

WASHINGTON STATE HEALTH SERVICES RESEARCH PROJECT

Anticipating the Needs of the Uninsured by Assessing at-Risk Communities

Research Brief No. 59
February 2011

Joe Campo, MPH
Healthcare Research Group

The Patient Protection and Affordable Care Act allows states to establish health care insurance exchanges, and allows uninsured individuals who are not otherwise eligible for coverage under Medicare or Medicaid to join those exchanges.

But as states consider establishing such an exchange, a key question is being raised: What will be the health care needs of those who join them?

Unfortunately, state-specific data on the health care needs and use of the uninsured are, at best, sparse.

Because of this lack of data, we identified regions within our state that have high percents of uninsured individuals and high proportions of households with lower income levels; individuals living in these areas, we believe, likely reflect the characteristics of those expected to join an exchange. We then profiled those regions in terms of their health behaviors and their hospitalization rates and costs.

Our belief is that these findings may help inform policy makers as they consider establishing a state exchange. In addition, the findings suggest pronounced regional variation in health care utilization that appears to be related to variations in underlying needs within each community. The findings also highlight the importance of primary care and prevention.

Data and methods

Four data sets were used in developing this analysis: The Behavioral Risk Factor Surveillance System data (BRFSS); inpatient hospitalizations, including both Washington and Oregon community hospital discharge data; age-specific ZIP code population estimates; and, inpatient cost-to-charge ratios. The BRFSS, hospital discharge and ZIP population data were provided by the state's Department of Health; the cost-to-charge ratios (CCR) were acquired from the Agency for Healthcare Research and Quality (AHRQ).

The spatial scan statistic software, SaTScan, was used with BRFSS to identify regions where significantly high proportions of the population had no insurance coverage, and where significantly high proportions of households reported an income level that was between 134% and 200% of the federal poverty level (FPL). These regions were based upon the ZIP code of residence reported in BRFSS for data from 2005 to 2009 combined. The SurveyFreq function in SAS was used with BRFSS in assessing underlying risk factors and each region's demographic characteristics.

Age-adjusted hospital patient day rates were also calculated with SAS, and so, too, were the cost estimates derived from the reported charges applied to the AHRQ CCRs.

All of the analyses were done for the population between ages twenty-five and sixty-four. These individuals would generally not be eligible for Medicare due to the age criterion, and, given their income level, would also generally not be eligible for Medicaid under both the age and income criteria.

ABSTRACT

Focusing on individuals ages 25 to 64, regions with significantly high percents of uninsured individuals and with significantly high percents of household with incomes between 134% and 200% FPL were identified; individuals living within these regions may reflect the needs of those likely to join state health care insurance exchanges.

We then profiled these high-risk regions in terms of their health behaviors and conditions and their hospitalizations rates. A low-risk region was also identified and profiled for comparison.

Rates for potentially preventable hospitalizations were high among the high-risk regions and low in the low-risk one. Rates for conditions associated with poor health behaviors were also high in the high-risk regions and low in the low-risk one.

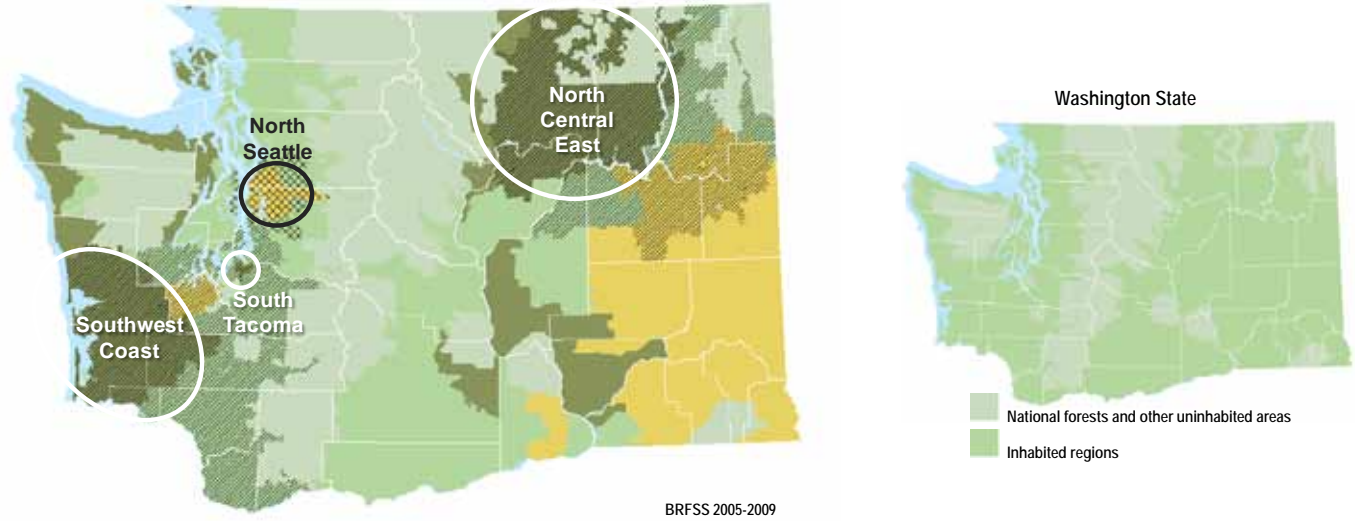
Excess costs associated with these hospitalizations were as high as \$550,000 per 1,000 persons ages 25-64.

The findings suggest that access to primary care services and increased public health prevention efforts could result in substantial savings over time.

