

## HEALTH CARE

Research Brief No. 48  
June 2008

## Estimating Health Insurance Coverage Using Hospital Discharge Data and Other Sources

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Health insurance coverage in Washington is a continuing policy concern, but information about coverage rates for Washington residents is limited. The Washington State Population Survey (WSPS)<sup>1</sup> is currently the standard source of health insurance coverage for policy analysis throughout state government. The WSPS, however, is only conducted every two years (in even numbered years), leaving a gap in health insurance coverage information in odd numbered years. Furthermore, there is currently no alternative source for health insurance information for verifying trends and estimates obtained from the WSPS data. The Current Population Survey (CPS)<sup>2</sup> is not directly comparable to the WSPS because health insurance coverage is defined differently. Policymakers could benefit from any information that helps to confirm the level and the direction of change in health insurance coverage rates in Washington.

This research brief explores the possibility of using hospital discharge data to verify the level and the direction of change in health insurance coverage in Washington State. Hospital discharge data uses a definition of health insurance coverage that is close to that of the WSPS and has the added strength that it is collected by hospital personnel rather than through a telephone interview. It also provides estimates in non-WSPS years (odd numbered years) and permits the verification of WSPS estimates and trends. In this brief we compare the hospital-based estimates with the WSPS and the CPS. Unfortunately, the nine month lag in the release of the hospital discharge data largely precludes it from providing any *more timely* estimates. In even numbered years, the hospital data and WSPS data provide estimates for the previous year and the current year respectively at about the same time (fall). For example, in 2006 the WSPS results for 2006 and the hospital data for 2005 became available in the fall. In odd years, the hospital data will permit estimates confirming the previous (even) year's WSPS estimates. The timeliness of the hospital discharge data, however, is similar to that of the CPS, which until now has been the only secondary source of health insurance coverage information to supplement the WSPS.

### Estimates of the Uninsured Using Washington's Comprehensive Hospital Abstract Reporting System (CHARS) compared to Other Data Sources

Washington's Comprehensive Hospital Abstract Reporting System (CHARS) contains non-identifiable information for patients admitted to Washington hospitals, including the type of payer (public, private, self-pay, or charity) responsible for payment to the hospital for medical and surgical procedures.<sup>3,4</sup>

<sup>1</sup> The survey was designed by the Office of Financial Management (OFM) and conducted by the Gilmore Research Institute. This survey is conducted biennially in the spring and is generally available the fall of the same year. Data are subject to sampling variability and other sources of error. More information about the state survey is available at: <http://www.ofm.wa.gov/sps>. Data versions 2000v6, 2002v5, 2004v4, 2006v2 and the MAAWGT2 weight are used in this analysis.

<sup>2</sup> U.S. Census Bureau "Historical Health Insurance Tables." (found at <http://www.census.gov/hhes/www/hlthins/historic/hihist4.html> on 3/24/08).

<sup>3</sup> For more information about CHARS, readers can consult the Department of Health website at <http://www.doh.wa.gov/EHSPHL/hospdata/Chars.htm>.

<sup>4</sup> Only hospital expenses are included; doctors' fees, specialists, and drugs are not included.

The approach taken here is to select a representative surgical procedure and estimate the “percent uninsured” as the proportion of all patients receiving that procedure who had their payer status recorded in the CHARS database as “self-pay” or “charity.” It is necessary to choose a common surgical procedure that is most often performed in a hospital and normally involves a hospital stay (that is, an “inpatient” procedure that is rarely performed on an outpatient basis). The procedure should also have an equal probability of being performed regardless of payer status (public, private, self-pay, or charity) in order to avoid bias in the estimates of “percent uninsured.” One such surgical procedure is an appendectomy, which consists of the removal of the appendix and is usually performed as an emergency response to acute appendicitis. Appendectomies are performed frequently enough to result in acceptable ranges of statistical confidence and there is little reason to expect that rates of acute appendicitis would vary significantly by payer status. For this study, we selected only appendectomy procedures that were performed in response to acute appendicitis, to which we hereafter refer as “acute appendectomies.”<sup>5</sup>

