State and Metropolitan Variation in Lack of Health Insurance Among Working-Age Adults, Behavioral Risk Factor Surveillance System, 2006

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SYNOPSIS

Objective. Lack of health insurance coverage for working-age adults is one of the most pressing issues facing the U.S. population, and it continues to be a concern for a large number of people. In the absence of a national solution, the states and municipalities are left to address this need. We examined the disparities in uninsurance prevalence by state and metropolitan areas in the U.S. and among racial/ethnic groups.

Method. Data from the 2006 Behavioral Risk Factor Surveillance System (BRFSS) were analyzed for working-age adults 18 to 64 years of age.

Results. In 2006, according to the BRFSS data, overall 18.6% (standard error = 0.20) of working-age adults were without health insurance coverage; by state, this proportion ranged from 9.7% to 29.0%. Health insurance coverage varied by state and metropolitan area and racial/ethnic group, and a higher age-adjusted prevalence of uninsurance was observed for non-Hispanic black and Hispanic respondents.

Conclusions. A substantial proportion of working-age Americans remain without health insurance coverage. Disparities in health insurance coverage were observed by population and geographic groups. Overall, black and Hispanic populations fared far worse in terms of lack of health-care coverage than working-age white Americans.

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Lack of health insurance coverage continues to be a concern for a large number of Americans in the U.S.,[1–5] and increased morbidity and mortality due to lack of health insurance is well-documented in the literature.[1–3,6–12] According to an Institute of Medicine (IOM) report, health insurance is associated with improved health outcomes and receipt of appropriate care for preventive, chronic, and acute health services, and those without coverage experience 25% more mortality than those with continuous coverage. Furthermore, disparities in the appropriate use of health-care services could be reduced by broad availability of health-care coverage.[1] The number of employed individuals without health insurance has increased as a result of changes in workplace policies over time.[1,13–16]

According to the 2006 U.S. Census reports based on the Current Population Surveys (CPSs), 47.0 million people, or 15.8% of the U.S. population, were without health insurance coverage in 2006. Of those who were covered, 59.7% had private plans with employment-based benefits.[17,18] A report published in 2000 using the CPS and National Health Interview Survey (NHIS) showed variation in health insurance coverage and disparities across cities in the U.S.[19] Lack of health insurance coverage varies considerably among states and specific demographic groups, and little is known about certain groups or geographic areas, such as cities. The impact of having to provide care to a large number of uninsured falls on the localities, which must have access to timely data to plan, develop, and measure the outreach of their programs.[4,17–21]

Several programs, including Medicaid and the State Children's Health Insurance Program, cover some low-income adults and children, but many still remain without coverage. States and local communities are increasingly facing challenges in providing specific programs or services for the uninsured.[15,19–21] In the absence of a national solution to the uninsurance problem, states are using various methods in an attempt to insure more people.[15,19–28] In line with the second goal of *Healthy People 2010*,[29] which focuses on eliminating health disparities, surveillance data are needed at the state and local levels to develop a portrait of the underlying situation that may be contributing to disparities in access to health-care services. Uninsurance may be one of the major factors contributing to the observed disparities and gaps in health-care access.[1,19–21,30–33]

More detailed and timely state- and local-level data on health insurance coverage are needed for states to assess the status of their population, as well as to evaluate existing programs to alleviate the lack of coverage and their potential impact. Existing state-level data from the CPS must be pooled during several years to produce state-level uninsurance estimates.[34] While useful, these estimates may not be timely for states and local governments dealing with issues of resource allocation and public health programming, whereas BRFSS data are state-generated and available to these entities on a yearly basis. To examine the variation in health insurance coverage in different geographic areas and to assess uninsurance levels by geographic and specific population groups, we analyzed data from the 2006 BRFSS in state and metropolitan areas. Our analysis was limited to working-age adults 18 to 64 years of age.

METHODS

The BRFSS is an ongoing, state-based, random-digit-dialed telephone survey of the non-institutionalized U.S. population aged 18 and older. The survey is administered in English and Spanish and is used to monitor health behaviors associated with the leading causes of morbidity and mortality, use of preventive health services, and health insurance coverage. The BRFSS data collection system is in place in 50 states, the District of Columbia (DC), and the three U.S. territories of Puerto Rico, U.S. Virgin Islands, and Guam. For this study, 2006 data from the 50 states and DC were used. Data from 252,844 adults aged 18 to 64 years whose health insurance information was available were included in the analysis. The state sample sizes ranged from 1,789 to 17,076 and metropolitan sizes from 502 to 4,928. The median BRFSS survey response rate (called a Council of American Survey Research Organizations response rate) was 51.4% (range 35.1%, 66.0%).