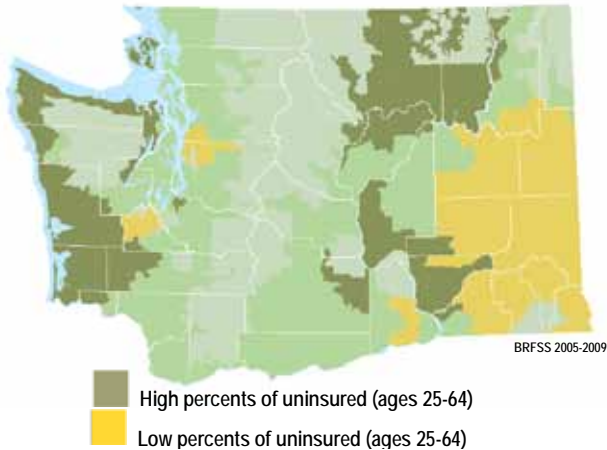
Identifying at-risk regions

Figure 1: Maps of at-risk regions identified via SaTScan using 2005-2009 BRFSS data for ages 25 to 64

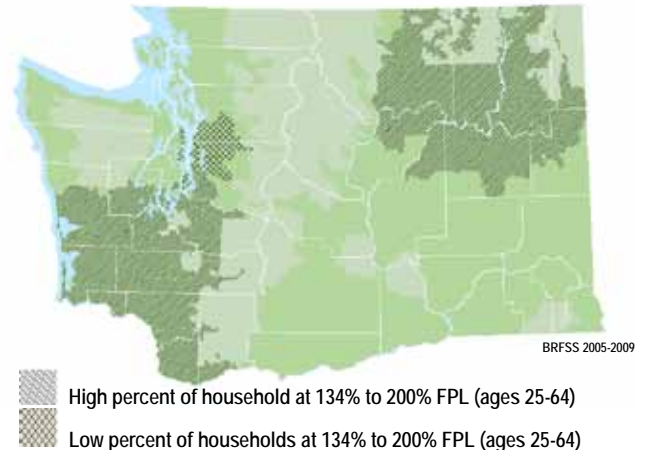
Regions with high & low insurance coverage and incomes at 134-200% FPL



Regions with high & low health care insurance coverage



Regions with high & low household incomes at 134- 200% FPL



To identify those regions with high percents of uninsured individuals and with high percents of households between 134% and 200% FPL, we ran separate SaTScan analyses for each measure. We then overlaid the resulting maps and highlighted those regions meeting both criteria. These separate analyses, and the combined effect, are shown in Figure 1.

Three such high-risk regions were found, and are labeled as Southwest Coast, South Tacoma and North Central East. In addition, one region was found to have a low percent of uninsured individuals as well as a low percent of households at 134% to 200% FPL. This low-risk region is labeled as North Seattle.

The three high-risk regions include two rural areas, and an inner-city urban neighborhood. The low-risk region is essentially a suburban community. In the broadest of terms, these regions may well reflect the types of communities most at-risk as well as those most “protected.”

More specifically, these are the regions that we have profiled in terms of their risk behaviors, inpatient utilization and costs, and general demographic characteristics.

Findings

As Figures 2 and 3 show, the three high-risk regions have significantly higher percents of individuals with no health care coverage, and significantly high percents of household with incomes between 134% and 200% FPL when compared to the state as a whole. Similarly, the low-risk North Seattle region has lower percents.

This confirms that SaTScan was able to identify regions meeting our intended criteria: poorer and uninsured.

Figure 2: No health care coverage of any kind
Ages 25-64, BRFSS, 2005-09

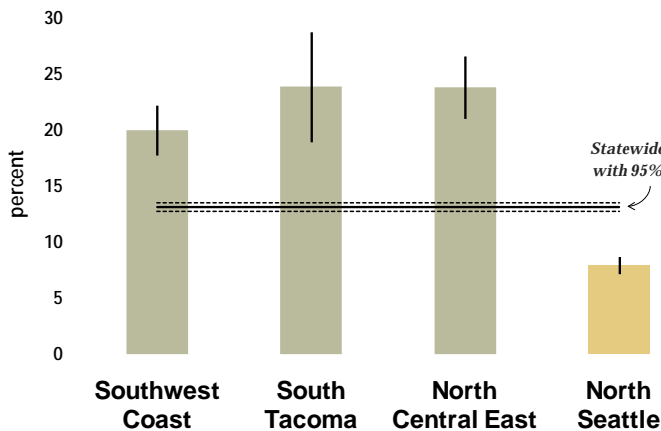
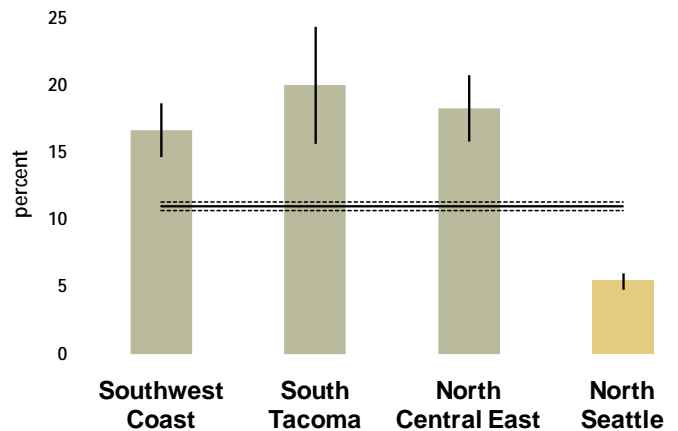


Figure 3: Household Income 134% - 200% FPL
Ages 25-64, BRFSS, 2005-09



In Figures 4 and 5, we see that respondents in the high risk regions were more likely to forego medical care when needed because of costs, and are less likely to have a personal physician or other health care provider. Conversely, those in the low risk region are less apt to forego needed care and more apt to have a personal physician or other similar provider.

