age	-0.011***	-0.009***	0.313
Female	-0.008	0.036*	0.297
Education	-0.004	-0.007*	0.437
Fair or poor self-reported health	0.250	-0.021	0.059*
Caucasian	n/a	n/a	n/a
Asian	-0.155	0.332***	0.005***
African American	0.091	0.228***	0.260
Hispanic	0.733***	0.412***	0.026**
Intercept	2.294***	2.848***	0.026**
R-squared	0.023	0.016	n/a
Number of observations	1370	19,247	n/a

Including Income Measure:

Variable	*Nongroup Sample Coefficient*	*Group Sample Coefficient*	*P-value for One-tail Comparison*
Log family income divided by FPL	-0.050	-0.054***	0.465
Age	-0.011***	-0.009***	0.289
Female	-0.014	0.033*	0.283
Education	-0.001	-0.002	0.476
Fair or poor self-reported health	0.240	-0.030	0.061*
Caucasian	n/a	n/a	n/a
Asian	-0.164	0.329***	0.004***
African American	0.066	0.216***	0.240
Hispanic	0.718***	0.400***	0.028**
Intercept	2.535***	3.082***	0.060*
R-squared	0.023	0.017	n/a
Number of observations	1370	19,247	n/a

Source: 1996-1997 Community Tracking Study Household Survey.
Notes: Samples include all insured adults ages 18 to 64 with no public insurance.
P-values: Statistical significance at 0.01 or better (***); between 0.01 and 0.05 (**); between 0.05 and 0.10 (*).

TABLE 3-3
Demand for Insurance Results: Nongroup Versus Group Comparisons
OLS Model for the Insured's "Followback" Number of Plan Restrictions

Variable	*Nongroup Sample Coefficient*	*Group Sample Coefficient*	*P-value for One-tail Comparison*
Age	-0.002	-0.006***	0.080*
Female	0.030	0.043**	0.435
Education	0.020	0.020***	0.491
Fair or poor self-reported health	0.245	-0.033	0.048**
Caucasian	n/a	n/a	n/a
Asian	0.137	0.244***	0.277
African American	-0.073	0.360***	0.017**
Hispanic	0.598***	0.534***	0.345
Intercept	1.312***	1.956***	0.009***
R-squared	0.010	0.017	n/a
Number of observations	1370	19,247	n/a

Including Income Measure:

Variable	*Nongroup Sample Coefficient*	*Group Sample Coefficient*	*P-value for One-tail Comparison*
Log family income divided by FPL	0.021	0.006	0.358
Age	-0.002	-0.006***	0.084*
Female	0.032	0.043**	0.446
Education	0.018	0.020***	0.472
Fair or poor self-reported health	0.249	-0.032	0.046**
Caucasian	n/a	n/a	n/a
Asian	0.141	0.244***	0.283
African American	-0.062	0.361***	0.019**
Hispanic	0.605***	0.536***	0.333
Intercept	1.211***	1.930***	0.017**
R-squared	0.009	0.017	n/a
Number of observations	1370	19,247	n/a

Source: 1996-1997 Community Tracking Study Household Survey.
Notes: Samples include all insured adults ages 18 to 64 with no public insurance.
P-values: Statistical significance at 0.01 or better (***); between 0.01 and 0.05 (**); between 0.05 and 0.10 (*).

TABLE 3-4
Demand for Insurance Results: Nongroup Versus Group Comparisons
Logit Model for Any Coverage

Variable	*Nongroup Sample A Odds Ratio*	*Nongroup Sample B Odds Ratio*	*Group Sample Odds Ratio*	*P-value for Nongroup A One-Tail Comparison*	*P-value for Nongroup B One-Tail Comparison*
Age	1.048***	1.044***	1.051***	0.161	0.030**
Female	1.122**	1.141*	1.272***	0.032**	0.102
Education	1.252***	1.291***	1.322***	0.000***	0.098*
Fair or poor self-reported health	0.573***	0.392***	0.616***	0.236	0.001***
Caucasian	n/a	n/a	n/a	n/a	n/a
Asian	0.774**	0.771	0.721***	0.333	0.366
African American	0.462***	0.237***	0.550***	0.042**	0.000***
Hispanic	0.497***	0.444***	0.401***	0.020**	0.238
Intercept[a]	-4.004***	-5.415***	-3.330***	0.002***	0.000***
-2 Log L	8538.9	4457.7	15622.7	n/a	n/a
Number of observations	7852	4199	24,858	n/a	n/a

