

Monitoring the Impacts of the Affordable Care Act in Washington

Office of Financial Management
Health Care Research Center

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Introduction

On March 23, 2010, President Barack Obama signed into law the Patient Protection and Affordable Care Act. The Act was the most comprehensive overhaul and expansion of the nation's health care system since President Lyndon B. Johnson signed into law amendments to the Social Security Act that created Medicare and Medicaid in 1965. Through the ACA, Congress sought to increase access to health care services, improve delivery of care and reduce the cost of health care. Although the ACA was signed in 2010, most ACA provisions became effective in 2014.

Key provisions¹ in the ACA

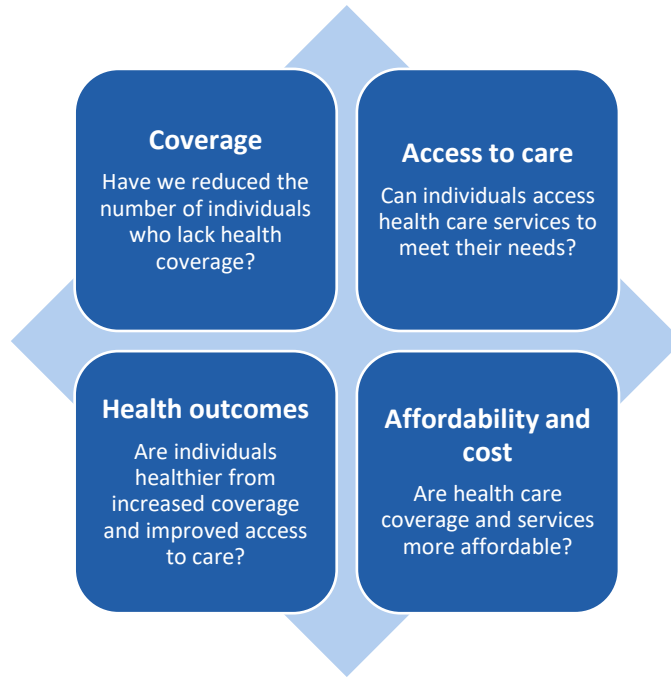
- *Expand public programs*
Under the ACA, access to Medicaid coverage was expanded to include all individuals² with incomes up to 138% of the federal poverty level. This provision is particularly beneficial to low-income adults without dependent children.
- *Establish health benefit exchanges*
This provision allows states to establish insurance marketplaces, or exchanges, where individuals can purchase insurance plans. States not wanting to establish their own exchanges have the option to participate in the federal exchange. Individuals can access premium and cost-sharing subsidies to offset health care costs through the exchanges.
- *Extend coverage to young adults on parents' insurance*
One of the earliest provisions to be implemented requires health plans to allow young adults up to age 26 to remain on their parents' health insurance coverage.
- *Require coverage of certain preventive services*
New plans under the ACA are required to cover certain preventive services with no cost-sharing. These services include certain types of visits, screenings and vaccinations.³
- *Cover individuals with preexisting conditions*
New insurance market regulations under the ACA prevent health insurance carriers from denying coverage to individuals with preexisting condition. Preexisting health conditions include, but are not limited to, conditions such as asthma, diabetes, cancer and even being pregnant.
- *Require individuals to have health coverage (individual mandate)*
Originally under the ACA, nearly all individuals were required to have health insurance starting in 2014. Those individuals without coverage were required to pay a financial penalty (Shared Responsibility Payment). Congress repealed the financial penalty late in 2017, effectively eliminating the individual mandate.

¹ <https://www.kff.org/health-costs/issue-brief/summary-of-coverage-provisions-in-the-patient/>

² Undocumented immigrants are not eligible for Medicaid.

³ <https://www.kff.org/health-reform/fact-sheet/preventive-services-covered-by-private-health-plans/>