Figure 4: Did not seek care due to costs
Ages 25-64, BRFSS, 2005-09

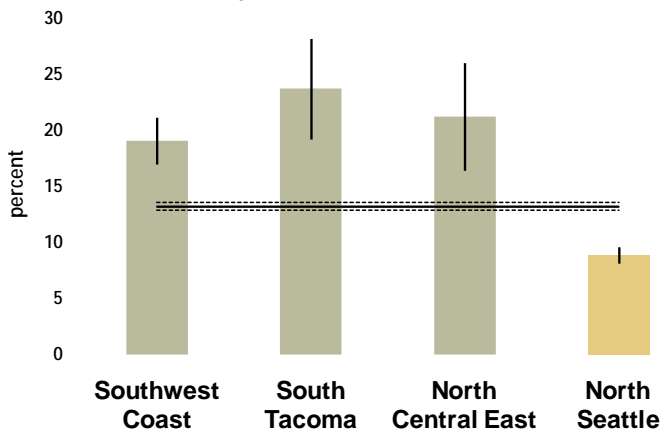
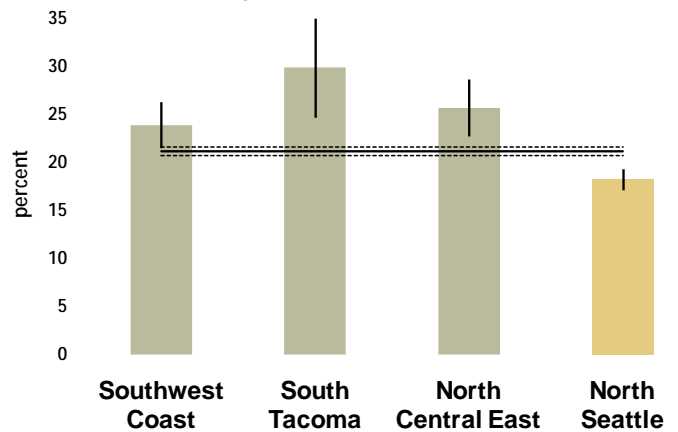


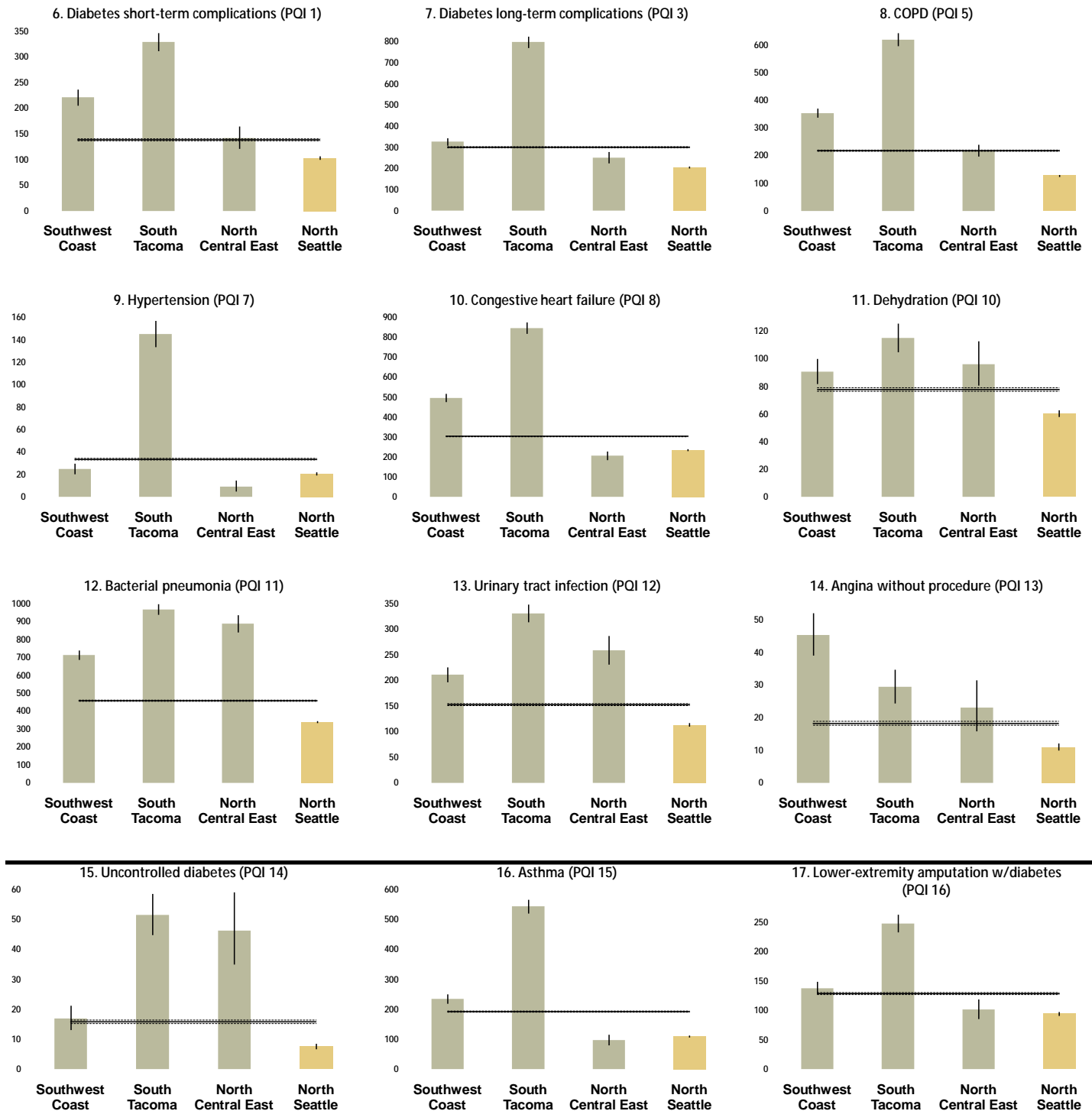
Figure 5: Does not have a personal physician
Ages 25-64, BRFSS, 2005-09



Having no health care coverage, being poorer, having to forego needed care because of costs, and not having a personal health care provider likely increases the risk of becoming hospitalized for conditions that could have been prevented had they been addressed earlier in a primary care setting such as a physician’s office or clinic.

A set of twelve such conditions have been identified by the Agency for Healthcare Research Quality (AHRQ) and are called Prevention Quality Indicators (PQI). In Figures 6 to 17, the age-adjusted patient day rates for these conditions are shown. Note that these rates are based upon where the patient lived, *not* where the hospitalization occurred.

Figures 6-17: Age-adjusted Prevention Quality Indicators patient day rates per 100,000 persons ages 25-64 WA & OR community hospitals, 2004-08



As seen in Figures 6-17, all three high-risk regions had higher hospitalization rates for dehydration, bacterial pneumonia and urinary tract infections. In addition, at least two high-risk regions had high rates for long- and short-term complications from diabetes, uncontrolled diabetes, congestive heart failure, angina without procedure, asthma, and chronic obstructive pulmonary disease (COPD).

