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Andrew F. Coburn PhD
*University of Southern Maine, Muskie School of Public Service, Maine Rural Health Research Center*

Elizabeth H. Kilbreth PhD
*University of Southern Maine, Muskie School of Public Service*

Stephen H. Long PhD

M. Susan Marquis PhD

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# Urban Rural Differences in Employer-Based Health Insurance Coverage of Workers

MUSKIE SCHOOL

# URBAN-RURAL DIFFERENCES IN EMPLOYER-BASED HEALTH INSURANCE COVERAGE OF WORKERS

Andrew F. Coburn, Ph.D.
Elizabeth H. Kilbreth, Ph.D.

Edmund S. Muskie School of Public Service
University of Southern Maine

Stephen H. Long, Ph.D.

M. Susan Marquis, Ph.D.

RAND, Washington, D.C.

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## EXECUTIVE SUMMARY

Prior research indicates that rural workers are less likely to obtain health insurance coverage through their employer, however, the reasons for this rural-urban differential in coverage rates are not well understood. Differences in coverage may stem from differences in the proportion of workers offered the chance to participate in an employer plan or to differences in the proportion of workers who enroll in an offered plan. Knowing whether rural firms and employees are fundamentally different than their urban counterparts is important to guide policy interventions aimed at increasing access to health insurance coverage.

This study uses data from the 1993 Robert Wood Johnson Foundation Employer Health Insurance Survey to measure differences in the proportion of rural and urban workers who are offered insurance coverage through their employer and in their rates of participation in offered plans, and to assess the effects of firm size, wages, and other factors in explaining the residential differences. Study findings confirm the results of prior research indicating that the probability of a rural worker being covered by an employer-sponsored plan is lower than of an urban worker. This difference is the product of a 10 percent difference in the probability of an employee being offered coverage and a 4 percent difference in the probability of a worker enrolling, if offered a plan. The shortfall in the probability of employer-based coverage is eliminated, however, when we adjust rural firm size and wages to urban levels, indicating that the smaller average firm size and lower wages found in rural areas are primarily responsible for the observed differential.

The good news is that these findings indicate that rural workers or employers do not face coverage barriers unique to rural areas and possibly driven by factors such as informational barriers, distinct business cultures, or delivery system differences in the

availability of free care. Such findings might have suggested the need for policy interventions specific to rural environments. It appears that policy solutions fitting urban America are likely to work in rural America as well. In particular, policies that target the special problems and barriers that small firms and their employees face in obtaining and affording health insurance—including small group reform, health insurance purchasing cooperatives, and tax credit or subsidy programs—are especially relevant to rural firms and workers.

The bad news is that, in addition to the lower coverage rates among rural workers, the factors affecting these low coverage rates—firm size and wage levels—are not easily amenable to policy solution. To date, policy efforts and demonstrations have not been effective in expanding coverage rates in the small business market. Although states and private sector groups continue to pursue group purchasing strategies for making health insurance more affordable for small firms, few of these initiatives have targeted rural firms. Recent reports on state and federal reform of the small group and individual insurance markets suggest that these policies are not likely to expand coverage among workers in small firms. The recently passed and soon to be implemented Child Health Insurance Program (CHIP), will extend health insurance coverage for lower income families whose employers do not offer coverage or who cannot afford to purchase the coverage that is extended to them. Monitoring the effects of these expansions on insurance coverage rates in rural areas will be important to determine whether and to what extent CHIP can reduce the significant disadvantage that rural workers in small firms and their families face in obtaining employer-based health insurance coverage.

## INTRODUCTION

Workers living in rural areas are less likely to have employer-sponsored health insurance coverage than those in urban areas (Frenzen 1995). The cause of this disparity is not well understood, however.