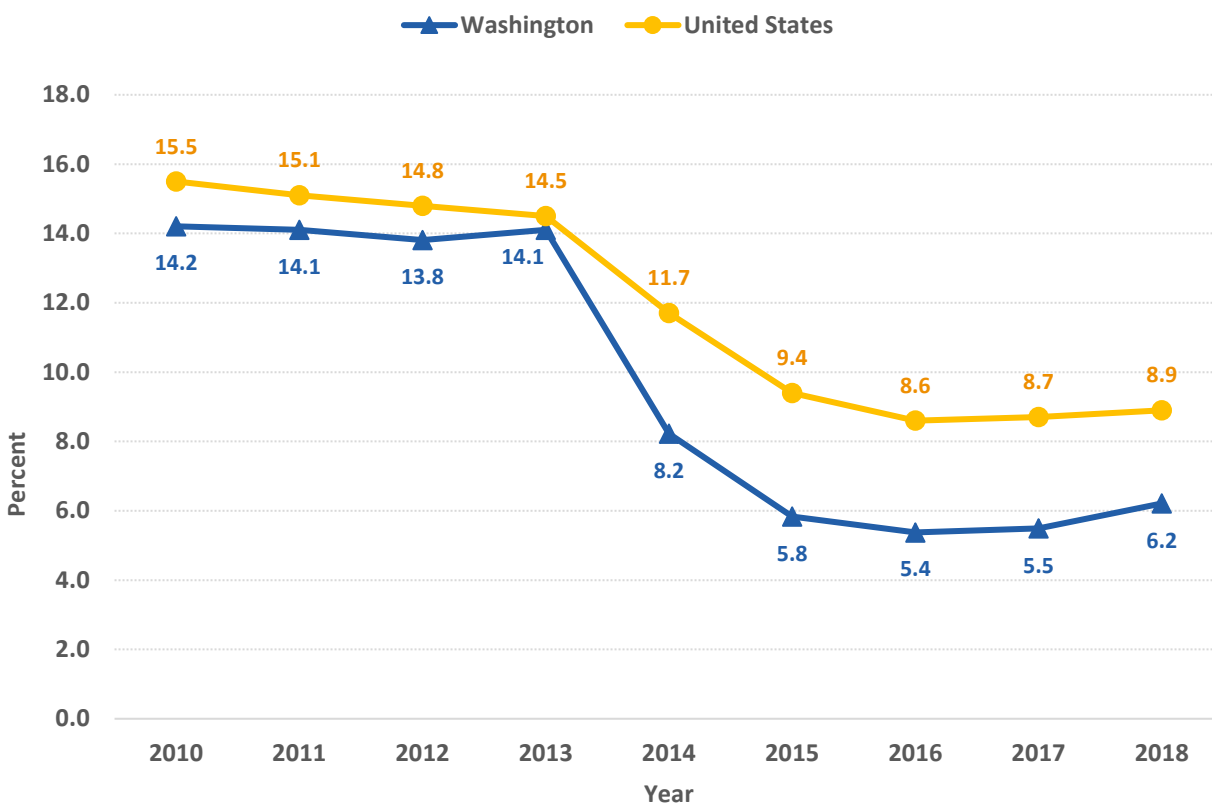
This report provides measures in four key areas to determine whether Washington has experienced improvements in health coverage, access to care, health outcomes, and affordability and cost since the passage of the ACA a decade ago.



Although some key areas have shown improvement during the decade, other areas need more time to show improvements.

Coverage

Percent of uninsured people in Washington and the U.S.



Source: American Community Survey

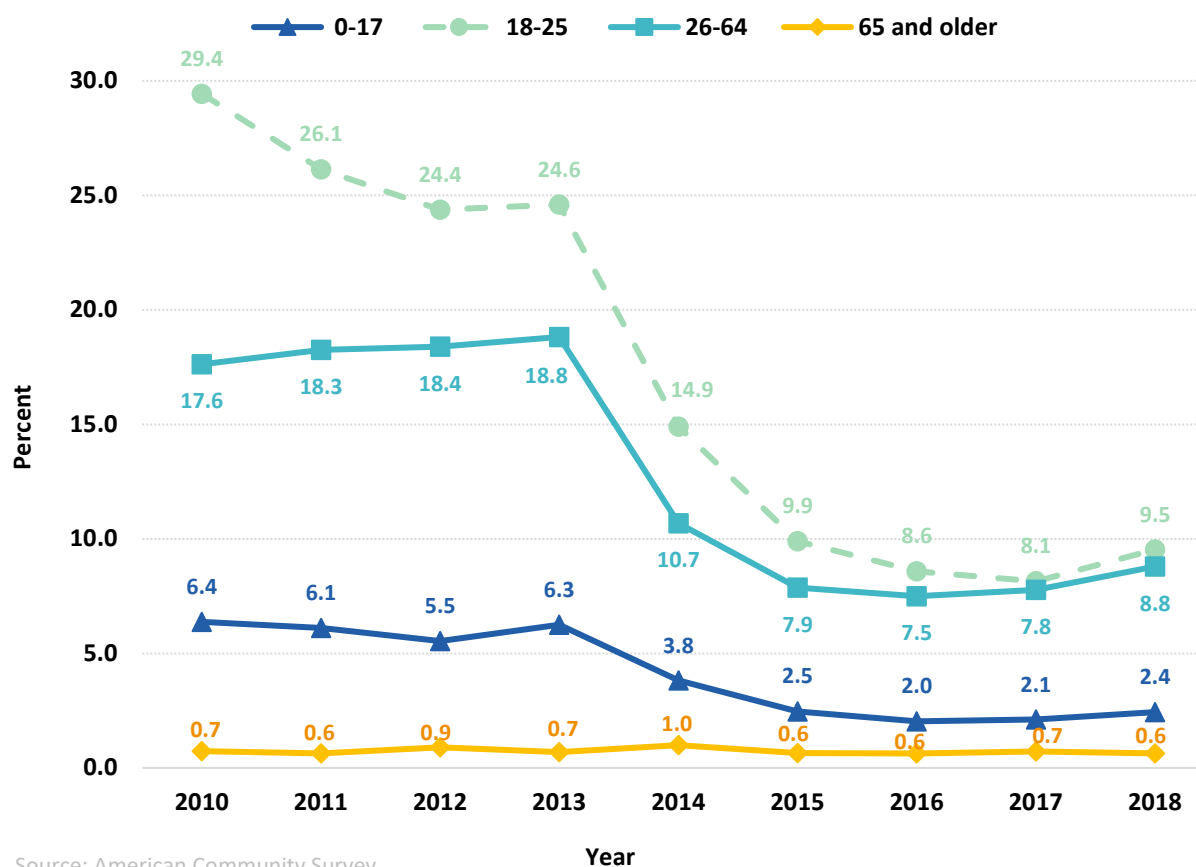
There are three key ACA components that increased insurance coverage over the last decade: Medicaid expansion, premium subsidies for qualified marketplace individual health plans, and the individual mandate. These ACA health coverage provisions reduced the state’s uninsured rates from 14.1% in 2013 to 8.2% in 2014 and to the lowest rate of 5.4% in 2016. Between 2017 and 2018, however, the state’s uninsured rate rose to 6.2% amid the repeal of the individual mandate financial penalty and uncertainty about the fate of the entire ACA.⁴