One high-risk region, South Tacoma, had high rates for all twelve conditions, while the low-risk North Seattle region’s rates were all low.

Since smoking, obesity and lack of exercise, individually or in combination, are acknowledged risk factors for a number of health conditions – and some of the PQI measures – we also assessed those behaviors and condition.

Figure 18: Currently smokes
ages 25-64, BRFSS, 2005-09

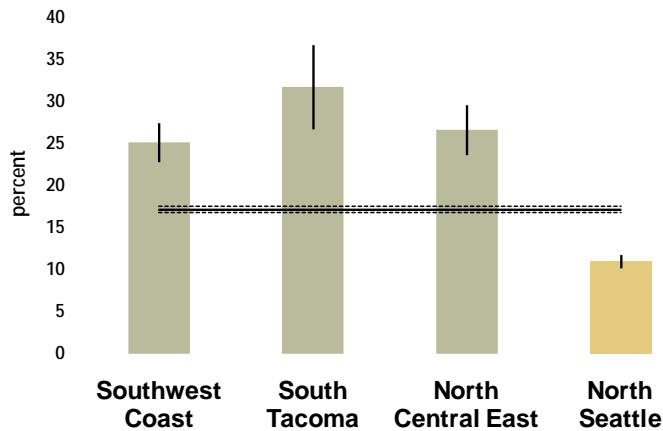
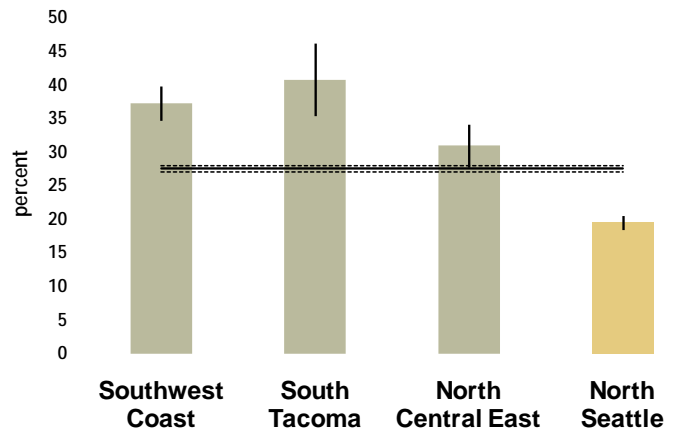


Figure 19: Is obese (BMI >= 30)
Ages 25-64, BRFSS, 2005-09



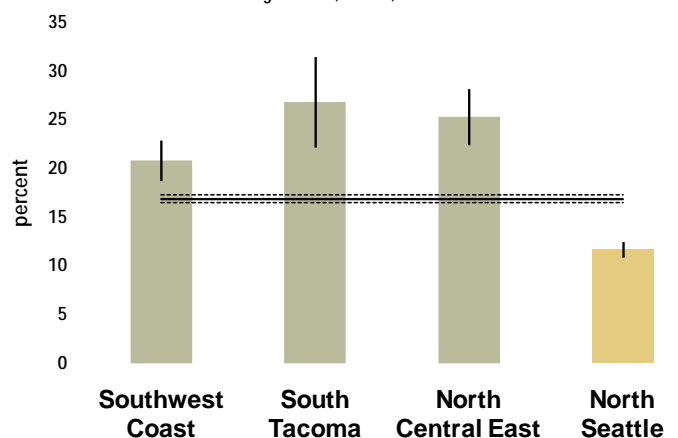
As seen in Figures 18-20, the percents for these behaviors and conditions in the high-risk regions are higher than the state, while those in the low risk region are lower.

The health consequences for these three risk factors are well known, with lung cancer, diabetes, stroke and coronary artery disease (CAD) being among those most commonly associated.

We, therefore, examined hospitalization rates for those conditions, using the primary diagnosis listed in the hospital discharge record in assigning the case to each category.

As would be expected, the hospitalization rates for these conditions were generally higher in the high-risk regions.

Figure 20: No exercise outside of work
Ages 25-64, BRFSS, 2005-09



For lung cancer and diabetes, two conditions directly related to smoking or obesity, we see high rates of hospitalization in the Southwest Coast and South Tacoma regions – and low rates in the low-risk region – in Figures 21 & 22.

Figure 21: Lung cancer patient day rates
Ages 25-64, WA & OR hospitalizations, 2004-08

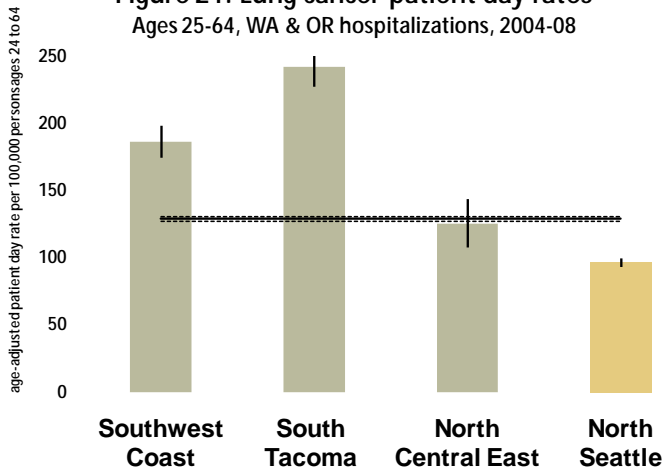


Figure 22: Diabetes patient day rates
Ages 25-64, WA & OR hospitalizations, 2004-08