To ascertain information about their health insurance coverage, we asked all respondents, "Do you have any kind of health-care coverage, including health insurance, prepaid plans such as health management organizations, or government plans such as Medicare?" We analyzed insurance data from the 2006 BRFSS survey, produced and graphed state and available metropolitan-level data estimates, and tabulated and age-adjusted additional estimates by race/ethnicity.[35] We adjusted the estimates for age because there were differences in insurance coverage for people in different age groups.

We used four age groups for adjustment purposes: 18–24 years, 25–34 years, 35–44 years, and 45–64 years. We used the self-reported county of residence to classify the primary residence of metropolitan statistical areas (MSAs) according to standard definitions designated by the U.S. Office of Management and Budget and used by the U.S. Census Bureau as of June 2003. All counties within the MSA, primary MSA, or New England County

metropolitan areas were included in the metropolitan areas that crossed state boundaries. A total of 146 MSAs with at least 500 completed interviews were included in the analysis, which is the minimum sample required by the BRFSS methodology. The rationale for including MSAs was that they represent standard geographic areas that contain a substantial population nucleus, together with adjacent communities, and have a high degree of economic and social integration.

Data on people who declined to answer the questions or whose insurance status was unknown were excluded from analyses; <1% were excluded for each state. Data were adjusted for nonresponse and weighted. SUDAAN® was used to generate the prevalence estimates and their corresponding standard errors.[36]

RESULTS

Considerable variability was observed in the prevalence of uninsurance by state and metropolitan areas within the U.S. in 2006. The median level of uninsurance for the states and DC was 17.01%, and the estimates ranged from 9.68% in Minnesota to 28.99% in Texas. The prevalence of uninsurance varied across geographic regions (Table 1 and Figure). States in the Southern and Western regions tended to have higher uninsurance prevalence estimates than those in the Northeast or Midwest regions.

The unadjusted estimates of uninsurance were 13.10% for non-Hispanic white respondents, 22.90% for non-Hispanic black respondents, and 40.80% for Hispanic people ($p<0.0001$). Age-adjusted estimates for the states and for three racial/ethnic groups are shown in Table 1. Overall, Hispanic respondents had a higher age-adjusted uninsurance prevalence (median = 38.31%), followed by non-Hispanic black respondents (median = 22.75%), and non-Hispanic white respondents (median = 13.57%). Examination of estimates within each geographic region revealed that non-Hispanic white respondents in the South (median = 16.88%) and West (median = 16.58%) had higher uninsurance prevalence than did non-Hispanic white respondents in the Northeast (median = 11.04%) or Midwest (median = 13.08%). Among the non-Hispanic black population, estimates were higher for the Midwest

Figure. Prevalence of uninsurance by state and metropolitan statistical area, Behavioral Risk Factor Surveillance System, 2006