Washington’s uninsured rate has been consistently lower than the U.S. uninsured rate. However, the gap between the two was relatively small before 2014 and became much larger starting in 2014. In 2013, Washington’s uninsured rate was only 0.4 percentage point lower than the U.S. rate of 14.5%. The gap between the two grew significantly in the first two years of the ACA coverage expansion, with Washington’s rate falling faster than the U.S. rate. The increased gap is attributable to Washington’s Medicaid expansion implementation, while for the U.S. as a whole, approximately half the states implemented the expansion.⁵ Since 2016, the gap has started to gradually close.

⁴ <https://www.ofm.wa.gov/sites/default/files/public/dataresearch/researchbriefs/brief095.pdf>

⁵ <https://ofm.wa.gov/sites/default/files/public/dataresearch/researchbriefs/brief086rev.pdf>

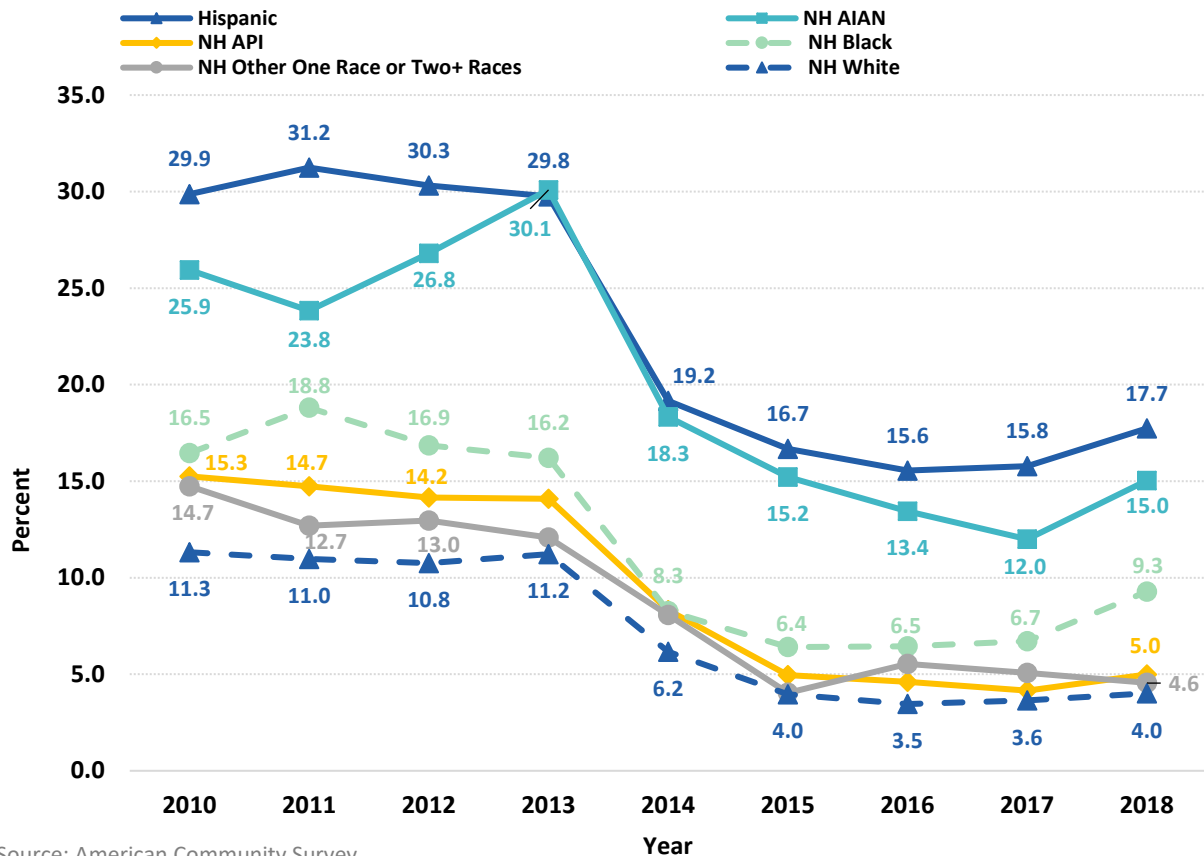
Percent of uninsured people by age groups