Including Income Measure:

Variable	*Nongroup Sample A Odds Ratio*	*Nongroup Sample B Odds Ratio*	*Group Sample Odds Ratio*	*P-value for Nongroup A One-Tail Comparison*	*P-value for Nongroup B One-Tail Comparison*
Log family income div. by FPL	1.681***	1.627***	2.041***	0.000***	0.000***
Age	1.044***	1.040***	1.044***	0.486	0.156
Female	1.236***	1.262***	1.349***	0.107	0.223
Education	1.189***	1.239***	1.247***	0.001***	0.367
Fair or poor self-reported health	0.652***	0.443***	0.691***	0.290	0.001***
Caucasian	n/a	n/a	n/a	n/a	n/a
Asian	0.915	0.908	0.796**	0.207	0.260
African American	0.566***	0.282***	0.658***	0.078*	0.000***
Hispanic	0.589***	0.512***	0.485***	0.035**	0.350
Intercept[a]	-6.080***	-7.423***	-6.376***	0.159	0.003***
-2 Log L	8062.6	4251.8	14760.4	n/a	n/a
Number of observations	7852	4199	24,858	n/a	n/a

Source: 1996-1997 Community Tracking Study Household Survey.
[a] Odds ratios for the intercept terms are inapplicable. The value presented in the table is the actual intercept.
Notes: Samples include all adults ages 18 to 64 with no public insurance.
Nongroup Sample A includes individuals who obtain group coverage.
Nongroup Sample B excludes individuals who obtain group coverage.
P-values: Statistical significance at 0.01 or better (***); between 0.01 and 0.05 (**); between 0.05 and 0.10 (*).

TABLE 4
OLS model for the Number of Discrepancies Between the Self-Reported and "Followback" Plan Restrictions

Variable	*OLS Coefficient*
Nongroup insurance	-0.002
Log family income divided by FPL	-0.028***
Age	-0.001
Female	-0.025*
Education	-0.021***
Fair or poor self-reported health	0.006
Caucasian	n/a
Asian	0.049
African American	0.027
Hispanic	-0.015
Metropolitan market	-0.026
Northeast census region	n/a
Midwest census region	0.159***
South census region	0.121***
West census region	0.133***
Intercept	1.533***
R-squared	0.008
Number of observations	20,616

Source: 1996-1997 Community Tracking Study Household Survey.
Notes: Samples include all insured individuals ages 18 to 64 with no public insurance.
P-values: Statistical significance at 0.01 or better (***); between 0.01 and 0.05 (**); between 0.05 and 0.10 (*).

TABLE 5-1
Effect of Unionization on Workers' Demand for Insurance
Ordered Logit for Plan Type Selected by the Insured

Variable	*Nongroup Sample Odds Ratio*	*Group Sample Odds Ratio*	*P-value for One-tail Comparison*
Unionization of industry in region	3.705***	0.951	0.002***
Log family income divided by FPL	1.018	1.007	0.434
Age	0.998	0.994***	0.234
Female	1.283**	1.069**	0.067*
Education	1.028	1.027***	0.484
Fair or poor self-reported health	1.804**	1.011	0.024**
Caucasian	n/a	n/a	n/a
Asian	1.480	1.341***	0.367
African American	1.201	1.592***	0.178
Hispanic	4.533***	2.300***	0.009***
Intercept 1[a]	-1.508***	-0.739***	0.078*
Intercept 2[a]	-1.340**	-0.076	0.010***
Intercept 3[a]	0.417	1.708***	0.008***
-2 Log L	2348.6	45254.3	n/a
Number of observations	1005	17,796	n/a

Source: 1996-1997 Community Tracking Study Household Survey.
[a] Odds ratios for the intercept terms are inapplicable. The value presented in the table is the actual intercept.
Notes: Samples include all insured workers ages 18 to 64 with no public insurance.
The dependent variable equals 1 for FFS, 2 for PPO, 3 for POS, and 4 for HMO.
P-values: Statistical significance at 0.01 or better (***); between 0.01 and 0.05 (**); between 0.05 and 0.10 (*).