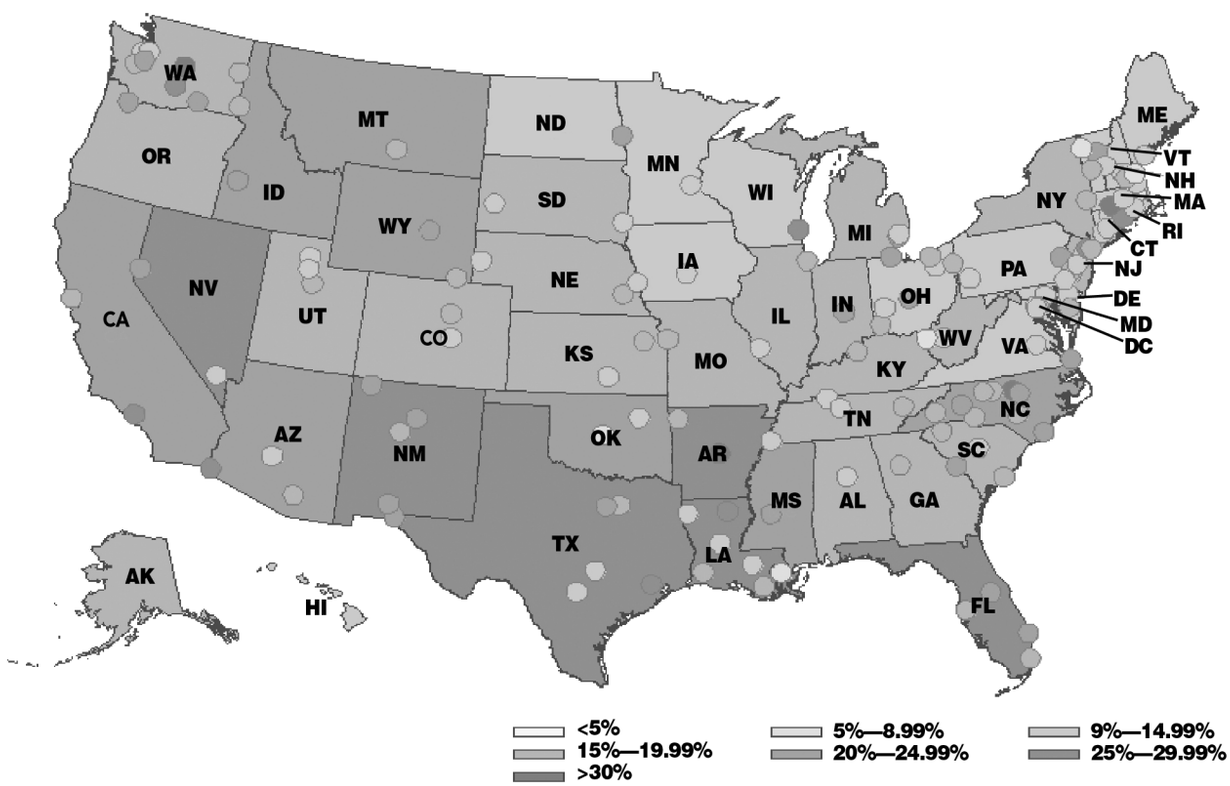

Table 1. Proportion of working-age adults, 18 to 64 years of age, without health insurance, overall by state and racial/ethnic groups, BRFSS, 2006

	N	*Percent (SE)*	*Age-adjusted percent (SE)*	*Age-adjusted white percent (SE)*[a]	*Age-adjusted black percent (SE)*[a]	*Age-adjusted Hispanic percent (SE)*
Total	252,844	18.59 (0.20)	18.68 (0.20)	13.57 (0.18)	22.75 (0.57)	38.31 (0.77)
Region						
Northeast						
Connecticut	6,017	12.06 (0.60)	12.59 (0.65)	7.94 (0.64)	17.56 (2.35)	37.96 (2.62)
Maine	3,042	12.38 (0.79)	12.72 (0.84)	12.58 (0.86)	NA	NA
Massachusetts	9,338	9.99 (0.56)	10.11 (0.57)	8.08 (0.62)	19.75 (3.10)	23.75 (2.34)
New Hampshire	4,532	13.29 (0.72)	14.16 (0.80)	13.71 (0.82)	NA	21.44 (6.24)
New Jersey	9,315	16.76 (0.64)	17.24 (0.67)	9.52 (0.66)	17.19 (1.79)	43.50 (1.98)
New York	4,231	15.94 (0.88)	16.18 (0.89)	11.95 (0.90)	15.95 (2.45)	29.92[b] (2.75)
Pennsylvania	9,447	12.70 (0.79)	12.91 (0.80)	11.04 (0.73)	26.28 (4.22)	18.17[b] (4.04)
Rhode Island	3,199	13.37 (0.94)	13.39 (0.91)	9.39 (0.92)	16.15[b] (4.00)	41.51 (3.69)
Vermont	5,145	13.34 (0.64)	13.98 (0.68)	13.52 (0.70)	NA	16.25[b] (4.23)
Median percent for the Northeast = 13.29			13.39	11.04	17.38	26.84
Midwest						
Illinois	3,846	17.64 (0.95)	17.64 (0.92)	11.08 (0.88)	26.93 (2.88)	39.04 (3.29)
Indiana	4,864	18.42 (0.80)	18.36 (0.75)	16.12 (0.82)	24.51 (2.62)	40.22 (4.49)
Iowa	3,871	12.70 (0.78)	12.84 (0.77)	11.24 (0.77)	NA	40.93 (5.54)
Kansas	5,946	15.65 (0.70)	15.46 (0.64)	12.06 (0.65)	18.13 (2.83)	43.44 (2.94)
Michigan	4,163	15.29 (0.85)	15.48 (0.84)	13.81 (0.83)	23.78 (3.18)	15.98[b] (3.75)
Minnesota	3,189	9.68 (0.72)	9.70 (0.71)	8.59 (0.75)	24.43 (4.57)	NA
Missouri	3,797	15.73 (0.90)	15.87 (0.92)	14.10 (0.94)	24.86 (3.62)	30.88[b] (6.27)
Nebraska	5,599	17.01 (0.89)	16.75 (0.81)	13.54 (0.81)	25.13 (4.87)	44.77 (3.80)
North Dakota	3,345	13.89 (0.85)	13.90 (0.82)	12.93 (0.85)	NA	NA
Ohio	4,110	14.63 (1.32)	14.83 (1.33)	13.23 (1.43)	20.41[b] (4.19)	NA
South Dakota	4,606	16.44 (0.88)	15.71 (0.75)	13.83 (0.80)	NA	NA
Wisconsin	3,686	11.25 (0.76)	11.32 (0.76)	10.43 (0.80)	19.14 (2.99)	19.42 (5.35)
Median percent for the Midwest = 15.47			15.47	13.08	24.43	39.04
South						
Alabama	2,409	19.07 (1.20)	19.03 (1.18)	16.88 (1.37)	23.40 (2.45)	NA
Arkansas	3,934	25.14 (0.95)	25.23 (0.90)	21.95 (0.99)	28.51 (2.73)	52.12 (4.16)
Delaware	2,953	11.37 (0.96)	11.42 (0.97)	10.69 (1.10)	14.35 (2.53)	16.60[b] (4.79)
District of Columbia	3,083	9.80 (0.82)	9.73 (0.79)	4.06 (0.61)	14.11 (1.41)	NA
Florida	7,329	25.52 (0.84)	26.09 (0.83)	19.24 (1.00)	24.34 (2.22)	43.41 (1.86)
Georgia	5,760	17.93 (0.77)	17.87 (0.75)	14.50 (0.78)	24.46 (1.71)	21.86 (4.01)
Kentucky	4,429	19.95 (1.00)	20.64 (1.04)	19.88 (1.06)	28.39 (4.81)	NA
Louisiana	5,437	26.53 (0.83)	26.38 (0.81)	20.08 (0.91)	36.49 (1.69)	40.22 (4.27)
Maryland	6,505	11.76 (0.68)	12.08 (0.70)	9.09 (0.65)	18.02 (1.72)	20.69[b] (4.27)
Mississippi	4,163	24.76 (0.96)	24.37 (0.89)	19.97 (1.08)	31.43 s(1.63)	25.65[b] (6.33)