Nonelderly adults, particularly young adults, had much higher uninsured rates before 2014, than children and the elderly. Most of the elderly population is eligible for Medicare, and they had an uninsured rate less than 1% during each year of the decade. Children under age 18 had an uninsured rate of about 6% before 2014. In comparison, adults age 26-64 had an uninsured rate between 17% and 18%. Young adults age 18-25 had the highest uninsured rate. However, their rate declined from nearly 30% in 2010 to about 25% in 2013. We attribute this decline to the ACA’s early implementation of the provision that allowed adult children in this age group to be covered under their parents’ insurance policies.

As the ACA implemented its major rollout in 2014, the uninsured rates of the nonelderly age groups started to decline dramatically, especially for the two adult groups. The uninsured rate for adults 18-25 fell by nearly 70%, from 24.6% in 2013 to its lowest point at 8.1% in 2017. Similarly, for adults age 26-64, the uninsured rate fell by 60% to its lowest point at 7.5% in 2016 from 18.8% in 2013. Despite the dramatic declines since 2014, the uninsured rates of the nonelderly adult groups remained significantly higher than the rates for children and the elderly.

Percent of uninsured people by race/ethnicity

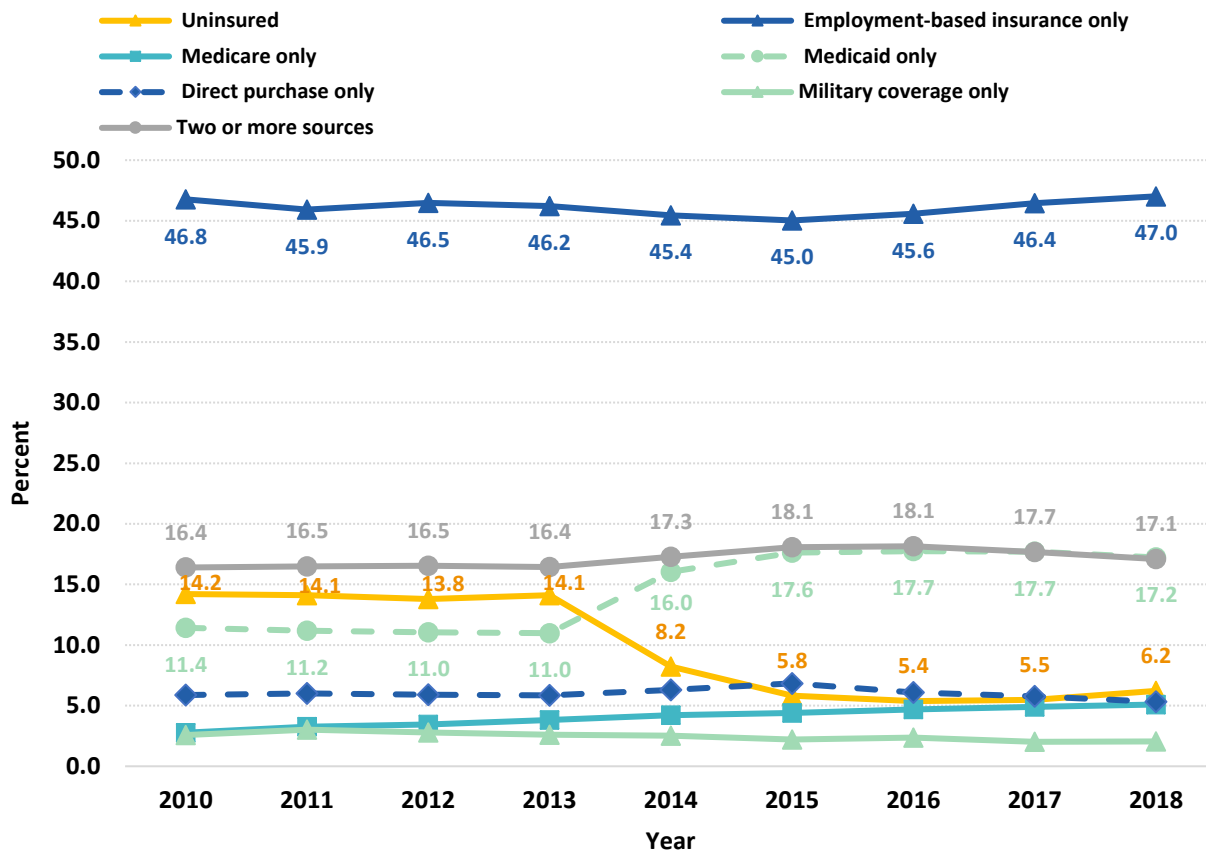


Source: American Community Survey
 NH = Non-Hispanic; AIAN = American Indian/Alaska Native; API = Asian/Pacific Islander

