Health Insurance Coverage of Illinoisans: An Analysis of the Current Situation, Trends, and Correlated Health Behaviors Using BRFSS Data

A Report Submitted to the Illinois Department of Public Health

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I. Introduction

As public leaders and representatives of interested groups develop strategies for reducing the number of uninsured Illinoisans, the information system that monitors the extent of health insurance coverage in Illinois and the ways health insurance coverage influences health behaviors can play an important role. Up to date state-level information can assist policy makers in targeting initiatives and in evaluating initiatives. The Illinois Department of Public Health, through its Illinois Center for Health Statistics possesses a unique resource in Illinois for monitoring health insurance coverage and examining its impacts on utilization and health behaviors. Its Behavioral Risk Factor Surveillance System (BRFSS) fields a comprehensive survey of Illinois individuals to learn about health behaviors (including health insurance coverage) of Illinoisans. The Illinois BRFSS operates with the combined support of both the Federal and State governments. Using the BRFSS data, this report addresses the questions of the number of uninsured Illinoisans currently, as well as the changes in health insurance coverage over the past decade.

The Health Resources and Services Administration (HRSA) State Planning Grant in support of the Illinois Assembly process has allowed for the expansion of the BRFSS and the development of a trend analysis and a report on the current level of health care coverage in Illinois. To that end, additional questions regarding a person's industry of employment were posed to respondents beginning in December 2000. While the focus of the BRFSS is on individuals and their health behaviors related to major causes of disease and death, the introduction of the industry of employment question begins to allow the consideration of health insurance coverage in terms of a system and as part of a labor market process. This is critical if the information is to

be used to assist in policy development, since health insurance coverage in the United States is directly related to employment for working-age people.

This report uses the following outline. Section II gives an overview of the BRFSS data and variables employed in this analysis. In addition, the analytic methods are described. Next is an analysis of the trends in health insurance coverage over the period 1991 through 2000. Section IV reports on the current level of the lack of health care coverage in Illinois along with an analysis of variables related to being uninsured. It also describes the differences between people without health insurance and people with health insurance. Section V lays out recommendations for variables to be included in future BRFSS efforts, and it suggests strategies for public health leaders in Illinois to further the development and dissemination of information related to health insurance coverage.

II. Data and Methods

The BRFSS provides Illinois public health officials and public policy makers with an ongoing source of monitoring information about health insurance coverage of Illinois residents and related demographic and health variables. The BRFSS is a telephone survey of adults (non-institutionalized) and it relies on self-reported answers to questions such as "Do you have a health plan?" As observers and users of such public health survey research should note, estimates of health insurance coverage differ across surveys (such as the BRFSS and the Current Population Survey) for a number of reasons, including slightly different wording of survey questions, slightly different sampling frames, different follow-up questions and probes, and in some cases, the use of imputation methods. While differences between estimates of the BRFSS

and other surveys should be noted, the BRFSS has a number of advantages for state-level monitoring of health insurance coverage. Those advantages include its design as a state-level public health monitoring tool, its ongoing nature and ability to produce trend data for the state, its ability to gather information not only about health insurance coverage, but also some measures of health care utilization and measures of many health behaviors. While the BRFSS cannot answer every question about health insurance coverage in Illinois that analysts may think of, it does address the primary monitoring issues very well and, through the HRSA Planning Grant has been enhanced to add more detail on the employment and occupations of individuals.

II.A Overview of the Data

In all, there are 22,054 observations for the *Health Plan* variable from adults ages 18-64 over the time period 1991 through 2000. The number of observations per year has increased as the Illinois BRFSS increased its scope. For 1991, 1554 observations on *Health Plan* are available for adults in the 18 to 64 year age range. By 1995 the number of observations had increased to 2337, and, in the year 2000, the number of observations increased to 3411. These differences in sample size necessarily mean that the precision of estimates for the earlier part of the decade is less than the precision of estimates from the later part of the decade.

To measure whether or not changes in health screening behaviors occurred over the 1991 through 2000 period, the variable *Mammogram, Clinical Breast Exam, Pap Smear*, and *Cholesterol* are examined. *Mammogram* (asked to women 40 years and older) is a dichotomous variable that indicates if a woman has had a mammogram or not. Similarly, *Clinical Breast Exam* indicates whether or not a woman has had a clinical breast exam. *Pap Smear* shows

whether or not a woman has had a pap smear taken. The screening variable *Cholesterol* indicates whether or not a person has had their cholesterol level checked.

Along with the link between an individual's health insurance coverage and health screening exams, another relationship of interest is that of health care utilization and health insurance coverage. To measure health care utilization, two BRFSS variables are examined. *Medcost* tells whether or not an individual avoided seeing the doctor because of cost. *Checkup* indicates when a person's last routine checkup was, with a range of answers possible (eg. within the past year, within two years, etc.).

The Enhanced BRFSS that began to gather information in December of 2000 included two additional variables related to health insurance coverage. The first, *Employer*, indicates the type of employer a person has if they are currently employed. The categories for this variable are: Federal Government, State Government, Local Government, Private Sector, Not-for-Profit, and Other. The second new variable is *Occupation*, which has the following thirteen categories: Management, Business, and Finance; Technical, Computer, Engineering and Social Science; Social Service, Legal, and Education; Health Care Support and Personal Care; Construction, Maintenance, Production, and Transport; Arts, Design, Media, and Sports; Healthcare Practitioners; Protective Service; Food Service; Building Maintenance and Cleaning; Sales; Office Support; and, Agriculture, Fishing, and Forestry. These two new variables expand the BRFSS's capability to help target program and policies (including experimental initiatives) that are aimed at reducing the levels of uninsuredness in Illinois. In addition, these new variables should prove useful for program and policy evaluation in the future.

II.B Methods

Since the purpose of the BRFSS is to monitor behavioral health measures at the state level, a sampling strategy that employs stratification and weighting is employed. Therefore, to produce unbiased estimates of health insurance coverage for the Illinois population, the analysis must take into account the weighting structure and the survey structure. For this analysis, Stata software was used. Stata's survey estimation routines account for the differential weighting of observations and the survey design found in the BRFSS data.