Differences in coverage may stem from differences in the proportion of workers offered the chance to participate in an employer plan or to differences in the proportion of workers who enroll in an offered plan. One hypothesis is that the disparity arises because small firms are less likely to offer health insurance to workers (Cantor et al. 1995; HIAA 1990; Hall and Kuder 1990) and more rural workers than urban workers are employed in small businesses (Frenzen 1995). However, there persists a gap in employer-sponsored coverage between rural and urban workers in small firms (Frenzen 1995), though coverage rates are similar for urban and rural workers in large businesses.

Other characteristics that distinguish urban and rural employers have also been found to be related to employer decisions to offer insurance. The industry and age of the business are both related to the likelihood that the firm offers health insurance (HIAA 1990). Differences in the demographic attributes of workers also distinguish businesses that do and do not offer insurance. Businesses that offer insurance have fewer low-wage workers, fewer part-time workers, and less turnover than other businesses (Long and Marquis 1993; Cantor et al. 1995; Edwards et al. 1992; HIAA 1990), and rural employees are more likely to have low earnings and to work part-time or seasonally than urban employees (Frenzen 1993; Frenzen 1995).

However, several multivariate studies of employers' decisions to offer health insurance suggest that these measurable factors may not fully account for differences between urban and rural areas. Kilbreth and others (1994), found that substantial differences in insurance offer rates between small firms in rural and urban areas of Maine

remained after controlling for business size, age, and industry, as well as for gender, turnover, and part-time status of the business' employees. Similarly, HIAA (1990) reported that firms in metropolitan areas are more likely to offer health insurance after adjusting for other business characteristics. McBride (1996) also found significant differences between urban and rural areas in the likelihood that otherwise similar workers are in firms that offer insurance, though the magnitude of the difference was small (3 percentage points). These studies, however, typically did not include controls for all of the business characteristics that have been found to differentiate both urban and rural businesses and those that do and do not offer insurance. For example, Kilbreth and McBride did not have measures of the earnings distribution of workers.[1]

Even less is known about differences between urban and rural employees in their decision to enroll in an employer-sponsored health plan if it is offered; we know of only one study that examined this decision. Kilbreth et al. (1994) found no difference in enrollment decisions of urban and rural employees in small businesses that offer insurance in Maine, after controlling for the effect of employee characteristics on the decision.

These two lines of research seem to suggest that there may be urban and rural differences in the proportion of workers who have health insurance coverage from their employers that cannot be accounted for by typically measured differences in business characteristics in these locations. In contrast, Coward et al. (1993) did not find urban and rural differences in coverage rates of employees in a multivariate analysis of data collected in the 1987 National Medical Expenditure Survey. This analysis reflects the combined effect of differences in employer offer decisions and differences in employee participation decisions.

The purpose of the current study is to use data from a 1993 survey of employers in 10 states to provide new evidence about differences between rural and urban areas in

health insurance offer rates to employees, employee enrollment rates, and coverage rates of workers in their employer-sponsored plans. The survey provides detailed information about all of the business characteristics and the demographics of its workers that are related to offer and enrollment rates. Thus, we are able to measure the relative contribution of these factors to observed differences in coverage rates between urban and rural areas and to assess whether there remain rural and urban differences that cannot be explained by observable business and worker characteristics.

## METHODS

### *Data*

Our data are from the 1993 Robert Wood Johnson Foundation Employer Health Insurance Survey (Cantor et al. 1995). Part of the Foundation's *State Initiatives in Health Care Reform Program,* this telephone survey was administered to about 2,000 private business establishments in each of 10 states: Colorado, Florida, Minnesota, New Mexico, New York, North Dakota, Oklahoma, Oregon, Vermont, and Washington. In each state, the sample included approximately equal numbers of establishments in four size strata, with about three-fourths drawn from businesses with fifty or fewer employees. The response rate was 71 percent.

Establishments located in counties that are part of a Metropolitan Statistical Area (MSA) are designated as urban; all other establishments are designated as rural. This classification was made by matching data on MSA designation from the Area Resource File (ARF) to the survey respondents by county. About four percent of establishments completing the survey are excluded from our analysis because they had missing county codes or codes that could not be matched to the ARF. The final analysis sample includes 21,472 establishments in the 10 states.