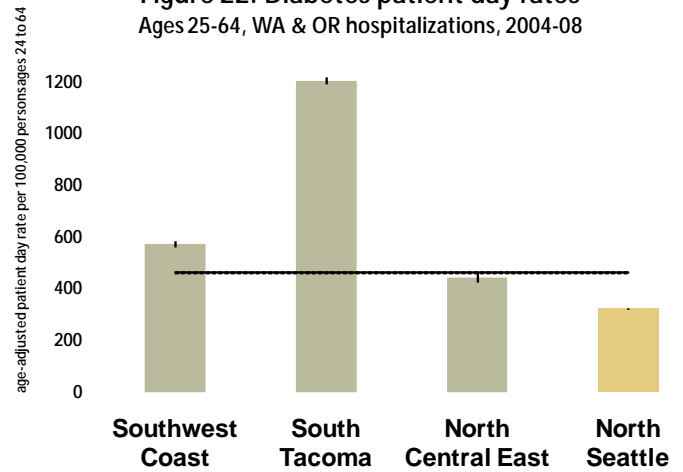


Figure 23: Stroke patient day rates
Ages 25-64, WA & OR hospitalizations, 2004-08

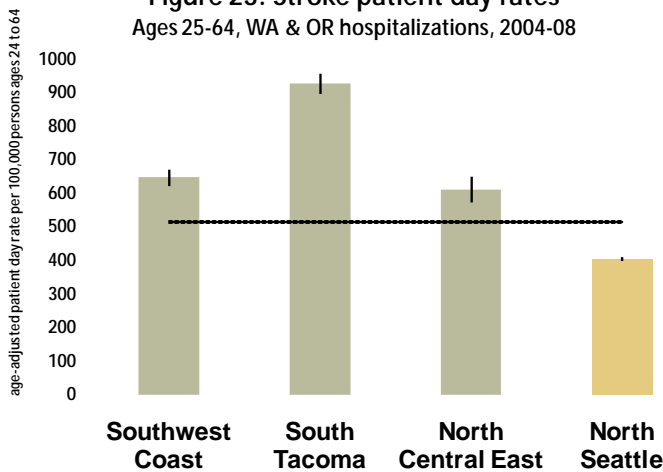
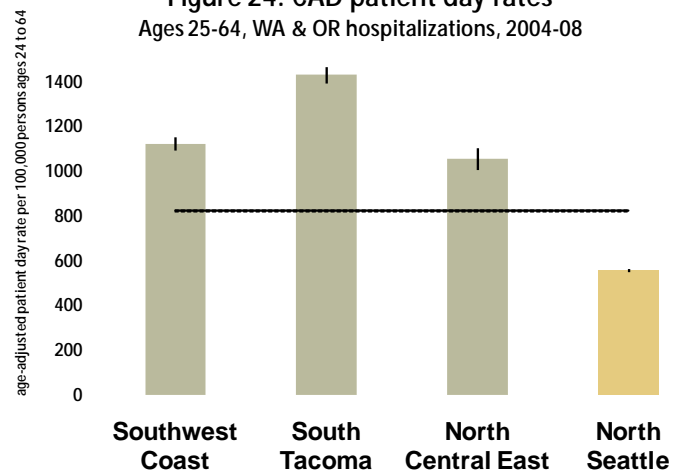


Figure 24: CAD patient day rates
Ages 25-64, WA & OR hospitalizations, 2004-08



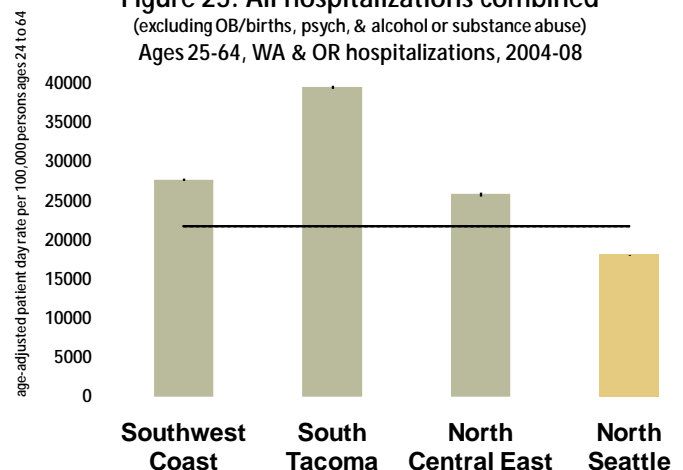
In Figures 23 and 24 we see that for stroke and CAD the high-risk regions all have high rates, while the low-risk region, once again, has low rates.

In fact, looking at all hospitalizations combined (excluding obstetrics (OB) and births, and psychiatric, alcohol or substance abuse discharges), the high risk regions all have high rates, while the low-risk region's is low.

All of which raises the question:

What are the costs associated with these differences in access, health-related behaviors, and subsequent hospitalizations rates?

Figure 25: All hospitalizations combined
(excluding OB/births, psych, & alcohol or substance abuse)
Ages 25-64, WA & OR hospitalizations, 2004-08