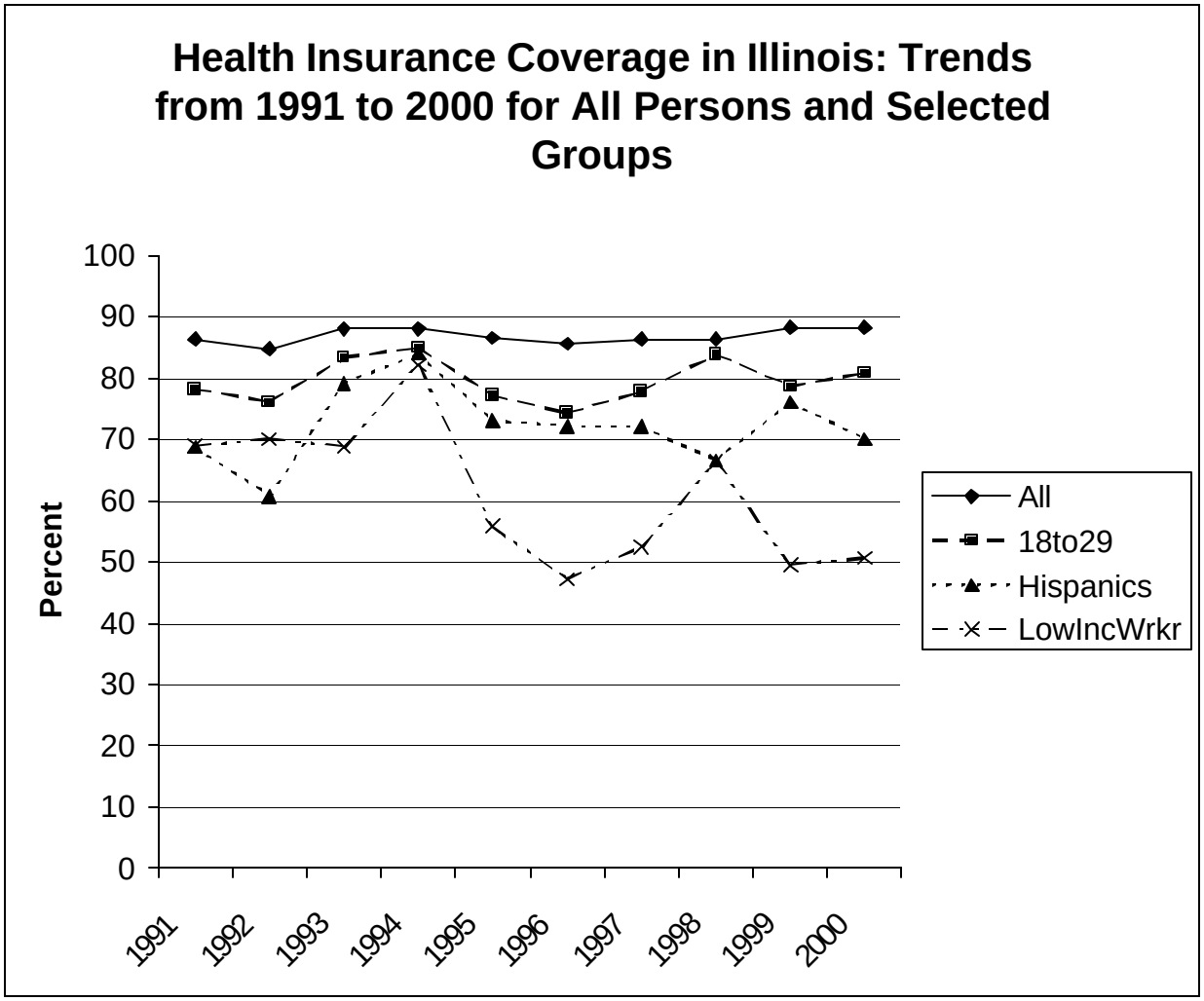
Descriptive statistics are used to answer most of the questions that are the focus of this report. Estimates of the proportion of Illinoisans with (or without) health insurance coverage of different population subgroups are the primary example of this sort of descriptive statistic. To look at changes in health insurance coverage trends, a breakpoint analysis is employed. This divides the decade into two parts (1991-1995 and 1996-2000) and descriptive statistics are estimated for each half of the decade. Then tests to determine whether or not the estimated statistics are significantly different at the 95 percent confidence level are performed. A third type of analysis is employed in the study to account for potential confounding variables that make descriptive statistics less useful as measures of association. To account for multiple confounding variables (such as income, sex, age, race, ethnicity, and urban or rural residence) a regression analysis approach is used (a probit regression estimated with survey weights). This allows the determination of the distinct contribution of a particular demographic variable, such as a low-income level, to the probability that a given Illinois resident would be without health insurance coverage.

III.Trend Analysis: 1991 Through 2000

III.A Graphical Analysis of Trends

Health insurance coverage for all persons (ages 18-64) changed little over the period 1991 through 2000. As Figure 1 shows, the level of health insurance coverage for Illinoisans over that period varied between a low of 84.7 percent in 1992 to a high of 88.6 percent in 2000.

Figure 1



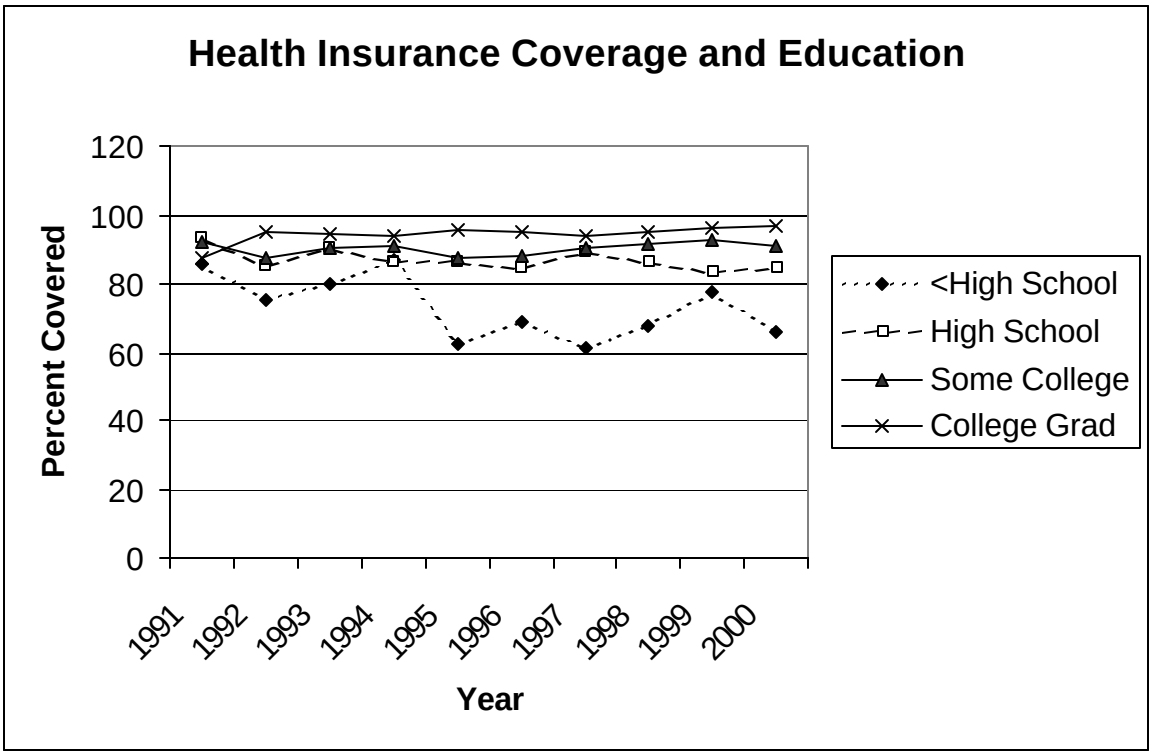
From the point of view of uninsured people, the levels of uninsuredness varied between a high of 15.3 percent in 1992 to a low of 11.4 percent in the year 2000.

The Illinois Assembly identified a number of groups of special interest, and trends for three of these groups are shown in Figure 1. The three groups are Young Adults (18-29 years old), Hispanics, and Low-Income Workers. From the graph it is apparent that a general ordering exists across the three groups that holds fairly constant across the decade. (In comparing these groups, readers should remember that the groups are not mutually exclusive.) A general pattern of health insurance coverage, from highest to lowest holds, with 18 to 29 year olds holding the highest place, and low-income workers having the lowest level. For all of the decade, 18 to 29 year olds have the highest level of health insurance coverage of the three groups. The high for the young adults was in 1994 when 85 percent were covered with health insurance at a given point in time. The lowest level of coverage for 18 to 29 years old during the 1991 to 2000 period came in 1996 when 74.3 percent had coverage.