*Estimation Methods*

We fit a two-part multivariate model to describe the probability that a worker is covered by an employer health insurance plan. The first part is a model for the probability that a worker is in a firm that offers health insurance coverage as a benefit. The second part is a model for the probability of enrolling in an employer's health plan, if one is offered. The product of these two probabilities is the probability that a worker is covered by health insurance from his or her own employer.

Both models are logistic regression models. In the first model, the dependent variable is a 0,1 variable indicating whether the employer offers insurance. In the second, the dependent variable is the proportion of workers who are enrolled in establishments that offer insurance. The analyses are weighted to account for the unequal sampling probabilities of different establishments within the sampled states. However, each state is given equal weight in our analysis—that is, we do not weight our sample to reflect the different probabilities of selection across states.[2] Our weights also are proportional to the size of the establishment that is surveyed, allowing us to make estimates for the population of workers.

The explanatory variables in our models include an indicator for whether the establishment is located in a rural area and several measures characterizing the firm and its workers. Descriptive measures on the key characteristics are given in Table 1. These include: size of the firm[3] industry; the distribution of workers by age and gender, and by wage level; and the proportion of employees working part-time and who are seasonal or temporary workers. In addition to these measures, our regression models include the age of the establishment, a measure of turnover in employment, whether the establishment employs union members, and indicators for the states included in the study. The share of

the premium that the employer contributes for single coverage is included in the model to explain decisions of employees to enroll, if offered a plan.

We tested for several key interactions between rural residence and other factors in the model. Following the findings of Frenzen (1995), we tested whether difference in offer rates or participation rates between rural and urban areas varies among different size firms. We also tested whether rural and urban differences varied among states. Finally, we tested whether the relationship between wages and offer and participation rates varied between urban and rural areas. None of these interactions was significant. In fact, the test for overall differences between urban and rural areas in the structure of the relationship among employer and employee characteristics and the two outcomes was not statistically significant. Therefore, the results that we present are from a model with main effects only.

*Predicted Values*

We use the fitted models to predict how differences between urban and rural areas in the proportion of workers offered coverage and the proportion enrolling in a plan change if we control for differences between urban and rural workers in key characteristics. We look at the *marginal effect* of adjusting the distribution of a single characteristic-such as firm size—in rural areas to the distribution in urban areas, holding the distribution of all other characteristics constant. We also report the *total effect* of adjusting a characteristic and allowing other correlates of it to change as well.

We first compute predicted values for all observations in our sample, given their observed characteristics. Letting p denote the average predicted probability for workers in rural areas from our prediction model, our estimate of the probability, Pm' after a *marginal* adjustment in the distribution of characteristic X is:

$$Pm = p + p * (1-p) ? ß dX,$$

where ß is the coefficient from the logit regression model, dX is the difference between rural and urban areas in the value of characteristic X, and the summation is over the indicators in our model that describe the characteristic X (for example, four categories to describe firm size). To measure the total effect of changing characteristic X, we estimate the probability in rural areas, Pt as:

$$Pt = ? wj * pj,$$

where, wj is the proportion of the population in urban areas in category j of characteristic X, and Pj is the predicted probability for rural observations in category j. That is, we estimate the total effect by weighting the predicted values for rural observations to match the distribution of X in the urban areas. Characteristics that are correlated with X, as well as the characteristic X, are adjusted in this process.

## RESULTS

*Characteristics of Rural and Urban Employers and Employees*

Although 78 percent of rural employees are offered an employer-sponsored health plan, the comparable figure for urban employees is 88 percent (Table 1). Among establishments offering a plan, the participation rate among rural workers is 66 percent compared to 68.5 percent among urban workers. The resulting coverage rates among employees are 51.7 percent and 60.4 percent, respectively.