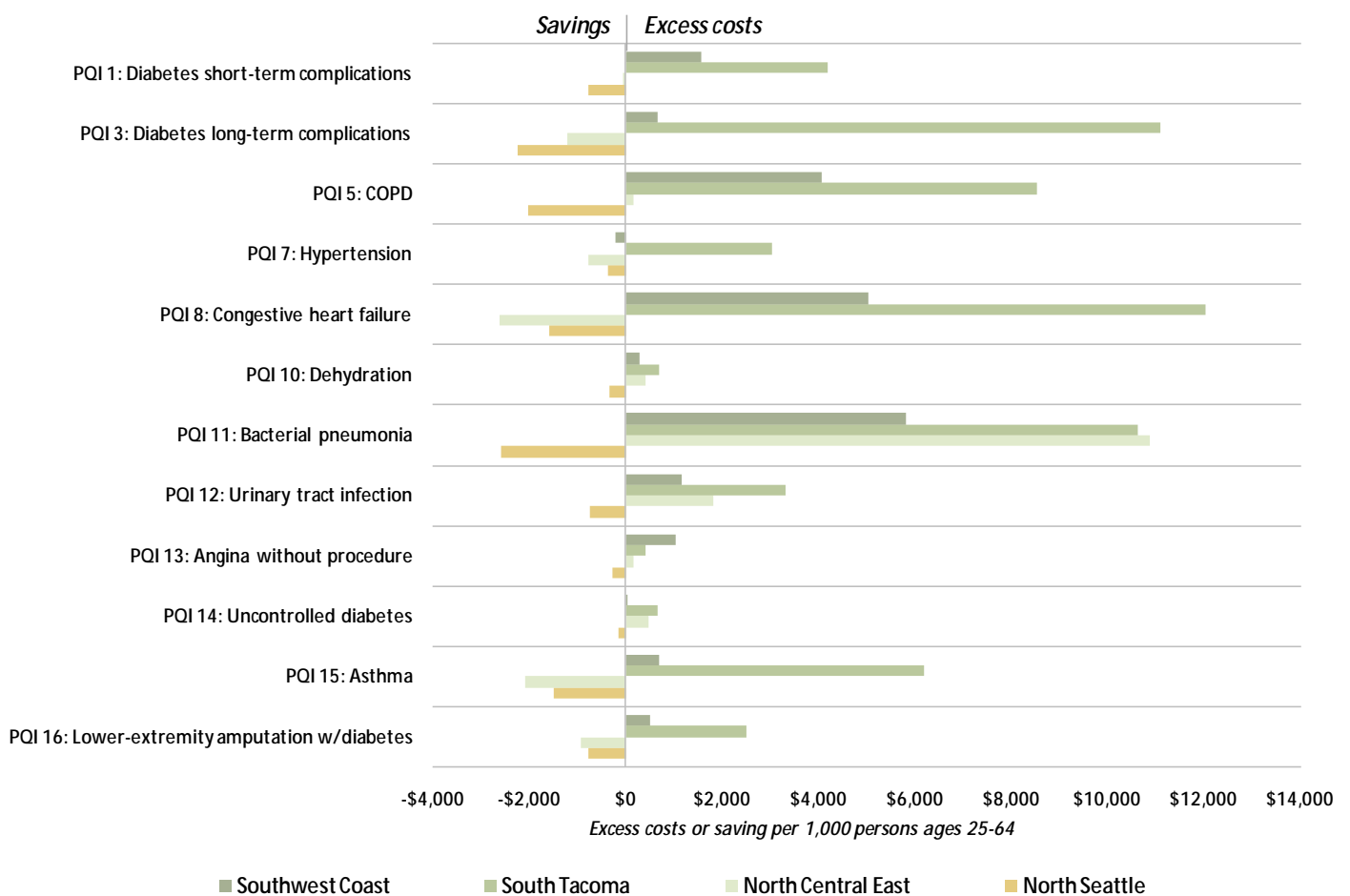


To answer that question, we first converted the charges reported in the hospital discharge data to estimates of costs. This was done using the cost-to-charge ratios (CCR) for state-specific hospitals types developed by AHRQ.

We then estimated the number of patient days each region would generate *if they were hospitalized at the same rate seen statewide*, and then multiplied those days by the CCR adjusted costs for each hospitalization. This gave us the “expected” cost if the regions’ hospitalization rates were the same as the states.

Next we subtracted those expected cost calculated above from the reported costs. And finally, because these regions differ in the size of their populations, to make the results comparable we divided those differences by the number of persons ages twenty-five to sixty-four living in each region. The resulting annual excess costs or savings per 1,000 persons is shown below in Figure 26.

Figure 26: Annual excess costs or savings for PQI conditions per 1,000 persons
 Ages 25-64, WA & OR hospitalizations, 2004-08



As can be seen, the two highest excess costs were in the South Tacoma region for congestive heart failure at over \$12,000 per 1,000 persons ages twenty-five to sixty-four, and for diabetes long-term complication at over \$11,000. However, looking at all high-risk regions combined, bacterial pneumonia has the highest overall excess cost since it appreciably affects all three areas at about \$11,000 in both the Southwest Coast and South Tacoma regions, and nearly \$6,000 in North Central East.

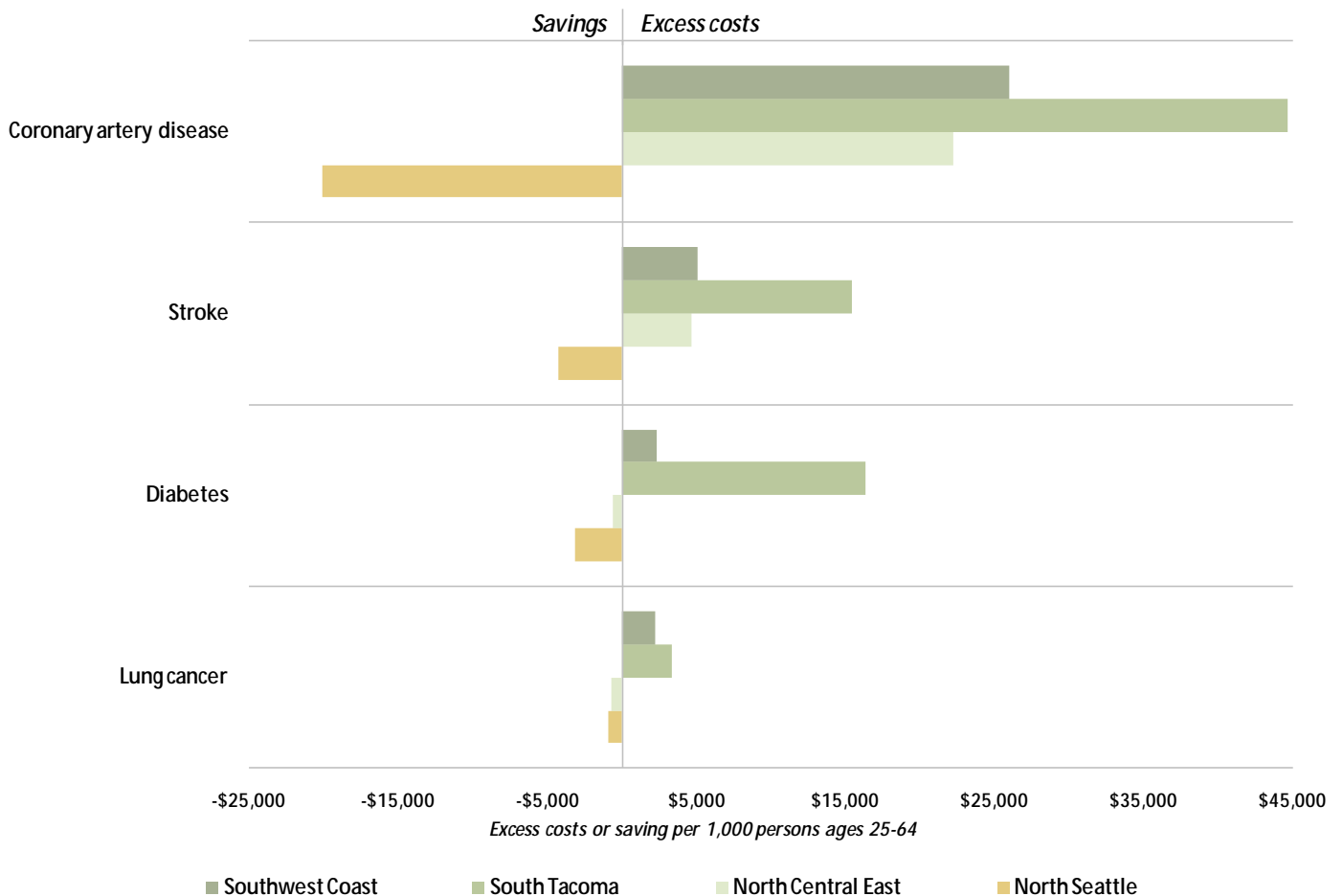
Five other conditions, COPD, dehydration, urinary tract infection, uncontrolled diabetes and angina without procedure also show excess costs in all three high-risk regions. The remaining seven show excess costs in at least two of the high-risk regions.