Health insurance coverage for Hispanics is estimated to range from a low of 60.8 percent in 1992 to a high of 84.0 percent in 1994. However, with the smaller sample sizes in the early 1990s, the estimated standard errors (and resulting confidence intervals around the estimates) are relatively large. Therefore, some of the extreme variation seen before 1995 in the annual estimates of the proportion of Illinois Hispanics having health insurance coverage may be due to chance and small numbers. After 1995 the number of Hispanics surveyed annually increased to between 200 and 300 per year. This increases the precision of estimates of health insurance coverage of Hispanics in the later part of the decade.

Of the three groups considered here, low-income workers (defined as those people in a household with an income below $15,000 per year and working) had the lowest estimated levels of health insurance coverage over the decade. The year with the lowest level of coverage is observed in 1996 (see Figure 1) when 47.2 percent of low-income workers held health insurance coverage. The highest level seen for the low-income workers was in 1994, when 82.1 percent of low-income workers were covered. An issue arises in the statistical analysis of these data over time with respect to the income variable, since income is reported in the BRFSS categorically, meaning that adjustments for changes in purchasing power cannot be undertaken. This categorical income variable leads to several statistical issues, including a reduction in sample size for this group in the later part of the decade (and lowered precision in estimates) and an

Figure 2. Health Insurance Coverage for Employed Persons By Education Level, 1991 to 2000



upward bias in the estimate of the proportion of low-income workers without health insurance coverage at the end of the decade relative to what the estimate would be if income were kept constant (adjusted for changes in the Consumer Price Index) over time.

While it may not be possible to ascertain with absolute certainty whether or not health insurance coverage declined for low-income workers, another piece of evidence related to this question comes from the change in coverage for workers with less than a high school education. The trend lines for health insurance coverage over the period 1991 to 2000 for working people by education level are shown in Figure 2. As might be expected, an ordering of health insurance coverage levels according to educational attainment holds in this graph. Workers with the least education have the lowest levels of health insurance coverage. On the other hand, workers with a college education or beyond have the highest levels of health insurance coverage. By visual inspection, it appears that workers with less than a high school education (the most likely workers to be low-wage earners) experienced a decline in health insurance coverage. This lends further support to the idea that low-income workers saw declines in their health insurance coverage over the decade of the 1990s in Illinois.

Overall, the trend graphs displayed in Figures 1 and 2 portray a picture of health insurance coverage remaining fairly constant for most people considered, but with evidence of declines for low-income workers and working people with less than a high school education. It is important to keep in mind that this relative constancy in health insurance coverage occurred over a period of robust economic activity and a very strong labor market. In the later half of the 1990s, Illinois experienced historically low levels of unemployment. If some groups experienced declines in

health insurance coverage during such good economic times, what slippage in coverage might be observed if the labor market and economy weakens significantly?

III.B Breakpoint Analysis of Changes in Coverage by Demographic Characteristics

Along with graphical analysis of trends, statistical tests can be employed to measure whether or not changes measured with survey data are, in fact, statistically significant. To test the significance of change in health insurance coverage associated with different demographic characteristics, observations were grouped by year into two sets (sub-samples), and summary statistics (proportion of a group insured, for example) are calculated. Data were grouped into a 1991-1995 set and a 1996-2000 set. Then hypothesis tests were constructed using the statistic and the estimate of the standard error or standard deviation. This method was employed to determine whether or not changes occurred and whether or not the observed changes were statistically significant at the 95 percent confidence level.

Table 1 provides estimates of the proportion of people covered across the two time periods (1991-1995 and 1996-2000) for groups based on age and income. The estimate of health insurance coverage for all adults shows a very slight decline over the period, but this decline is not statistically significant. Young adults (18-29 year olds) also experienced a decline in coverage over the period, and this decline was fairly large (about 5.5 percentage points). However, it too was not statistically significant at the 95 percent confidence level.

Working adults in households with incomes below $35,000 did experience a decline in health insurance coverage over the decade. In the 1991-1995 period 85.56 percent of these adults had

Table 1 Changes in Health Insurance Coverage Over the Periods 1991-1995 and 1996-2000 by Young Adult Status, Low-Income Working Person Status, Education, Geographic Region, and Race and Ethnicity Groups

Demographic Group	% Covered		Diff. Significant?
	91-95	96-00	
All Adults 18-64 Years of Age	87.96	87.02	No
18 to 29 Years of Age	84.79	79.26	No
Working Adults			
HH Income<$35,000	85.56	75.57	Yes
HH Income<$15,000	81.95	53.89	Yes
Working Adults, by Education			
Less than High School	86.87	67.69	Yes
High School	86.11	85.76	No
Some College or Tech. School	91.05	90.91	No
College Graduate	94.12	95.36	No
Geographic Region			
Chicago	81.72	79.79	No
Other Metropolitan Area	91.28	90.57	No
Rural Illinois	84.51	85.90	No
Race/Ethnicity (not mutually exclusive)			
White	89.41	88.12	No
Black	79.88	79.94	No
Hispanic	83.45	70.80	No

health insurance coverage, and that level declined to 75.57 percent in the later half of the decade. Similarly, working people in households with incomes less than $15,000 experienced a sharp decline in the proportion with health insurance over the decade. In the first half of the decade, 81.95 percent of these workers had health insurance coverage, but in the later half of the decade just 53.89 percent of these workers had health insurance coverage. The declines for both of these groups of low-income workers are statistically significant with 95 percent confidence. The only other group found with a statistically significant change in health insurance coverage over the sub-periods of the decade was working people with less than a high school education.

Trends for other groups, including working adults with at least a high school education, adults by geographic region of the state, and adults by Black and White race and Hispanic ethnicity are also reported in Table 1. Most of these groups experience very little change in their rates of health insurance coverage over the two periods. However, Hispanic Illinoisans did experience a decline in health insurance coverage from 83.45 percent in 1991-1995 to 70.80 percent in 1996-2000. However, this drop in coverage was not statistically significant.

Table 2 reports changes in coverage over the period by sex and marital status. Females experienced a decline in coverage over the period from 89.95 percent to 86.82 percent. On the other hand, males experienced a small increase in coverage from 85.93 percent to 87.29 percent. With respect to marital status, most categories experienced small changes but persons with an unmarried couple saw a sharp drop in their health insurance coverage, but with fairly large estimated standard errors, the drop is not statistically significant at conventional levels of significance.

Table 2 Change in Coverage by Sex and Marital Status

Demographic Group	% Covered		Diff. Significant?
	91-95	96-00	
Sex			
Female	89.95	86.82	No
Male	85.93	87.29	No
Marital Status			
Married	93.42	91.73	No
Divorced	81.46	80.97	No
Widowed	87.37	78.25	No
Separated	82.02	78.91	No
Never Married	78.97	80.19	No
Unmarried Couple	89.79	75.49	No

In summary, in this section of the report changes in health insurance coverage were reviewed for different demographic groups in Illinois over the period 1991 to 2000. For most demographic groups small changes in the level of health insurance coverage were observed. However, for low-income workers and workers with less than a high school education, the proportion of people in these groups with health insurance coverage declined over the decade. These declines are not only significant in a statistical sense, but they also are large in magnitude.