A great deal of disparity exists in the uninsured rates of Washington’s racial and ethnic groups. For most of these groups, the uninsured rates were relatively stable and ranged between 10% and 20% between 2010 and 2013. However, Hispanics and non-Hispanic American Indian and Alaska Natives (AIAN) had uninsured rates that were much higher. In 2013, the uninsured rates for both groups were at 30%, almost three times the rate of non-Hispanic whites (11%). Since 2014, the uninsured rates in all groups have fallen significantly, each with a reduction of 50% or more.

Despite the large reductions, Hispanics and non-Hispanic AIANs continued to have significantly higher uninsured rates than the other race groups. For these two groups, uninsured rates since 2014 ranged between 10% and 20%. In the other groups, uninsured rates were all below 10%.

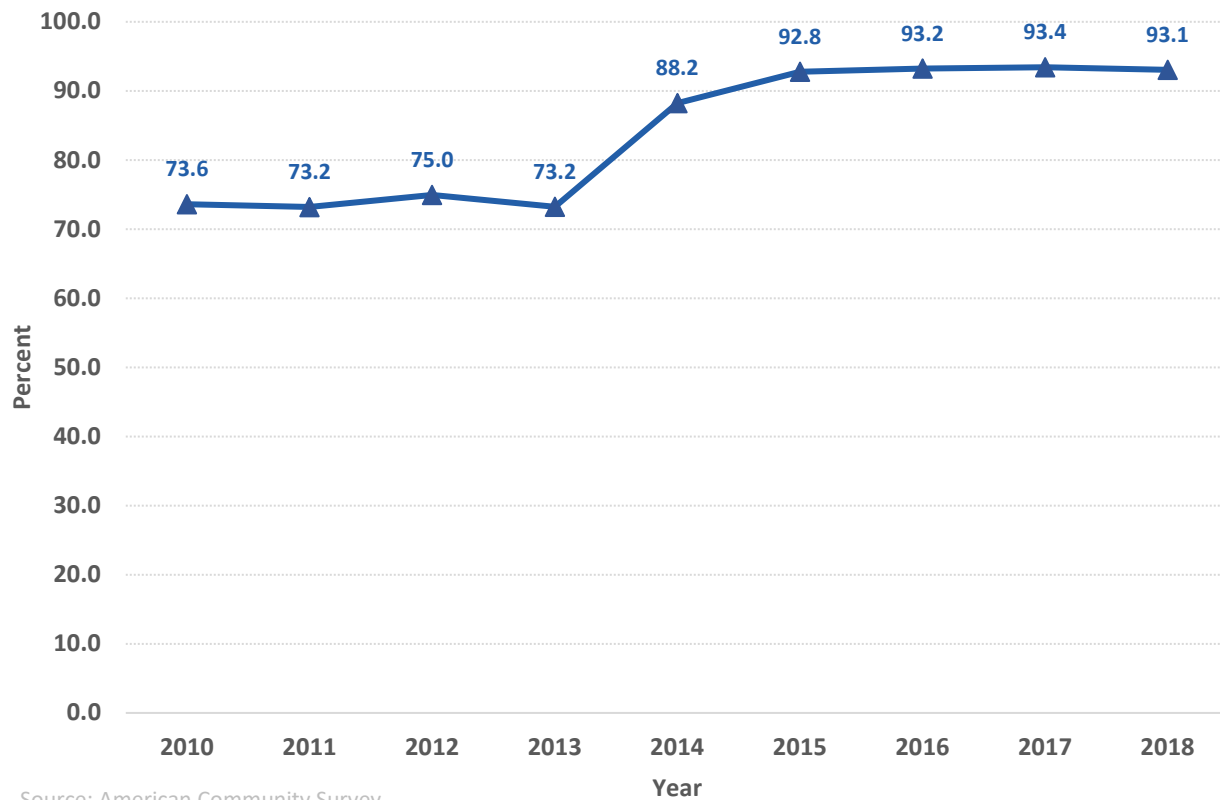
Health coverage type by source



Source: American Community Survey; Military coverage includes Tricare and VA

Health coverage in Washington consists of a number of public and private sources, including Medicare, Medicaid and employment-based coverage. Shares of these sources remained relatively stable before and after the ACA’s major rollout in 2014, with one important exception: coverage by Medicaid. The mirror image of the trends in coverage by Medicaid and uninsured rates since 2014 shows that Medicaid expansion under the ACA was the key factor in dramatically reducing Washington’s uninsured rate.