As expected, a higher percentage of rural employees work in establishments that are smaller and have lower wages. Industry also differs with rural employees more likely to be working in agriculture, forestry, and fisheries; manufacturing and mining; transportation; retail trade; and “other” service industries. There are negligible age and sex

***Table 1***
**CHARACTERISTICS OF EMPLOYEES IN RURAL AND URBAN AREAS**

| CHARACTERISTIC | RURAL EMPLOYEES | URBAN EMPLOYEES |
|---|---|---|
| | (Percent) | |
| Offered employer health Plan | 78.3 | 88.2 |
| Participate in employer plan, if offered | 66.1 | 68.5 |
| Covered by employer health plan | 51.7 | 60.4 |
| Size of Firm | | |
| Fewer than 5 workers | 8.6 | 4.7 |
| 5-9 workers | 11.0 | 6.7 |
| 10-24 workers | 15.1 | 10.5 |
| 25-99 workers | 20.2 | 16.8 |
| 100 workers or more | 45.1 | 61.3 |
| Industry | | |
| Agriculture, Forestry, Fisheries | 2.3 | 1 .3 |
| Construction | 4.4 | 5.6 |
| Manufacturing, Mining | 19.8 | 1 5.1 |
| Transportation | 6.4 | 5.0 |
| Wholesale Trade | 6.2 | 6.3 |
| Retail Trade | 21.7 | 19.2 |
| Finance, Insurance, Real Estate | 9.5 | 18.1 |
| Professional Services | 23.0 | 24.9 |
| Other Service Industries | 6.7 | 4.5 |
| Annual Wage of Worker | | |
| Under $10,000 | 15.7 | 11.3 |
| $10,000-14,000 | 23.9 | 20.0 |
| $14,000-$20,000 | 23.3 | 22.9 |
| $20,000 and more | 37.1 | 45.8 |
| Age and gender | | |
| Male, under 25 | 10.2 | 11 .5 |
| Male, 25-54 | 36.6 | 35.3 |
| Male, 55 and older | 5.7 | 5.2 |
| Female, under 25 | 9.8 | 10.7 |
| Female, 25-54 | 32.7 | 33.0 |
| Female, 55 and older | 5.0 | 4.3 |
| Part time workers (< 30 hours) | 12.2 | 12.0 |
| Seasonal or temporary workers | 1 2.0 | 9.2 |

Source: Authors' tabulations of the 1993 Robert Wood Johnson Foundation Employer Health Insurance Survey

differences among rural and urban employees; the percentage of part-time workers is nearly identical. The proportion of seasonal or temporary workers is higher among rural employees (12.0 versus 9.2 percent).

*What Factors Account for Coverage Differences?*

Can the lower rates of offer and enrollment in rural areas be attributed to known characteristics of rural firms? And if so, which characteristics are key to the rural shortfall? These questions are addressed in Tables 2 and 3 by measuring the change in the predicted probability of coverage among rural employees when various characteristics of rura' establishments are adjusted to those of urban establishments. We focus on three key variables and their contribution to the rural shortfall in employer-sponsored coverage rates: firm size, wage levels, and industry.

As shown in Table 2, the total effect of a change in firm size distribution (and its correlates) among rural businesses to the urban distribution would narrow the difference in the probability a worker is in a firm offering insurance from a 10 percentage point gap (88 percent versus 78 percent) to a 3 percentage point gap (88 percent versus 85 percent). Adjustment to the size of firm also increases the probability of worker enrollment, although to a lesser extent. A change to an urban size distribution among rural firms would increase the probability of enrollment from 62 to 64 percent. Overall, the probability of a rural worker being covered by an employer plan would increase from 48 percent to 54 percent.