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Table 1 (continued). Proportion of working-age adults, 18 to 64 years of age, without health insurance, overall by state and racial/ethnic groups, BRFSS, 2006

	N	*Percent (SE)*	*Age-adjusted percent (SE)*	*Age-adjusted white percent (SE)*[a]	*Age-adjusted black percent (SE)*[a]	*Age-adjusted Hispanic percent (SE)*
North Carolina	11,339	20.94 (0.59)	20.97 (0.58)	14.89 (0.65)	19.89 (1.26)	53.15 (2.35)
Oklahoma	4,852	24.97 (0.82)	25.03 (0.80)	20.14 (0.89)	31.76 (3.56)	53.87 (3.29)
South Carolina	6,426	19.60 (0.71)	20.19 (0.75)	17.00 (0.84)	22.81 (1.60)	46.35 (5.17)
Tennessee	3,257	15.49 (0.95)	15.58 (0.96)	15.66 (1.05)	15.66 (2.69)	NA
Texas	4,984	28.99 (1.15)	28.49 (1.10)	16.65 (1.26)	31.82 (3.27)	50.93 (2.07)
Virginia	4,078	11.98 (0.79)	12.07 (0.79)	9.41 (0.78)	20.99 (3.13)	25.90 (4.99)
West Virginia	2,756	18.91 (0.98)	19.82 (1.02)	20.02 (1.06)	NA	NA
Median percent for the South = 19.60			20.19	16.88	23.87	40.22
West						
Alaska	1,789	19.01 (1.36)	19.16 (1.34)	20.38 (1.70)	NA	NA)
Arizona	3,287	23.32 (1.56)	23.12 (1.50)	14.82 (1.79)	NA	44.07 (3.52)
California	4,364	20.37 (0.94)	20.24 (0.91)	9.46 (0.84)	NA	34.14 (1.73)
Colorado	4,717	19.56 (0.79)	19.67 (0.78)	13.53 (0.80)	15.29[b] (3.76)	42.83 (2.33)
Hawaii	4,984	9.97 (0.66)	10.03 (0.66)	10.28 (1.13)	NA	11.31[b] (2.58)
Idaho	4,047	22.19 (0.96)	21.72 (0.88)	17.88 (0.87)	NA	57.05 (3.77)
Montana	4,431	20.03 (0.91)	20.29 (0.88)	19.63 (0.99)	NA	21.14[b] (5.17)
Nevada	2,723	25.93 (1.41)	26.55 (1.27)	17.48 (1.54)	NA	51.27 (3.01)
New Mexico	4,905	25.55 (0.90)	25.62 (0.89)	16.58 (1.12)	17.57[b] (4.87)	33.35 (1.52)
Oregon	3,565	19.52 (0.89)	19.89 (0.90)	17.59 (0.97)	NA	38.77 (3.52)
Utah	4,083	17.10 (0.92)	15.99 (0.80)	11.89 (0.74)	NA	40.79 (3.53)
Washington	17,076	16.88 (0.47)	17.18 (0.46)	13.56 (0.47)	27.11 (3.46)	42.43 (2.03)
Wyoming	3,734	21.03 (0.87)	20.95 (0.85)	19.88 (0.90)	NA	27.52 (3.63)
Median percent for the West = 20.03			20.24	16.58	16.43	39.78