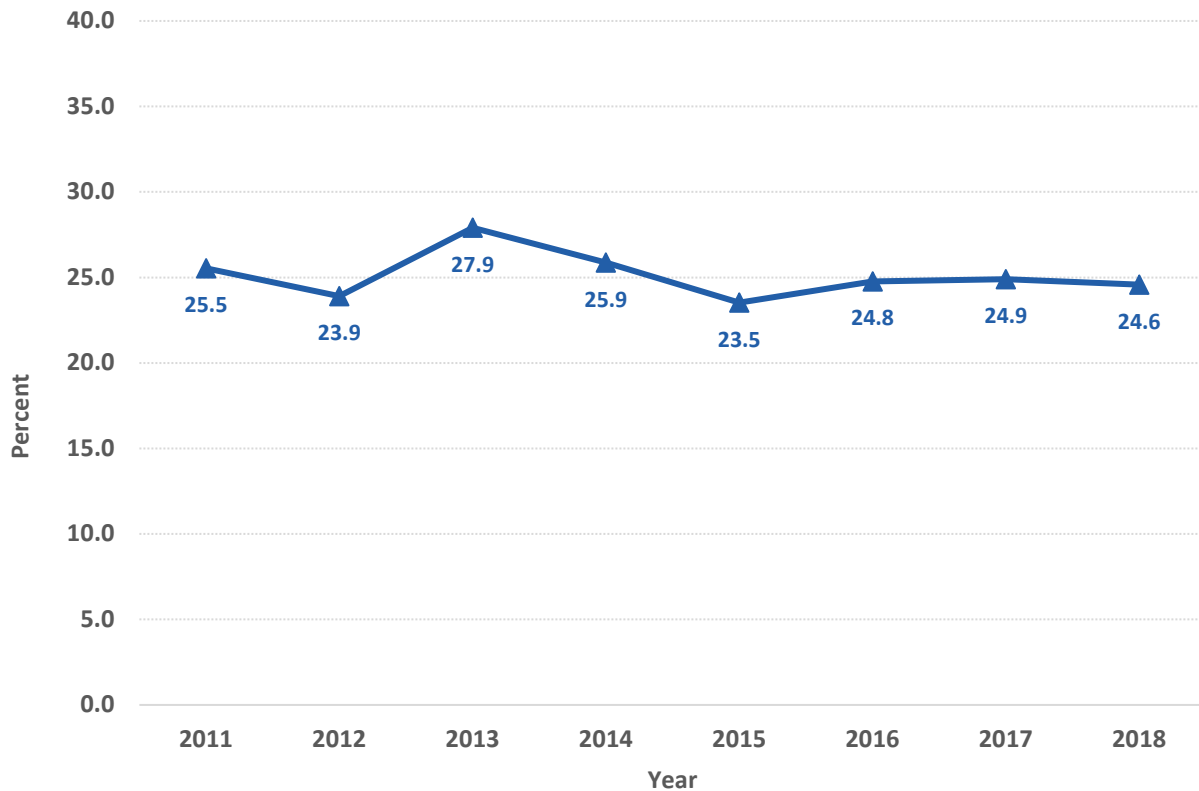
Medicaid participation rate



A key provision of the ACA was to expand access to Medicaid for low-income individuals. Medicaid participation among the newly eligible Medicaid population increased significantly since 2014. Before 2014, less than 75% of the population with income eligible for Medicaid under the ACA expansion eligibility rules were enrolled in the program. Since 2015, the share increased to above 90%. Note that Medicaid enrollment before 2014 was mainly driven by categorical eligibility, such as parents with children, elderly persons and individuals with disabilities, as opposed to the strictly income-based eligibility under the ACA Medicaid expansion.