Between 1990 and 2006, over 82,000 acute appendectomies were performed in Washington on Washington residents. Statewide, the age and sex adjusted rate for appendectomies has remained relatively stable since 1990 at around 8 to 10 appendectomies per 10,000 Washington residents. Recent years have seen a slight but consistent increase. The incidence of acute appendicitis does vary by age and sex. Acute appendectomies are most likely to be performed in the teenage years and are up to 1/3 more likely for males (18 per 10,000 Washington residents) than females (12 per 10,000) in the 10 to 14 years age group.<sup>6</sup> The proportions of patients receiving acute appendectomies were age and sex adjusted prior to estimating the uninsured rate.

Figure 1 compares uninsured rates of Washington State’s population based on the CHARS estimate, WSPS, and CPS. Between 2000 and 2003 a downward level shift appears in the CHARS estimate, returning to its apparent usual level in 2004. This period is indicated in Figure 1 by the dotted line segment. The source of this level shift does not appear to be limited to any particular region or hospital, and probably stemmed from changes in data editing practices for the payer status variable between 2000 and mid-2003. The first full year of data in which the editing process for the payer status field more closely resembled that of years prior to edit change in 2000 was 2004.<sup>7</sup> In past years, uninsured rates were in fact estimated from hospital discharge data, however, the practice was discontinued when the unexplained drop in the estimates occurred in 2000 and 2001 and the WSPS estimates became available.

From 2004 to 2006 (the most recent year available), the CHARS estimate of the percent uninsured is very similar to the WSPS. In 2004, the estimate of uninsured among Washington State residents was 9.9 percent according to the WSPS and 9.6 percent according to the CHARS. In 2006, the estimate of uninsured among Washington State residents was 9.3 according to the WSPS and 10.0 percent according to the CHARS. In contrast, the CPS estimate of uninsured was higher in both years: 12.4 percent in 2004 and 11.8 in 2006.

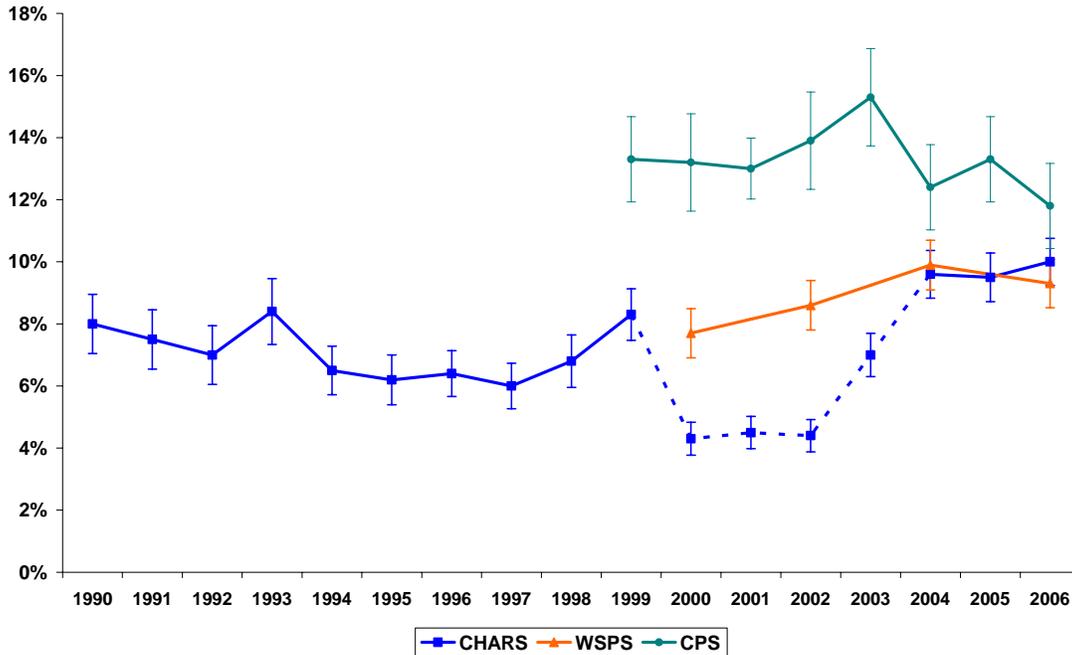
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<sup>5</sup> To analyze appendectomy rates Washington residents receiving appendectomies in Washington hospitals were selected from the annual CHARS datasets between 1990 and 2006, so long as their primary or secondary diagnoses included the diagnosis code for “acute appendicitis.” Appendectomy cases were not included if they were performed for other reasons, for example, incidentally with other abdominal procedures or for non-appendicitis reasons. In what follows, we emphasize this definition by using the term “acute appendectomies.”