TABLE 5-2
Effect of Unionization on Workers' Demand for Insurance
OLS Model for the Insured's Self-Reported Number of Plan Restrictions

Variable	*Nongroup Sample Coefficient*	*Group Sample Coefficient*	*P-value for One-tail Comparison*
Unionization of industry in region	0.480	-0.034	0.076*
Log family income divided by FPL	-0.044	-0.070***	0.311
Age	-0.014***	-0.006***	0.035**
Female	0.073	0.049**	0.399
Education	-0.008	-0.005	0.425
Fair or poor self-reported health	0.429**	-0.004	0.024**
Caucasian	n/a	n/a	n/a
Asian	-0.061	0.369***	0.027**
African American	0.150	0.227***	0.373
Hispanic	0.661***	0.389***	0.085*
Intercept	2.698***	3.117***	0.157
R-squared	0.020	0.015	n/a
Number of observations	1005	17,796	n/a

Source: 1996-1997 Community Tracking Study Household Survey.
Notes: Samples include all insured workers ages 18 to 64 with no public insurance.
P-values: Statistical significance at 0.01 or better (***); between 0.01 and 0.05 (**); between 0.05 and 0.10 (*).

TABLE 5-3
Effect of Unionization on Workers' Demand for Insurance
OLS Model for the Insured's "Followback" Number of Plan Restrictions

Variable	*Nongroup Sample Coefficient*	*Group Sample Coefficient*	*P-value for One-tail Comparison*
Unionization of industry in region	0.778**	-0.059	0.008***
Log family income divided by FPL	0.014	-0.003	0.370
Age	-0.005	-0.004***	0.490
Female	0.141	0.052**	0.165
Education	0.021	0.020***	0.478
Fair or poor self-reported health	0.516**	0.009	0.009***
Caucasian	n/a	n/a	n/a
Asian	0.224	0.273***	0.411
African American	0.203	0.382***	0.219
Hispanic	0.642***	0.510***	0.247
Intercept	1.222***	1.915***	0.044**
R-squared	0.021	0.015	n/a
Number of observations	1005	17,796	n/a

Source: 1996-1997 Community Tracking Study Household Survey.
Notes: Samples include all insured workers ages 18 to 64 with no public insurance.
P-values: Statistical significance at 0.01 or better (***); between 0.01 and 0.05 (**); between 0.05 and 0.10 (*).

TABLE 5-4
Effect of Unionization on Workers' Demand for Insurance
Logit Model for Any Coverage

Variable	*Nongroup Sample A Odds Ratio*	*Nongroup Sample B Odds Ratio*	*Group Sample Odds Ratio*	*P-value for Nongroup A One-Tail Comparison*	*P-value for Nongroup B One-Tail Comparison*
Unionization of industry	3.957***	1.607	8.785***	0.011**	0.000***
Log family income div. by FPL	1.606***	1.533***	1.990***	0.000***	0.000***
Age	1.046***	1.045***	1.044***	0.319	0.421
Female	1.154*	1.067	1.397***	0.020**	0.008***
Education	1.194***	1.209***	1.242***	0.028**	0.133
Fair or poor self-reported health	0.567***	0.487***	0.693***	0.101	0.045**
Caucasian	n/a	n/a	n/a	n/a	n/a
Asian	0.730	0.767	0.819*	0.308	0.403
African American	0.530***	0.232***	0.674***	0.066*	0.000***
Hispanic	0.573***	0.527***	0.495***	0.171	0.377
Intercept[a]	-6.153***	-6.790***	-6.519***	0.182	0.292
-2 Log L	3628.5	2261.1	14576.7	n/a	n/a
Number of observations	3570	2013	24,858	n/a	n/a

Source: 1996-1997 Community Tracking Study Household Survey.
[a] Odds ratios for the intercept terms are inapplicable. The value presented in the table is the actual intercept.
Notes: Samples include all working adults ages 18 to 64 with no public insurance.
Nongroup Sample A includes workers who obtain group coverage.
Nongroup Sample B excludes workers who obtain group coverage.
P-values: Statistical significance at 0.01 or better (***); between 0.01 and 0.05 (**); between 0.05 and 0.10 (*).