III.C Changes in health screening behaviors among uninsured Illinois residents

Figure 3. Mammogram Screening Exam Use and Health Insurance Coverage

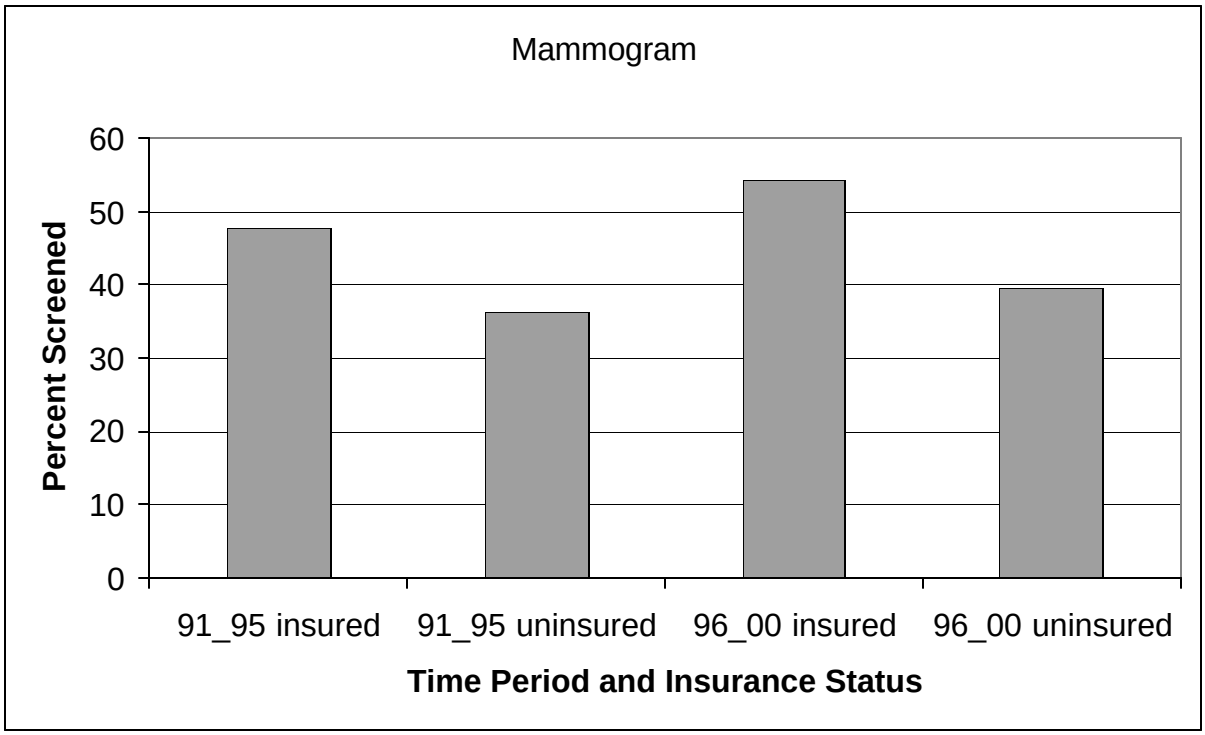


Figure 4. Clinical Breast Exam Use and Health Insurance Coverage Overtime

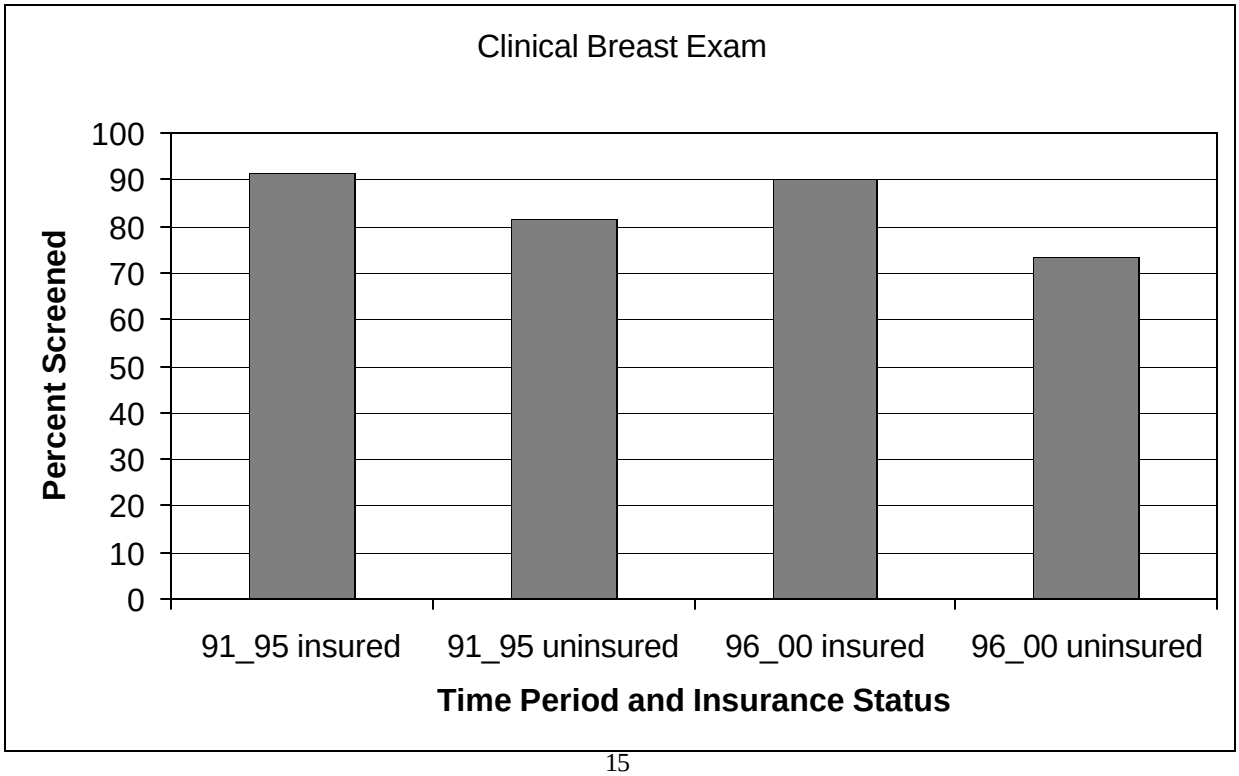


Figure 5 Pap Smear Exam Use and Health Insurance Coverage

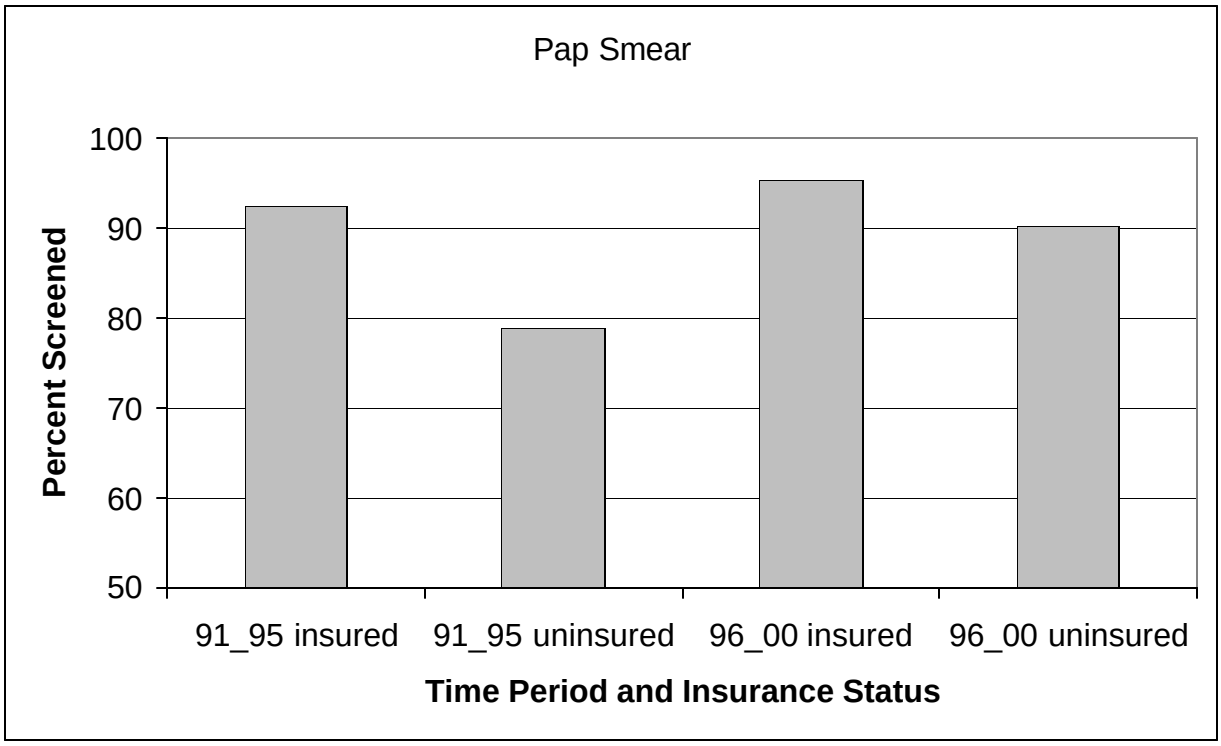
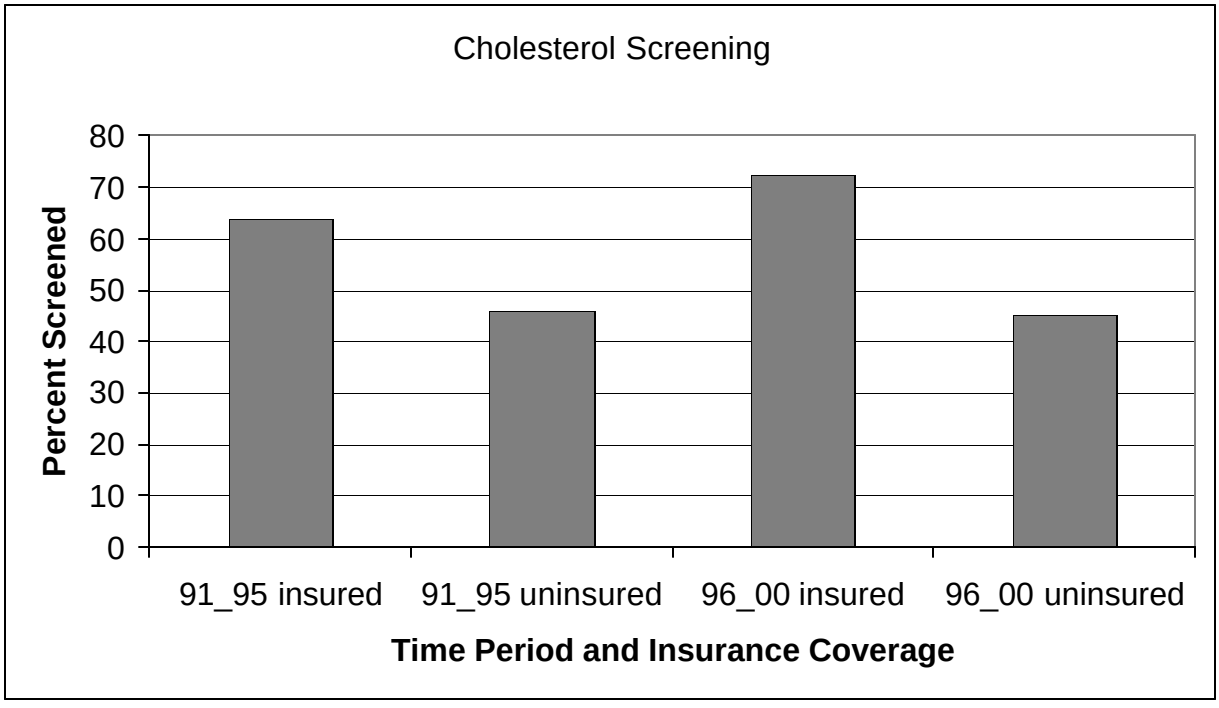


Figure 6 Cholesterol Screening and Health Insurance Coverage



Health insurance coverage is of concern to public health policy makers and advocates because having health insurance is a critical factor in whether or not a person has access to high quality health care. To examine the link between insurance coverage and screening exams, Figures 3 through 6 present graphs depicting the use of screening exams by uninsured people and insured people over the periods 1991-1995 and 1996-2000. Along with documenting the connection between health insurance coverage and screening exam use, these figures allow us to examine whether the connection between health insurance coverage and screening use has changed over the past decade.

Taking the screening exam use graphs as a group, it is readily apparent that uninsured people are less likely to have had any one of the four screening exams when compared with people with health insurance. The difference ranges between from around 10 percentage points to more than 25 percentage points (cholesterol screening exams in the 1996-2000 time period). In addition, there also appears to be an increase in the overall level of use of screening exams, with use increasing for each exam whether or not a person is uninsured. The exceptions to that trend are the