<sup>6</sup> The age sex profile and historical trends for inpatient acute appendectomies in Washington closely follows that of all appendectomies, which were investigated as part of the Washington Inpatient Atlas Project. See Research Brief 44H, “Appendectomy: 1995-2005,” available on-line at <http://www.ofm.wa.gov/healthcare/WIAP/default.asp>.

<sup>7</sup> While not tested, this tentative conclusion was reached after discussions with DOH staff.

Figure 1: Percentage Uninsured in Washington State



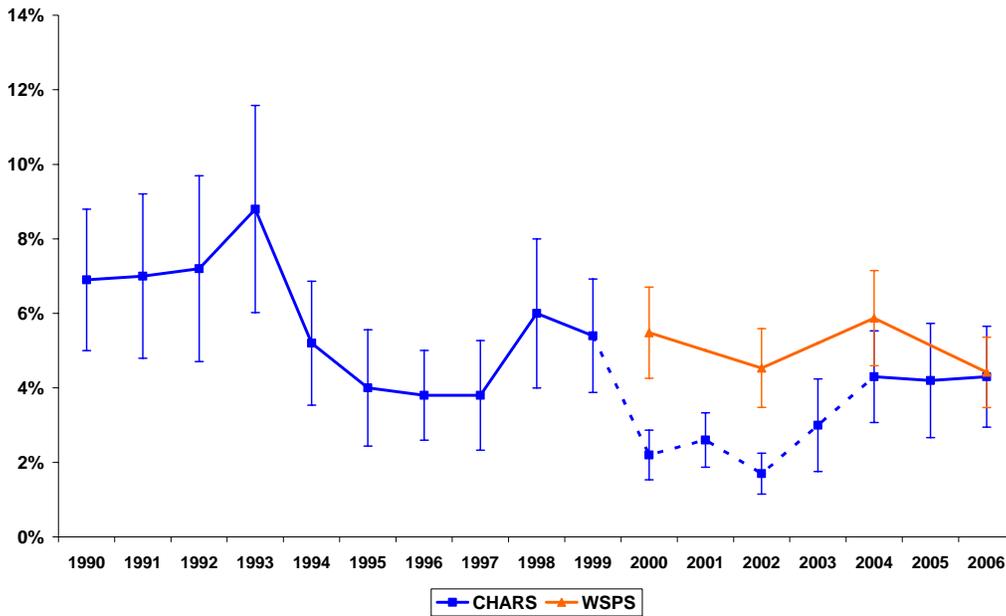
The CPS is widely used for state to state comparisons and evaluating historical trends. Researchers have noted, however, that the CPS consistently under-reports the Medicaid population, which is believed to result in a higher estimated percentage of uninsured.<sup>8</sup> The CPS trend line in Figure 1 suggests the effects of the Medicaid undercount, as the CPS estimates are well above both the CHARS and WSPS estimates in each year. Because the CPS probably does not capture the “true” rate of uninsured, we exclude it from further consideration as we compare the estimates of uninsured by age.