Adding an adjustment of rural industry distribution to urban characteristics to the total effect of firm size does not increase the probability that a worker is offered coverage or enrolls in a plan. However, when wages, in addition to size, are adjusted to urban levels, the rural shortfall in the probability of employer coverage is eliminated. The additional effect results primarily from a change in the probability of worker enrollment, which increases by five percentage points through the total effects of adjustment to these

***Table 2***
**PREDICTED PROBABILITIES FOR URBAN AND RURAL EMPLOYEES: TOTAL EFFECTS OF KEY VARIABLES**

| | Probability Coverage Offered | Probability Enroll If Offered Plan | Probability Covered By Employer Plan * |
|---|---|---|---|
| Urban Employees | 88% | 66%*** | 58% |
| Rural Employees: | | | |
| Own Characteristics | 78% | 62%*** | 48% |
| Adjusted to Urban Distribution: * * | | | |
| Size of Firm | 85% | 64% | 54% |
| Size of Firm and Industry | 85% | 63% | 54% |
| Size of Firm and Wage | 86% | 67% | 58% |
| All Variables | 86% | 67% | 58% |

Source: Authors' calculations from the 1993 Robert Wood Johnson Foundation Employer Health Insurance Survey.

*Product of probability coverage offered and probability enroll if offered.

**Calculated by adjusting weights for observations to match the distribution of the urban observations. Thus these calculations reflect changes in the characteristic and other variables that are correlated with it.

*** The average predicted value for all employees in the sample if they are offered coverage. It differs from the observed participation rate in Table 1 which is limited to employees in firms offering a plan.

two variables. The same results are obtained when all rural business and worker characteristics are adjusted to the urban distributions.

In Table 3, we measure the independent effects of changes in selected explanatory variables, holding all else constant. In addition to firm size, wage, and industry, we present marginal effects for the share of seasonal or temporary employees since this characteristic differs between rural and urban areas (see Table 1). These marginal effects allow us to determine the unique effect of each of these factors on the probability of an employee being offered coverage and the probability of enrolling. This analysis reinforces the findings from the total effects analysis. Size of firm has the largest effect among these factors in explaining urban and rural differences in the probability an employee is offered insurance and (consequently) of an employee being covered. Specifically, adjusting the distribution of firm size alone increases the probability of a rural worker being offered coverage from 78 percent to essentially that of urban workers (87 percent). Firm size increases the probability that a rural worker will be covered from 48 percent to 55 percent, again, nearly the 58 percent rate for urban employees. The marginal effect of wage levels is smaller in both models, increasing the probability of being offered coverage to 81 percent and of an employee being covered to 51 percent (versus 88 and 58 percent for urban workers, respectively). Neither differences in the industry mix nor differences in the share of seasonal and temporary workers between urban and rural areas contribute to the residential differences in the proportion of workers offered insurance.[4] None of the factors is independently useful in accounting for the small difference among rural and urban workers in the probability of enrollment if offered a plan.

***Table 3***
**PREDICTED PROBABILITIES FOR URBAN AND RURAL EMPLOYEES: MARGINAL EFFECTS OF KEY VARIABLES**

| | Probability Coverage Offered | Probability Enroll If Offered Plan | Probability Covered By Employer Plan * |
|---|---|---|---|
| Urban Employees | 88% | | 58% |
| | | **66%*** ** | |
| Rural Employees: | | | |
| Own Characteristics | 78% | | 48% |
| | | **62%*** ** | |
| Adjusted to Urban Distribution: * * | | | |
| Size of Firm | 87% | 63% | 55% |
| Industry | 78% | 62% | 48% |
| Wage | 81% | 63% | 51% |
| Seasonal or Temporary Workers | 78% | | |

Source: Authors' calculations from the 1993 Robert Wood Johnson Foundation Employer Health Insurance Survey.

* Product of probability coverage offered and probability enroll if offered plan.

** Calculated as p + p*(1-p)*{sum(b*dx)}, where p is the predicted probability evaluated at own characteristics, b is coefficient in the logit model, and dx is the change in the characteristic needed to adjust the rural employees to the urban distribution.

*** The average predicted value for *all* employees in the sample if they are offered coverage. It differs from the observed participation rate in Table 1, which is limited to employees in firms offering a plan.

## DISCUSSION AND POLICY IMPLICATIONS

This study confirms the results of prior research indicating that the probability of a rural worker being covered by an employer-sponsored plan is lower than of an urban worker. This difference is the product of a 10 percent difference in the probability of an employee being offered coverage and a 4 percent difference in the probability of a worker enrolling, if offered a plan. The shortfall in the probability of employer-based coverage is eliminated when we adjust rural firm size and wages to urban levels, indicating that the smaller average firm size and lower wages found in rural areas are primarily responsible for the observed differential.