Access to care

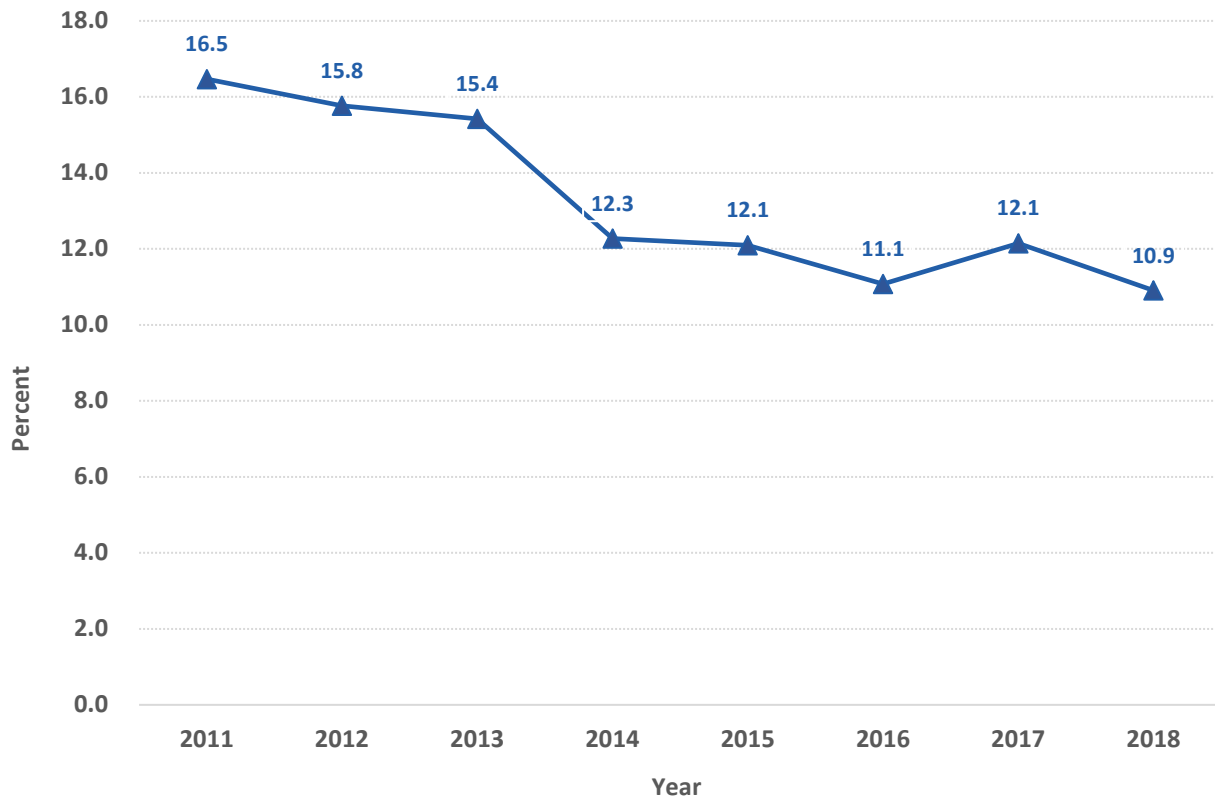
Percent of adults who don't have a personal doctor



Source: Washington State Behavioral Risk Factor Surveillance System (BRFSS)

Having a personal physician has been linked with improved access to care. Each year, approximately a quarter of the adult population (18 and older) in our state reported they had no personal or regular doctor. In 2013, the share reached its highest point at nearly 28%. The percentage has since declined to the level comparable to percentages before 2013, suggesting that challenges in access to health care providers remain in spite of expanded coverage. Issues that may impact individuals' access to care include, but are not limited to, limited provider hours, limited provider availability, geographic obstacles, and transportation barriers.

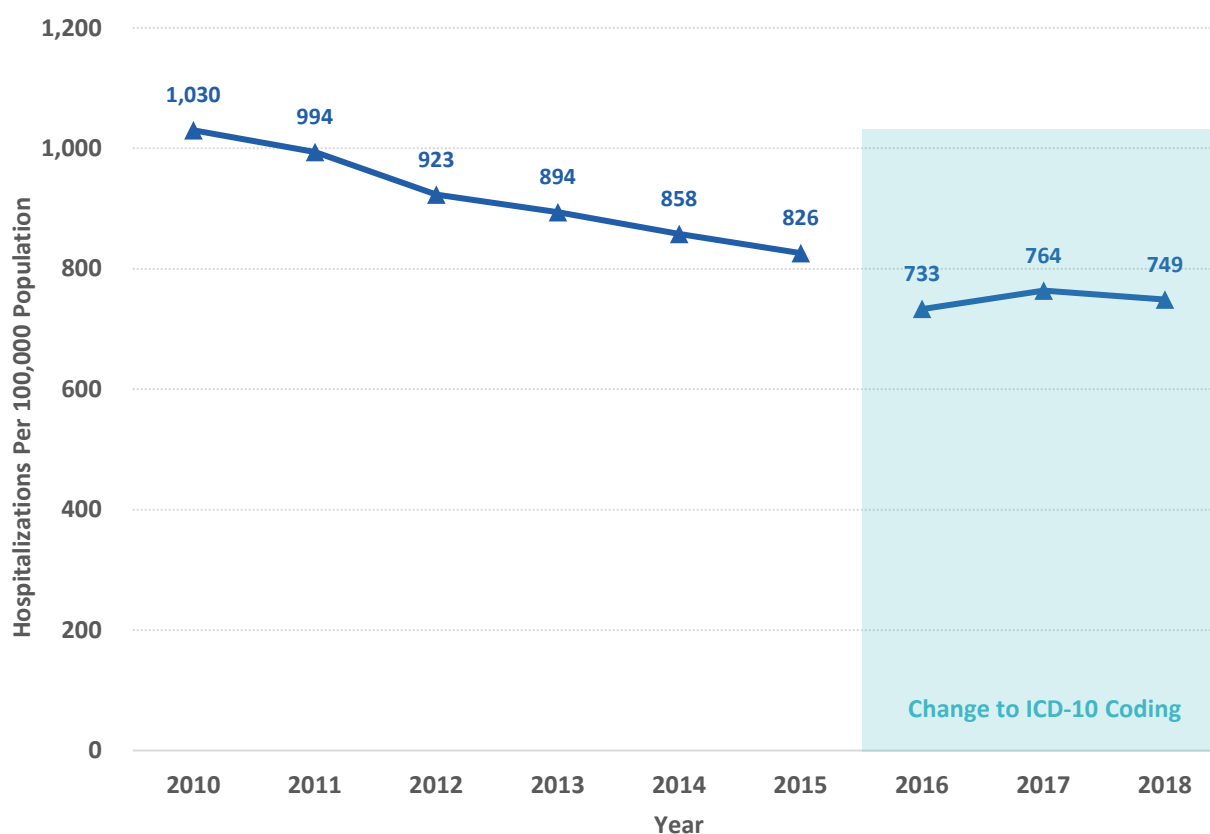
Percent of adults who report delaying care because of cost