clinical breast exam for both insured and uninsured people (a decline in use among uninsured persons) and cholesterol screening exams for uninsured people. However, while increases occurred for screening exams, the size of the increase differed across insured people and uninsured people. In the case of mammogram screening exams (women aged 40 and older), insured women increased their use rate from about 47 percent to about 54 percent. Uninsured women on the other hand, only increased their use rate from about 36 percent to almost 40 percent. In contrast, the increase in pap smear exam use was dramatic for uninsured women across the two time periods. The increase for these women was from below 80 percent having

had a pap smear exam in the first half of the decade to over 90 percent having had an exam by the later half of the decade. This slightly mixed picture makes conclusions about changes in the use of screening exams by uninsured people over the past decade include difficult to make. However, it appears to be the case that in the face of overall increases in the level of screening exam use (mammograms and cholesterol screening exams, for example) uninsured people are less likely to respond to the same degree to whatever public health and medical messages insured people are hearing.

III.D Utilization and Access to Care for the Uninsured

To examine whether changes occurred over the past decade in the relationship between uninsuredness and the use of health care services, the role of medical care costs and visits to a primary care physician were examined. *MEDCOST* is a BRFSS variable that measures if a person avoided seeing a doctor because of the cost. *CHECKUP* asks an individual when he or she last had a routine checkup.