As was seen with the hospitalization rates, South Tacoma had excess costs for all twelve PQI's, while North Seattle had all savings.

All told, the excess costs for all PQI's combined were \$63,000 in South Tacoma, \$21,000 in Southwest Coast, and \$6,300 in North Central East; the saving in North Seattle came to over \$13,000 per 1,000 persons ages twenty-five to sixty-four.

Similarly, for lung cancer, diabetes, stroke and CAD savings were also seen in North Seattle. These ranged from a low of about \$1,000 for lung cancer to a high of over \$20,000 for CAD, as seen in Figure 27.

Figure 27: Annual excess costs or savings for select conditions per 1,000 persons
 Ages 25-64, WA & OR hospitalizations, 2004-08



Conversely, for those same four conditions, the excess expenditures for the South Tacoma region ranged from a low of \$3,300 for lung cancer to a high of \$45,000 for CAD; stroke and diabetes, in the middle, were each around \$15,000 to \$16,000 per 1,000 persons ages twenty-five to sixty-four.

The Southwest Coast region also had excess costs for these four conditions, with a high of \$26,000 for CAD, followed by stroke at \$5,000, and then diabetes and lung cancer at \$2,300 and \$2,200, respectively.

Quite strikingly, for all causes combined (excluding OB and births, and psychiatric, alcohol or substance abuse discharges) the savings in North King equaled \$120,000, while the excess costs per 1,000 persons ages twenty-five to sixty-four were \$147,000 in North Central, \$202,000 in Southwest Coast, and over \$550,000 in South Tacoma.

Clearly the lack of access to primary care, as evidenced the hospitalizations associated with PQI conditions, and the effects of poor primary prevention practices, as evidenced by the hospitalizations associated with the four addition conditions assessed, suggest that there are substantial cost consequences being borne by those high-risk communities.

Implications

In seeking out regions where individuals ages twenty-five to sixty-four are less apt to have any health care insurance coverage and more apt to have household incomes between 134% and 200% FPL, we have found three regions within the state with a high degree of needs, risk factors – and excess inpatient care costs.

Those excess costs are likely associated to some degree with a lack of access to primary care services, and with poor preventative health practices.

We have also identified a region with good health care coverage and low poverty rates. Here we saw that ready access to primary care services and adherence to preventative health practices appear to be associated with low inpatient care costs.

While attention certainly needs to be paid to these high-risk regions, it is the low-risk one which best represents our desired goal and direction.

Figure 28: Current and potential PQI costs
Ages 25-64, WA & OR hospitalizations, 2004-08

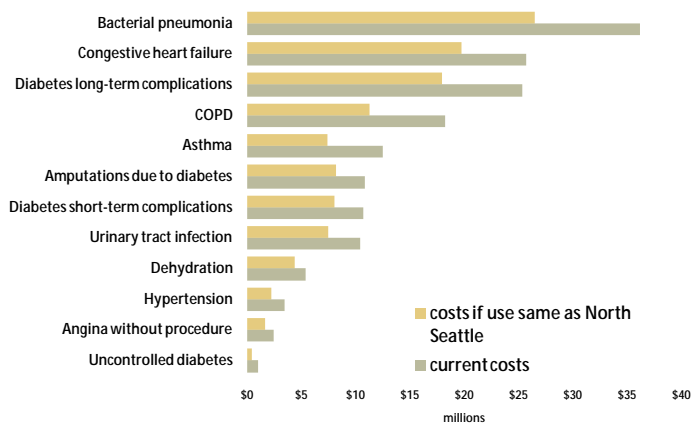
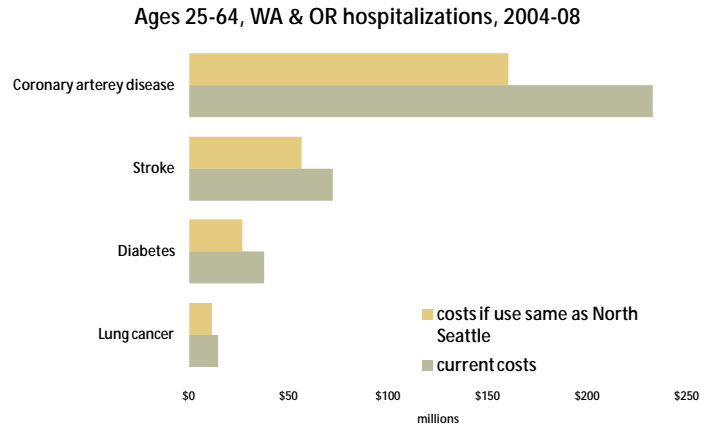


Figure 29: Current and potential costs for lung cancer, diabetes, stroke and CAD
Ages 25-64, WA & OR hospitalizations, 2004-08



In that context, we re-examined the twelve PQI conditions statewide, looking at the current hospitalization rates and their associated costs, and the potential hospitalization rates and their associated savings, *if the state’s hospitalization rate for those conditions were the same as the North Seattle region’s rates*. Assuming that were so, savings incurred for those ages 25 to 64 would equal approximately \$47 million per year, with five conditions in particular constituting seventy-five percent of that total: bacterial pneumonia (\$10 million), diabetes long-term complications (\$7 million), COPD (\$7 million), congestive heart failure (\$6 million), and asthma (\$5 million); see Figure 28.