NOTE: All percentages are weighted.

[a]Non-Hispanic white or non-Hispanic black

[b]Potentially unstable estimates; interpret these with caution. The calculated estimate reliability (RSE = 100 x (SE(r)/r)) was 20–30; values higher than 30 were suppressed.

BRFSS = Behavioral Risk Factor Surveillance System

SE = standard error

NA = not available due to insufficient sample size

(median = 24.43%) and Southern (median = 23.87%) regions than for the Northeast (median = 17.38%) and West (median = 16.43%). Hispanic respondents, on the other hand, had an uninsurance prevalence of 26.83% in the Northeast, followed by 40.00% in the other three geographic regions.

The Figure shows the variation of uninsurance estimates for states and metropolitan areas within the states. Table 2 shows the 10 metropolitan areas within each region with the highest uninsurance prevalence. Overall, the median across MSAs for the four regions varied. In the Northeast, the MSA median was 12.58% (range = 7.31% in the Nassau-Suffolk, New York, Metropolitan Division to 18.65% in the New York–White Plains–Wayne, New York–New Jersey Metropolitan Division). The MSA median for the Midwest was 13.15% (range = 8.29% in the Minneapolis–St. Paul–Bloomington, Minnesota–Wisconsin MSA to 19.77% in the Youngstown–Warren–Boardman, Ohio–Pennsylvania MSA). In the South, the MSA median was 20.47% (range = 9.01% in the Bethesda–Gaithersburg–Frederick, Maryland, Metropolitan Division to 46.14% in the El Paso, Texas, MSA). For the Western region, the median was 18.86% (range = 7.82% in the Honolulu, Hawaii, MSA to 36.2% in the Las Cruces, New Mexico, MSA).

DISCUSSION

Findings from this study showed that substantial numbers of working-age adults in state and metropolitan areas are without health insurance coverage and BRFSS data can be used by these entities to monitor and assess their specific situation. The coverage prevalence varied by region of the U.S. as well as across MSAs, indicating potential influences that result from local conditions such as employment opportunities, economic situations, population demographics, and specific programs or policies implemented by state and local governments to address the uninsurance situation. Lack of health insurance incurs significant concerns for state and local areas and the health of their populations, including shifting limited resources from public health functions to providing medical care to the uninsured populations.[1,3,6,9–12,20,21]

The issue of the uninsured and the specific challenges encountered by local and state governments trying to address these issues and to bridge gaps in providing health-care services and programs have been the subject of much discussion in the U.S.[1,19–28,30–33] An IOM report examined the effect of uninsurance on communities and found that the responsibility for financing and delivering care to the uninsured in

Table 2. Estimates of uninsurance for 10 metropolitan areas within each region with the highest prevalence, BRFSS, 2006