The BRFSS data from the period show a strong association between having health insurance coverage and utilization of primary care services, as measured by *CHECKUP* and *MEDCOST*. In the first half of the decade (1991-1995), 35.5% of uninsured people stated that they avoided the doctor because of cost. Only 6.9% of insured people reported avoiding the physician because of cost during the same time period. Based on these frequencies, uninsured people are about five times more likely than insured people to report cost as a barrier to seeking primary care services. In the second half of the decade, 32.3% of uninsured people reported avoiding the doctor because of costs. However, this percentage is not statistically different from the percentage in

the first half of the decade. Therefore, evidence exists that over the 1990s a slight decrease in cost as an access barrier for uninsured Illinoisans occurred, but the decrease is not statistically significant with 95% confidence.

Similarly, in the case of a person's last routine checkup the data show a large difference between the proportion of insured people having a checkup in the past year (70.1% over 1991 to 2000) and the proportion of uninsured (51.0% over 1991 to 2000) who report a checkup in the past year. While this difference between the insured and uninsured and the timing of last routine checkup exists, no evidence exists that the percentage of uninsured people putting off obtaining a routine checkup has increased. In the first half of the decade 50.9% of uninsured people reported having a routine checkup within the past year. In the later half of the decade that percentage was virtually unchanged at 51.8%. To sum up, the evidence from the BRFSS variable *MEDCOST* and *CHECKUP* show that while significant differences in utilization for insured and uninsured Illinoisans exist, there is no statistically significant evidence from this data demonstrating a decrease in utilization for uninsured people.

This section has reviewed trends in health care insurance coverage for people in Illinois, and it has examined changes in health screening exam use and changes in utilization for uninsured people over the past decade. The main findings are that, while most groups did not experience significant changes in their rates of health insurance coverage over the period, low-income working people (including working people with less than a high school education) experienced significant declines in the proportion of people in the group with health insurance.

IV. Analysis of Enhanced BRFSS data

The Enhanced BRFSS data was collected over the period December 1, 2000 through May 30, 2001. The Enhancement refers to additional questions that were posed to respondents about their industry of employment and job type. The Enhanced BRFSS data analyzed here covers 1602 complete responses by adults (aged 18 through 64) to the question on coverage of a health plan. Overall, the Illinois BRFSS data show that an estimated 9.8% of adults aged 18 to 64 years of age were without health insurance coverage in the December 2000 through May 2001 time period.

IV.A Demographic Differences Between Insured and Uninsured Illinoisans

As Table 3 illustrates, people with health insurance differ markedly from people without health insurance at the current time in Illinois. Table 3 reports the composition of two groups, people with health insurance and people without health insurance, by a variety of demographic characteristics. Strong differences in the composition of the two groups appear immediately from an examination of Table 3. First, the uninsured are more likely to be young adults, with 39.4 percent of the uninsured falling in the 18 to 29 year age group. The insured group is more heavily weighted with adults aged 30 to 64 years (74.2 percent), compared to 60.6 percent of people in the uninsured group. Second, the uninsured are much more likely to be in a low-income household. More than 75 percent of uninsured Illinoisans live in households with an annual income below $35,000, while only about 23.4 percent of insured people live in households with incomes below $35,000. Third, uninsured Illinoisans are disproportionately people of color, with 32.2 percent of uninsured people in the non-white category, while only 16.3 percent of insured people belong to the non-white category.

Table 3 Comparison of Demographic Characteristics Between Uninsured and Insured Illinoisans, December 2000 – May 2001

Demographic Characteristic or Population Group	Uninsured (%)	Insured (%)
All Adults (18-64 Years of Age)		
Young Adults (18-29 Years)	39.4	25.8
Adults Aged 30-64 Years	60.6	74.2
Income Groups		
Income Less than $15,000	23.4	4.1
Income $15,000 to $35,000	53.2	19.3
Income $35,000 to $50,000	10.8	20.0
Income $50,000 and Above	12.6	56.6
Race		
White	67.8	83.7
Non-White	32.2	16.3
Sex		
Female	55.3	50.3
Male	44.7	49.7
Geographic Region		
Chicago	35.8	17.2
Other Metro (Collar Counties, Downstate Metro)	46.5	63.0
Rural	17.6	19.8

Source: Illinois BRFSS December 2000--May 2001 Enhanced Survey

At the current time in Illinois the uninsured also are more likely to be female than male, with 55.3 percent of uninsured people being female. Lastly, there is a strong geographic pattern of uninsuredness in Illinois, with uninsured people living in Chicago with a disproportionate frequency compared to their presence in the insured category. Chicagoans comprise 35.8 percent of uninsured Illinoisans, while only 17.2 percent of insured Illinoisans live in the City of Chicago.

Table 4 Percentage Uninsured By Demographic Characteristic, Illinois, December 2000 through May 2001

Population Group	Percentage Uninsured
All Adults (18-64 Years of Age)	9.8
Young Adults (18-29 Years)	14.2
Adults Aged 30-64 Years	8.1
Income Groups	
Income Less than $15,000	36.7
Income $15,000 to $35,000	21.8
Income $35,000 to $50,000	5.1
Income $50,000 and Above	2.2
Race	
White	8.1
Non-White	17.6
Sex	
Female	10.6
Male	8.9
Geographic Region	
Chicago	18.4
Other Metro (Collar Counties, Downstate Metro)	7.4
Rural	8.8

While examining demographic composition of the uninsured versus the insured is important to understand relative frequency of lack of health insurance coverage by demographic characteristic, considering the percentage of different groups that are without health insurance helps to further quantify the issue. Table 4 reports on the percentage of people without health insurance for different demographic categories. While the overall rate of lack of health insurance is 9.8 percent for adults aged 18-64, more than 14 percent of young adults (18-29 years) are without health insurance coverage. The relationship between household income and lack of health insurance is seen in the percentage uninsured by income group. While 36.7 percent and 21.8 percent of people in households with incomes less than $15,000 and between $15,000 and $35,000, respectively, lack health insurance, only 2.2 percent of people in households with incomes about $50,000 lack health insurance.

Again, Table 4 shows the difference in lack of coverage across racial lines, with Non-Whites nearly 10 percentage points more likely to lack health insurance coverage than Whites. A difference in health insurance coverage by sex is also observed, with 10.6 percent of women without health insurance in the 18 to 64 year age group, compared to 8.9 percent of men. Lastly, while 18.4 percent of Chicagoans lack health insurance, a lower percentage of Other Metropolitan residents (Collar Counties and Downstate Metropolitan Areas) and Rural residents lack health insurance coverage.