There is both good and bad news in these results. The good news is that these findings indicate that rural workers or employers do not face coverage barriers unique to rural areas. Such findings might have suggested the need for policy interventions specific to rural environments and targeted to factors such as informational barriers, distinct business cultures, or delivery system differences in the availability of free care. It appears from our findings that policy solutions fitting urban America are likely to work in rural America as well. In particular, policies that target the special problems and barriers that small firms and their employees face in obtaining and affording health insurance—including small group reform, health insurance purchasing cooperatives, and tax credit or subsidy programs—are especially relevant to rural firms and workers.

The bad news is that the factors affecting lower coverage rates among rural workers — firm size and wage levels—are not easily amenable to policy solution. To date, policy efforts and demonstrations have not been effective in expanding coverage rates in the small business sector (Helms at al. 1992; Thorpe et al. 1992; Morrisey at al. 1994). A number of these initiatives have involved either the development and marketing of lower cost products through the use of higher cost sharing arrangements and pared down

benefits, and/or the use of direct and indirect subsidies for the purchase of insurance products by small employers. Even with substantial subsidies, the penetration of these insurance products in the market of uninsured small businesses was low (McLaughlin and Zellers 1992).

There has been considerable interest in providing incentives for expanded group purchasing arrangements for small firms. Despite the failure of national health reform, the private sector and states continue to be interested in the development of formal though voluntary group purchasing arrangements, such as purchasing coalitions, as a strategy for enabling smaller purchasers to achieve the same degree of market leverage as larger employers. While much of this interest has been urban-based, this interest has extended to rural firms as well. In 1997, the Northern Great Plains Rural Development Commission (1997) prepared a report and developed recommendations in which it identified group purchasing as among it highest priorities for enabling small, rural firms to obtain greater access to affordable health insurance coverage. In California, Florida, Iowa, Kentucky, and other states, formal purchasing groups have been established which are offering a variety of insurance products for urban and rural small firms. To date, there is little information on the effectiveness of these approaches and initiatives in expanding insurance coverage in rural areas.

In the final analysis, there is little evidence that the strategies tried so far have successfully reduced the price of insurance, or that reducing the price of insurance alone, will be sufficient to bring large numbers of small employers and their employees into the insurance market. Meanwhile, the recently passed and soon to be implemented Child Health Insurance Program (CHIP), will extend health insurance coverage for lower income families whose employers do not offer coverage or who cannot afford to purchase the coverage that is extended to them. Monitoring the effects of these expansions on

insurance coverage rates in rural areas will be important to determine whether and to what extent CHIP can reduce the significant disadvantage that rural workers in small firms and their families face in obtaining employer-based health insurance coverage.

## NOTES

[1] McBride used a measure of total family income as proxy.

[2] We also carried out our analyses using weights that adjust for different probabilities of selection across the states and obtained similar results. We have reported the results giving each state an equal weight so that our findings are not dominated by the two states with very large populations in our sample.

[3] This measure reflects the number of employees in all locations for establishments that are part of a multi-establishment firm. We sample establishments in order to have a unit that is contained within geographic borders. But insurance decisions in firms with several establishments are typically made at a regional or national level and thus differences in the size of the firm better reflect the purchasing power of the unit.

[4] Both of these factors however are statistically significant in the offer model. The result indicates that the magnitude of the effect of the factor *and* the difference in the distribution of the factor between urban and rural areas do not combine to explain urban and rural offer rate discrepancies.

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EDMUND S. MUSKIE SCHOOL OF PUBLIC SERVICE
96 Falmouth Street
PO Box 9300
Portland, ME 04101-9300

TELEPHONE (207) 780-4430
TTY (207) 780-5646
FAX (207) 780-4417
www.muskie.usm.maine.edu