Region	*Percent (SE)*
Ocean City, NJ	14.13 (2.81)
Rockingham County–Strafford County, NH	14.18 (1.55)
Edison, NJ	14.45 (1.24)
Bridgeport–Stamford–Norwalk, CT	14.69 (1.27)
Rutland, VT	14.70 (2.09)
Atlantic City, NJ	16.24 (2.47)
Keene, NH	16.46 (3.00)
Newark–Union–NJ–PA	17.03 (1.22)
Lebanon, NH–VT	18.06 (1.83)
New York–White Plains–Wayne, NY–NJ	18.65 (1.24)
Northeast (*n*=31), median[a] percent = 12.58 (range 7.31, 18.65)	
Kansas City, MO–KS MSA	14.83 (1.23)
Omaha–Council Bluffs, NE–IA MSA	15.25 (1.42)
Topeka, KS	15.74 (2.03)
Scottsbluff, NE	16.07 (2.29)
Detroit–Livonia–Dearborn, MI	16.08 (2.24)
Cincinnati–Middletown, OH–KY–IN	16.56[b] (3.75)
Indianapolis, IN	17.14 (1.30)
Rapid City, SD	17.72 (1.86)
Chicago–Naperville–Joliet, IL–IN–WI	18.84 (1.15)
Youngstown–Warren–Boardman, OH–PA	19.77[b] (5.05)
Midwest (*n*=24), median percent = 13.15 (range 8.29, 19.77)	
Tulsa, OK MSA	24.31 (1.64)
Shreveport–Bossier City, LA MSA	24.37 (2.58)
Houston–Sugar Land–Baytown, TX MSA	24.70 (3.74)
Wilmington, NC MSA	24.80 (3.55)
Hilton Head Island–Beaufort, SC MSA	25.33 (3.22)
Lubbock, TX MSA	26.48 (3.19)
Miami–Fort Lauderdale–Miami Beach, FL	26.56 (1.69)
Myrtle Beach–Conway–North Myrtle Beach, SC	26.89 (3.15)
San Antonio, TX MSA	31.80 (3.97)
El Paso, TX MSA	46.14 (3.29)
South (*n*=51), median percent = 20.47 (range 9.01, 46.14)	
Kalispell, MT MSA	22.58 (2.78)
Reno–Sparks, NV MSA	23.16 (1.76)
Tucson, AZ MSA	24.10 (3.29)
Yakima, WA MSA	26.05 (2.59)
Las Vegas–Paradise, NV MSA	26.47 (1.89)
Los Angeles–Long Beach–Glendale, CA	27.84 (2.46)
Yuma, AZ MSA	28.40 (3.13)
Wenatchee, WA MSA	32.94 (2.43)
Farmington, NM MSA	33.55 (3.07)
Las Cruces, NM MSA	36.20 (2.94)
West (*n*=40), median percent = 18.86 (range 7.82, 36.2)	

[a]Median and range represent all MSAs within a region. A table with all the MSA data is available upon request.

[b]Potentially unstable estimates; interpret these with caution. The calculated estimate (r) reliability (RSE = 100 x (SE(r)/r)) was 20–30; values higher than 30 were suppressed.

BRFSS = Behavioral Risk Factor Surveillance System

SE = standard error

MSA = metropolitan statistical area

the U.S was fragmented and ill defined. A significant consequence is that many state, county, and municipal facilities serve as health-care providers by default, thereby having to shift their fiscal and public health priorities.[20,21] The IOM report notes that uninsurance can adversely affect the financial viability of a community's health-care institutions and providers, which can result in reduced access to primary care, specialty service, and hospital care, particularly emergency services and trauma care.[20] These are some of the reasons that making timely, local-level data available to policy makers on the size and characteristics of the uninsured population is important, and the BRFSS data are a key source of this information for state and local entities.

Previous studies have also observed the disparities in insurance coverage shown by the BRFSS data.[19,20] For example, the Northeast region, despite having the lowest overall uninsurance prevalence, still has high proportions of non-Hispanic black and Hispanic populations without coverage. Previous work on uninsurance shows that in contrast to non-Hispanic white and black populations, close to 60% of Hispanic individuals reported that their employers do not offer health insurance coverage.[30] There are other factors contributing to the Hispanic population's lack of access to health care and health insurance, including employment opportunities, type of employment, acculturation, and language.[27,31–33,37] Given that the U.S. Hispanic population is projected to grow from 35.6 million in 2000 to 102.6 million by 2050, a large proportion of this population's health-care needs will remain unmet if the current situation persists.[37,38]

Health insurance coverage is a complicated problem, and the disparities observed in our data reflect a dimension of that complexity. States and local areas differ in demographic characteristics, levels of employment, and employment-based coverage, as well as in public-sector coverage, types of industry, local labor markets, and programs available through the state.[13–22] Resources available to states and localities will determine how they negotiate the issue of providing coverage to the uninsured. Clearly, low-income states have fewer resources than high-income states.[12,19] For example, a state with higher rates of employer coverage may have more resources to dedicate to the uninsured than do states with a lower employment base and lower rates of employer coverage, leaving a larger pool of people without health insurance coverage.[14–16] Given that employer-provided health insurance has been undergoing significant changes over the past several years, states and localities have faced many challenges in covering the uninsured.[13–15,30–33]

The findings from the BRFSS on uninsurance prevalence are useful in that they provide timely estimates by state and local areas to monitor their individual situations. The data can serve as a planning tool for local and state officials to direct resources to public health efforts to ensure that vulnerable populations are provided with a safety net or minimum access to health-care services. The health benefits of insurance coverage are most useful to individuals when they are covered over time and have access to needed services. This is especially true for working-age Americans, as large numbers of this population are uninsured.[1,12] Other datasets, such as that of the NHIS and the CPS, also provide uninsurance data, but their data must be pooled across several years and do not include local-level data as does the BRFSS.[34] The BRFSS surveys are an important source of timely data for estimating uninsurance by state, local, and other health-related measures because the sample sizes are large and data are consistently available over many years. The BRFSS data are collected by each state, allowing states the flexibility to explore state-specific health coverage changes as they implement new programs or policies.