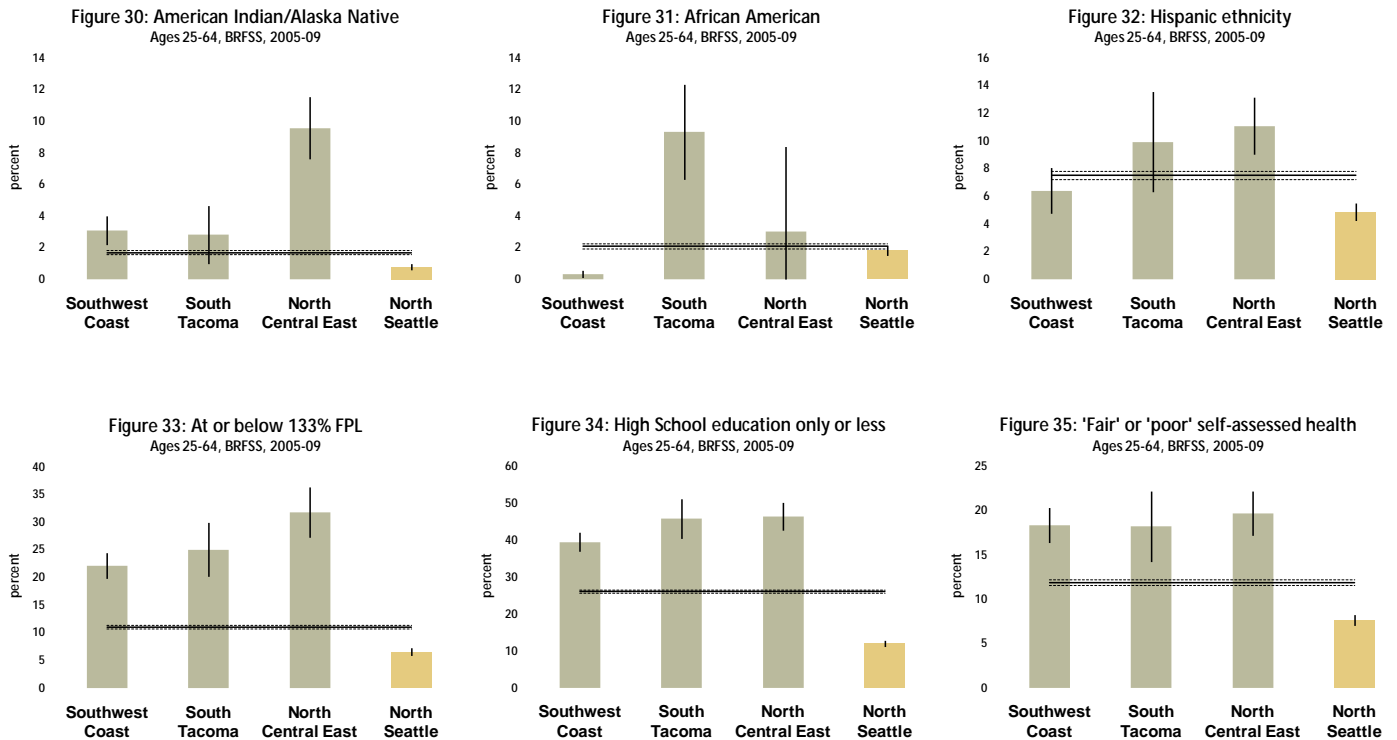
Similarly we assessed the implications if the statewide hospitalization rate for lung cancer, diabetes, stroke and CAD were the same as the North Seattle region’s rates; these are shown in Figure 29. Here the differences are even more noteworthy – *over \$100 million per year* – for those ages 25 to 64, with \$3 million per year in potential savings from lung cancer, \$11 million per year from diabetes, \$16 million per year from stroke, and \$73 million per year from CAD.*

* Inpatient hospitalization rates for a specific set of procedures used to treat some patient with CAD, percutaneous coronary interventions or PCI, are generally lower in King County compared to the rest of the state because such procedures are more commonly done on an outpatient basis there. Thus the potential saving may be slightly overstated.

Conclusions

Clearly a sub-set of the population enrolling in state health care insurance exchanges will present with a number of needs that could likely be mitigated by appropriate access to primary care services and by increased public health preventative practices. And, while primary care expenditures may initially increase, over time appreciable inpatient savings seem likely to be incurred.

Additional demographic characteristics of the at-risk regions



The North Central East region stands out with a high percent of respondents self-reporting their race as American Indian or Alaska Native, while in the South Tacoma region an appreciably high percent identify themselves as African-American. The North Central East respondents are more apt to self-report being of Hispanic ethnicity. (See Figures 30-32.)

In addition to having higher percents of households with incomes between 134% and 200% FPL, the three high-risk regions also had higher percents of households at or below 133% FPL, as seen in Figure 33. The low level of educational attainment seen in Figure 34 is consistent with these high levels of poverty.

Self-assessed health status is a well accepted indicator of a population's health; in Figure 35, we see all three high-risk regions are more apt to self-report their own health status as fair or poor.

For further information or to obtain this document in an alternative format, contact the Washington State Office of Financial Management at (360) 902-0599 or OFM.Forecasting@ofm.wa.gov.