IV.B Coverage By Employer and Occupation Type

Some significant differences in health insurance coverage exist across types of employers

Figure 7 Coverage by Type of Employer, December 2000 through May 2001

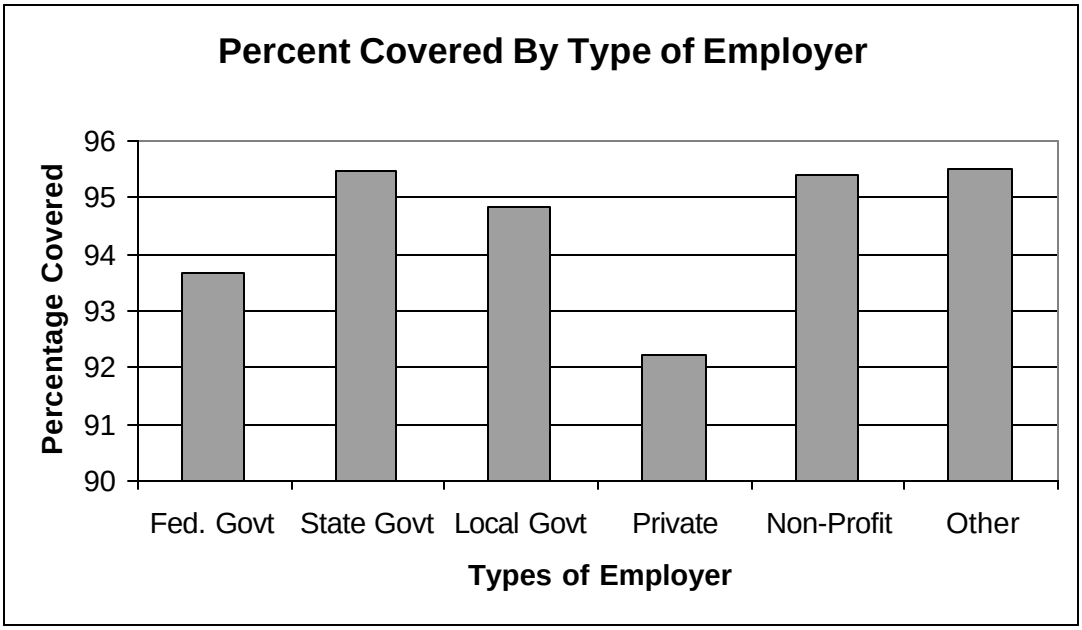


Table 5 Percentage Insured by Occupation Type, December 2000 – May 2001

Occupation Type	Insured (%)
Management, Business, Finance	99.1
Technical, Computer, Engineering, Science, Social Science	97.9
Social Service, Legal, Education	96.7
Health Care Support and Personal Care	85.1
Construction, Maintenance, Production, and Transport	88.1
Arts, Design, Media, and Sports	87.0
Heathcare Practitioners	94.5
Protective Service	97.7
Food Service	74.2
Building Maintenance and Cleaning	93.0
Sales	90.9
Office Support	95.6
Agriculture, Fishing, Forestry	Insufficient Data

Source: Illinois BRFSS December 2000--May 2001 Enhanced Survey

as Table 7 demonstrates. Of the six employer types, workers employed by the private sector and the federal government are more likely to be without health insurance than are employees of state and local governments and of the not-for-profit sector and other category employers.

Of all the occupation types examined (Table 5) Food Service workers have the lowest level of health insurance coverage (74.2 percent), with Health Care Support and Personal Care workers (85.1 percent) the next lowest. Two other groups that have less than 90 percent of workers with health insurance coverage are workers in the Arts, Design, Media, and Sports industries (87.0 percent) and workers in Construction, Maintenance, Production, and Transport areas (88.1 percent). The employed persons with the highest level of coverage work in the areas of Management, Business, and Finance (99.1 percent). This occupation information is new to the BRFSS and it allows the monitoring of coverage by occupation area, and it strongly suggests possibilities for targeting of any initiative that might be aimed at employers (food service, some home health agencies, etc.). This information would also be useful in developing outreach strategies if a public decision is made to expand Kidcare into a Familycare program.

Of course, it is important to remember that unemployed persons lack health insurance coverage with greater frequency than employed persons. In the December 2000 through May 2001, an estimated 19.8 percent of unemployed persons lacked health insurance coverage, compared to 6.7 percent of employed persons. This suggests that if the economy weakens significantly we will see a greater percentage of Illinoisans without health insurance coverage.

IV.C Coverage, Health Care Utilization, and Health Screens

Like the period 1991 to 2000, the Enhanced BRFSS data show a strong link between health insurance coverage in utilization. For people with a health plan (in the 18 to 64 year range), only 5.5 percent reported that they had avoided a doctor because of cost (*Medcost*). Meanwhile, 35.4 percent of uninsured people reported that they avoided the doctor because of concerns over the cost. This pattern is very similar to what was found over the 1991 to 2000 period. With respect to a person's last routine checkup (*Checkup*), this differential in utilization holds for health insurance coverage. About 70 percent of insured people had a routine checkup in the past year, as compared to 50.2 percent of uninsured people. Both of these differences between insured and uninsured people with respect to *Medcost* and *Checkup* hold up statistically at the 5 percent level.

Figure 7 Health Care Screening Exams By Coverage Status

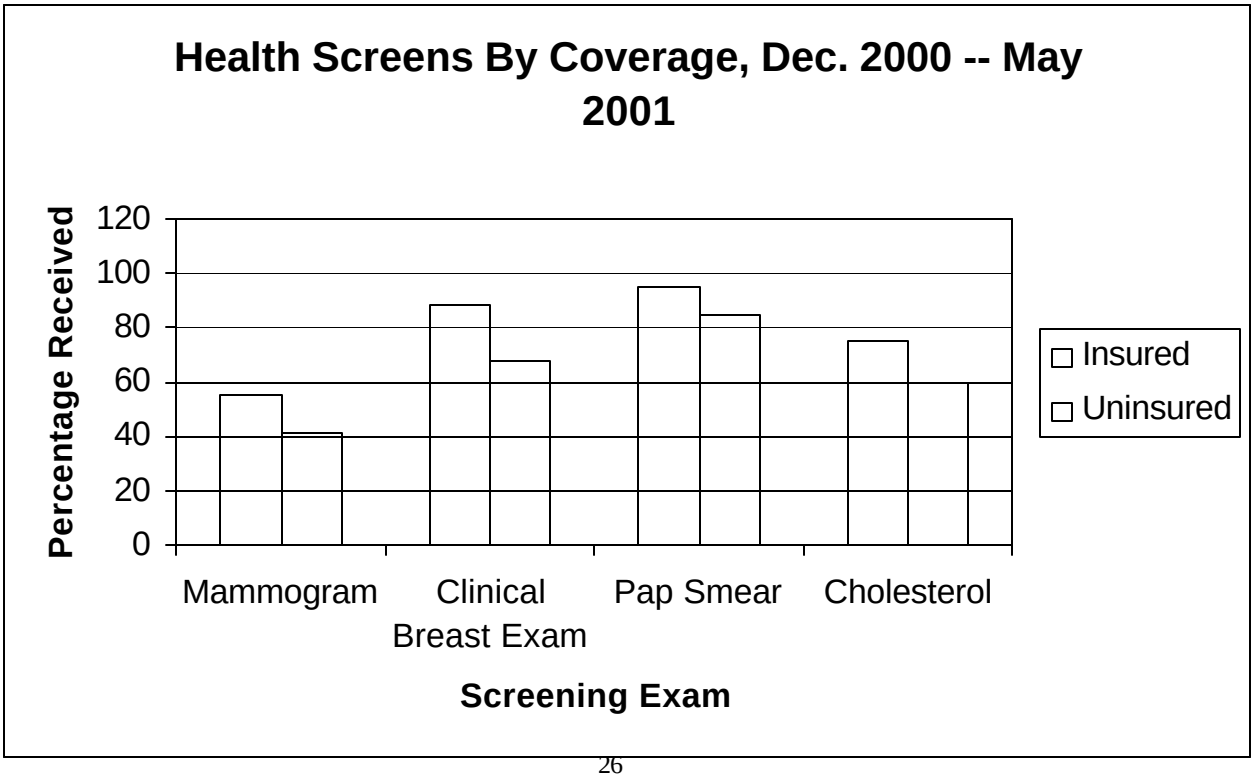


Figure 7 reports the most up to date information about how health-screening use relates to health insurance coverage in Illinois. For each of the screening exams portrayed, insured people were more likely to have had the screen than uninsured people, but only some of the differences in use are statistically significant. The clinical breast exam and cholesterol exam differences are significant at the 5 percent level. One reason that the other two women's health screening exam differences are not significant is that these differences are calculated with subsets of the overall Enhanced BRFSS, thereby reducing sample size and increasing the size of the estimated standard errors.