Strengths and limitations

The following strengths and limitations must be considered when interpreting the results of this study. First, the BRFSS uses telephone contact to administer the survey. This methodology does not capture responses from people without land-based telephone lines, which may include young and mobile populations. Therefore, BRFSS may actually underestimate the prevalence of uninsurance for these groups. Second, because data are self-reported, biases associated with self-report may apply. However, studies have shown self-reported information on health insurance status to be valid.[39,40] Third, the BRFSS question on insurance may not capture all the possible sources of health insurance coverage or the length of time someone is uninsured.

On the other hand, an important strength of the BRFSS data is that consistent information is collected from state and local areas and the question is asked in reference to the time of the interview, thereby limiting the issues related to recall bias, as opposed to a historical timeframe, which has the potential to yield estimates about past uninsurance history.[34]

CONCLUSIONS

A substantial proportion of Americans aged 18 to 64 years in state and metropolitan areas remain without health insurance coverage, and we observed disparities in coverage among racial/ethnic groups. Access to health insurance may increase an individual's access to

needed health care and health services, which remain out of reach for many Americans. Although many states and localities are trying to bridge the gaps by developing innovative programs to cover the uninsured, these programs can cover only a fraction of the people who may need such assistance, and in the long run these efforts may be neither adequate nor sustainable.[15,19,27] Therefore, broad-based support for increasing access to health insurance coverage is needed to address health disparities among different population groups.

The findings and conclusions in this article are those of the authors and do not necessarily represent the views of the Centers for Disease Control and Prevention.