### Uninsured Kids (Aged 0-18)

In Figure 2, the WSPS and CHARS estimates for the uninsured are shown for those aged zero to 18. Compared to the total uninsured population estimates in Figure 1, there is more variability in the estimates for the uninsured population aged zero to 18. This is a natural result of the smaller sample size associated with producing the estimates. If we were to correct for the down-shifted CHARS estimates from 2000 to 2003 (dotted line segment) and extend a rough trend line between 1999 and 2004, we see the CHARS estimates would line up very closely to the WSPS estimates.

<sup>8</sup> Lewis K, Ellwood M, Czajka JL. (1998) “Counting the Uninsured: A Review of the Literature”. *Assessing the New Federalism, Occasional Paper Number 8*. Washington, DC: The Urban Institute; (Available at: <http://www.urban.org/publications/308032.html#conc> )

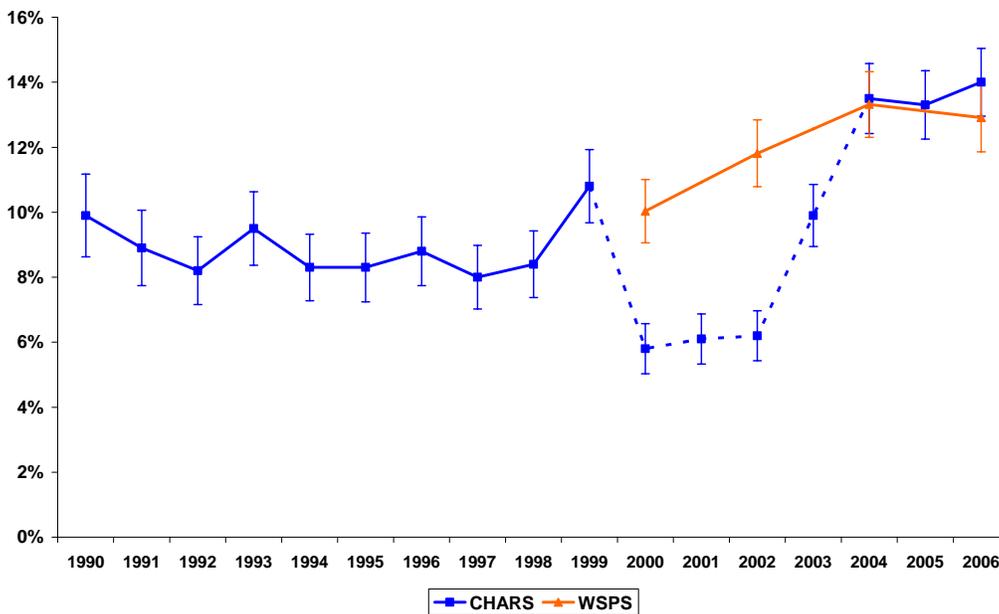
Figure 2: Percentage 0-18 Uninsured in Washington State



**Adults (Aged 19-64)**

Figure 3 shows the trend in the uninsured rate for 19 to 64 year olds in Washington State. Again, if we disregard the downward level shift of the CHARS estimates between 2000 and 2003, the WSPS and CHARS data show very similar levels and trends.

Figure 3: Percentage 19-64 Uninsured in Washington State



**Conclusion**

The method employed here of using the CHARS database to estimate rates of the uninsured can provide supplemental evidence in verifying the results of the WSPS. Aside from the level-shift observed in the CHARS payer data between 2000 and 2003, when the payer status variable in CHARS was edited differently from other years, the CHARS estimate appears to closely approximate the WSPS estimate of Washington's uninsured population in even numbered years, and provides an estimate for odd numbered years that was previously unavailable (note that line markers do not appear for the WSPS estimate in odd years in the figures above).

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