IV.F Multivariate Analysis of Factors Related to Health Insurance Coverage

A difficulty with simple descriptive statistics, such as those presented above, for the purpose of assessing the factors related to health insurance coverage is the problem of confounding variables. Demographic variables often are highly correlated (for instance, education and income), and while simple descriptive statistics can be standardized by other variables (age-adjustment for example), it is easy to think of another confounding variable the analyst might need to address. Multivariate regression is appropriate in this situation, and it provides estimates of the distinct correlation of an independent variable (income, age, race, geographic location in this analysis) with an outcome of interest. Here we are interested in the likelihood that a given individual has health insurance coverage, given a set of demographic and social variables.

The explanatory variables in the probit regression reported in Table 6 include Age (and a squared

Table 6 Probit Regression Estimates of the Effects of Demographic Variables on the Probability of Health Insurance Coverage for Illinoisans, December 2000 – May 2001

	Coefficient	Std. Error	t-statistic	p-value	dF/dx
AGE	-0.03017	0.03384	-0.89	0.373	-0.00310
SQAGE	0.00042	0.00041	1.02	0.307	0.00004
DINCOME<$15,000	-0.75439	0.31344	-2.41	0.016	-0.12911
DINCOME$15,000to$34,999	-1.11881	0.18847	-5.94	0.000	-0.18943
DINCOME$35,000to$49,999	-0.34075	0.19367	-1.76	0.079	-0.04170
DRURAL	0.08977	0.19554	0.46	0.646	0.00883
DCHICAGO	-0.26154	0.15336	-1.71	0.088	-0.03078
DWHITE	0.33089	0.13592	2.43	0.015	0.04053
DFEMALE	0.08823	0.13047	0.68	0.499	0.00907
DEMPLOYED	0.60474	0.16440	3.68	0.000	0.08266
DRURAL&POOR	-0.49330	0.38528	-1.28	0.200	-0.07381
DWORKING&POOR	-1.17835	0.34503	-3.42	0.001	-0.26186
CONSTANT	1.76127	0.68590	2.57	0.010	

n=1454, Psuedo R2=0.2354, dF/dx denotes the effect on the probability of coverage (calculated at the average dependent variable values) of a change in the dependent variable.

term), dummy (indicator or dichotomous) variables for income level, dummy variables indicating rural residence and Chicago residence, a dummy variable for race (DWhite), a dummy variable for sex (DFemale), and dummy variables for employment and interactions between rural residence and the lowest income group and between employed and the lowest income group. The probit regression allows the determination of an estimate of the distinct impact of a factor on the likelihood that an individual with given characteristics will be insured. The last column in Table 6 reports an estimate of the effect size of the variables. The effect size is how much the probability of being insured will change given a change in the explanatory variable. For instance, being employed leads to an 8-percentage point increase in the probability of insurance coverage when calculated at the mean values of the independent variables. Recall that on average about 90 percent of Illinoisans own health insurance coverage in this data. Therefore, for a low-income person (income less than $15,000) is about 12.9 percentage points less likely

than a person with an income above $50,000 to have health insurance coverage.

Overall, the probit regression results confirm the strong relationship between low-income people and lack of health insurance, and this relationship takes into account the confounding variables of race and Chicago residence. On average, Chicago residents have a three-percentage point lower chance of having health insurance coverage when compared with other residents of the state. Employed people have about an 8-percentage point higher chance of having health insurance coverage when compared to unemployed people, all other characteristics being held constant.

To sum up, this section has reported on the Enhanced BRFSS data that was collected from December 2000 through May 2001. An estimated 9.8 percent of Illinoisans were without health insurance during this period. While a number of factors were related to the lack of health insurance, being in a low-income household was the strongest factor related to health insurance coverage. Other important factors associated with an increased risk of being without health insurance coverage include Non-White race, being a low-income working person, and living in Chicago. Living in a rural area and being a low-income person is also associated with a lower chance of health insurance coverage, but this relationship is statistically significant at the 20 percent level.

V. Recommendations for Future BRFSS Data Collection

The BRFSS is a unique public health information resource for policy makers in Illinois. It provides timely and accurate information about health insurance coverage annually and in a

format that permits analyses to consider changes over time and estimates for regions within the State. The State and the Federal Government have supported the Illinois BRFSS and encouraged its expansion in sample size over the past decade, thereby allowing more precise estimates of public health variables such as smoking prevalence or lack of health insurance. Moreover, fielding a social survey like the BRFSS is a complex task and any recommendations about further variables to monitor must be weighed against concerns such as multiple public health monitoring objectives, respondent burden, competing sources of data and the possibility for public health information to be obtained through alternative means. That being said, this section outlines my recommendations for variables for IDPH to consider monitoring through year 2010 as well as my recommendations for related data gathering and dissemination activities.

First, the Illinois Center for Health Statistics should continue to field the occupation and employer type questions, perhaps with modifications, that were introduced in the Enhanced BRFSS. An issue with the questions as they stand is that they are fairly open-ended and lead to a wide variety of responses that are difficult to categorize in the data organization and cleaning process. Furthermore, in the occupation question, some of the responses more closely resemble answers to a question about industry rather than occupation. Another related issue is the absence of information concerning the size of employer in terms of number of employees, although this is admittedly difficult to ascertain from individual respondents (however the Current Population Survey asks individuals this question). From the point of view of health insurance coverage monitoring, it is valuable to continue the use of follow-up questions and probes such as whynopln, pastplan, whyno12, planothr, medicare, and plantype.

Second, the other access to care variables such as medcost, checkup, prmcare1, prmcare2, dentcost, and prescost should be continued. Previously fielded access variables, including the question about how people get to their primary care provider, should be reconsidered in light of the prominence of access and quality as public health concerns. Consideration should be given to specific quality of care questions to respondents that answer positively to a question about diabetes or overweight or some other condition where interaction with a primary care physician is critical to successful disease management.

Third, the BRFSS (necessarily) is not as in-depth as some other surveys in its questions about income and the respondent's involvement in the labor market. With income, an issue for trend analysis is the use of ranges and the difficulty in adjusting the discrete income values for changes in the CPI. In the labor market, it would be helpful to know directly whether or not a person is eligible to receive health insurance in his or her job. The offer of health insurance by employers is an important part of the coverage issue that the BRFSS does not treat at this time.

As for other research and dissemination strategies, the IDPH should consider partnering with groups in Illinois that conduct surveys of employers (including Employment Security and the Health Education Research Trust in Chicago), if it is interested in obtaining establishment or employer level information about whether or not coverage is offered to employees. Another dissemination strategy would be to hold an Illinois Health Insurance Coverage Summit where analysts and others interested health insurance coverage in the state could meet and discuss current levels of coverage and the issues around the lack of coverage. The annual estimate of the lack of health insurance coverage for Illinois could be released and presented at such a meeting.