REFERENCES

1. Institute of Medicine. Care without coverage: too little, too late. Washington: National Academy Press; 2002.
2. Census Bureau (US). Health insurance: historical health insurance tables [cited 2007 Aug 21]. Available from: URL: http://www.census.gov/hhes/www/hlthins/historic
3. Kaiser Family Foundation. The uninsured: a primer: key facts about Americans without health insurance. Washington: Kaiser Family Foundation; 2006. Also available from: URL: http://www.amsa.org/uhc/UninsuredPrimer.pdf [cited 2007 Aug 21].
4. Nelson DE, Bolen J, Wells HE, Smith SM, Bland S. State trends in uninsurance among individuals aged 18 to 64 years: United States, 1992–2001. Am J Public Health 2004;94:1992-7.
5. Holahan J, Kim J. Why does the number of uninsured Americans continue to grow? Health Aff (Millwood) 2000;19:188-96.
6. Davidoff AJ, Kenney GM. Uninsured Americans with chronic health conditions: key findings from the National Health Interview Survey. Princeton (NJ): Robert Wood Johnson Foundation; 2005.
7. Powell-Griner E, Bolen J, Bland S. Health care coverage and use of preventive services among the near elderly in the United States. Am J Public Health 1999;89:882-6.
8. Faulkner LA, Schauffler HH. The effects of health insurance coverage on the appropriate use of recommended clinical preventive services. Am J Prev Med 1997;13:453-8.
9. Hayward RA, Shapiro MF, Freeman HE, Corey CR. Inequalities in health services among insured Americans. Do working-age adults have less access to medical care than the elderly? N Engl J Med 1988;318:1507-12.
10. Ayanian JZ, Kohler BA, Abe T, Epstein AM. The relation between health insurance coverage and clinical outcomes among women with breast cancer. N Engl J Med 1993;329:326-31.
11. DeVoe JE, Fryer GE, Phillips R, Green L. Receipt of preventive care among adults: insurance status and usual source of care. Am J Public Health 2003;93:786-91.
12. Collins SR, Davis K, Doty MM, Kriss JL, Holmgren AL. Gaps in health insurance: an all-American problem: findings from the Commonwealth Fund Biennial Health Insurance Survey. 2006 [cited 2007 Aug 22]. Available from: URL: http://www.commonwealthfund.org/publications/publications_show.htm?doc_id=367876
13. Reschovsky JD, Strunk BC, Ginsburg P. Why employer-sponsored insurance coverage changed, 1997–2003. Health Aff (Millwood) 2006;25:774-82.
14. Shen YC, Zuckerman S. Why is there state variation in employer-sponsored insurance? Health Aff (Millwood) 2003;22:241-51.
15. Giled S, Gould D. Variation in the impact of health coverage expansion proposals across states. Health Aff (Millwood) 2005;Suppl Web Exclusives:W5-259-71.
16. Xu KT. State-level variation in income-related inequality in health and health achievement in the US. Soc Sci Med 2006;63:457-64.
17. Fronstin P. Sources of health insurance and characteristics of the uninsured: analysis of the March 2007 Current Population Survey. EBRI Issue Brief 2007;310:1-36.
18. DeNavas-Walt C, Proctor BD, Smith J. Current population reports: income, poverty, and health insurance coverage in the United States: 2006. Washington: U.S. Government Printing Office; 2007.
19. Brown ER, Wyn R, Teleki S. Disparities in health insurance and access to care for residents across U.S. cities. The Commonwealth Fund. August 2000 [cited 2007 Aug 21]. Available from: URL: http://www.commonwealthfund.org/publications/publications_show.htm?doc_id=387057
20. Institute of Medicine Committee on the Consequences of Uninsurance. A shared destiny—effects of uninsurance on individuals, families, and communities. Washington: National Academies Press; 2003.
21. Kellermann AL, Snyder LP. A shared destiny: community effects of uninsurance. Ann Emerg Med 2004;43:178-80.
22. Ryan J. Local coverage initiatives: solution or band-aid for the uninsured? National Health Policy Forum. Issue Brief No. 803. 2005.
23. Bodenheimer T. The Oregon health plan—lessons for the nation. First of two parts. N Engl J Med 1997;337:651-5.
24. Call KT, Lurie N, Jonk Y, Feldman R, Finch MD. Who is still uninsured in Minnesota? Lessons from state reform efforts. JAMA 1997;278:1191-5.
25. Newby D. The Wisconsin health care plan: a practical, effective, and comprehensive response to our health care crisis. WMJ 2005;104:31-3.
26. McGlynn EA, Wasserman J. Massachusetts health reform: beauty is in the eye of the beholder. Health Aff (Millwood) 2006;25:W447-9.
27. Taylor EF, Cunningham P, McKenzie K. Community approaches to providing care for uninsured. Health Aff (Millwood) 2006;25:W173-82.
28. Benson E, Hickey B, Wong K. Recent developments in health law. States lead the way on health insurance reform. J Law Med Ethics 2007;35:329-39.
29. Department of Health and Human Services (US). Healthy people 2010. 2nd ed. With understanding and improving health and objectives for improving health. 2 vols. Washington: U.S. Government Printing Office; 2000.
30. Kahn CN III, Pollack RF. Building a consensus for expanding health coverage. Health Aff (Millwood) 2001;20:40-8.
31. Carrasquillo O, Himmelstein DU, Woolhandler S, Bor DH. A reappraisal of private employers' role in providing health insurance. N Engl J Med 1999;340:109-14.
32. Fronstin P. Employment-based health benefits: trends in access and coverage. EBRI Issues Brief 2005;284:1-27.
33. Fronstin P. Employment-based health benefits: access and coverage, 1988–2005. EBRI Issues Brief 2007;303:1-22.
34. Fronstin P. Counting the uninsured: a comparison of national surveys. EBRI Issues Brief 2000;225:1-19.
35. Klein RJ, Schoenborn CA. Age adjustment using the 2000 projected U.S. population. Healthy People 2010 Statistical Notes, No 20. Hyattsville (MD): Centers for Disease Control and Prevention, National Center for Health Statistics (US); 2001.
36. Research Triangle Institute. SUDAAN Language Manual: Release 9.0. Research Triangle Park (NC): Research Triangle Institute; 2004.
37. Pearson WS, Ahluwalia IB, Ford ES, Mokdad AH. Language preference as a predictor of access to and use of health care services among Hispanics in the United States. Eth Dis 2008;18:93-7.
38. Census Bureau (US). People: race and ethnicity [cited 2007 May 14]. Available from: URL: http://factfinder.census.gov/jsp/saff/SAFFInfo.jsp?_pageId=tp9_race_ethnicity
39. Nelson DE, Thompson BL, Davenport NJ, Penaloza LJ. What people really know about their health insurance: a comparison of information obtained from individuals and their insurers. Am J Public Health 2000;90:924-8.
40. Nelson DE, Holtzman D, Bolen J, Stanwyck CA, Mack KA. Reliability and validity of measures from the Behavioral Risk Factor Surveillance System (BRFSS). Int J Public Health 2001;46 Suppl 1:S3-42.