Source: Washington State Behavioral Risk Factor Surveillance System (BRFSS)

Some individuals delay or forego necessary medical care due to the cost. Delaying necessary care may cause medical conditions to worsen and result in greater costs to either the patient or society, or both. The ACA coverage expansion reduced the number of people experiencing delay of needed medical care because of cost concerns. In the three years before the ACA coverage expansion, the percentage of Washington’s adult population (18 and older) reporting delay of care due to cost was above 15%. Since the expansion, the share has dropped to 12% or below.

Ambulatory care sensitive conditions – Overall composite



Source: Washington Comprehensive Hospital Abstract Reporting System (CHARS)

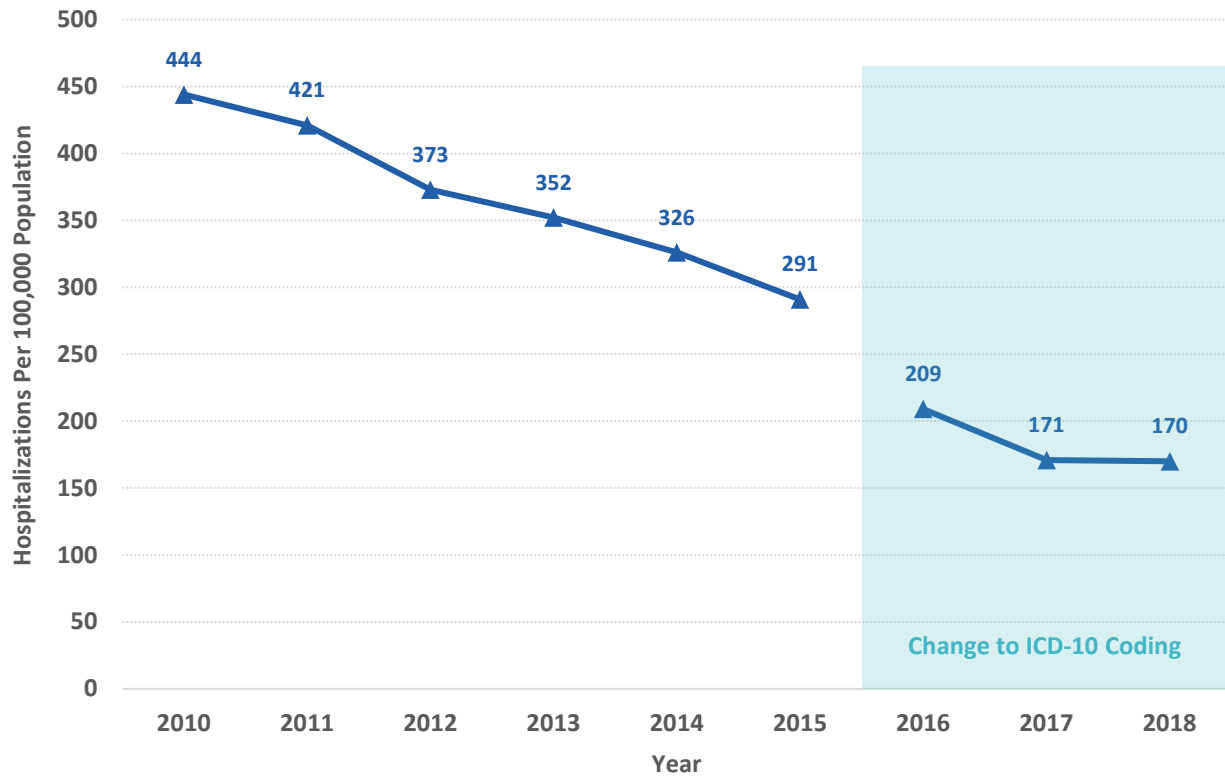
Ambulatory Care-Sensitive Conditions are hospital admissions that may have been prevented with more effective primary care. From 2010 to 2018, ACSC hospitalizations represented between 8.2 and 9.3% of discharges reported in the state’s hospital discharge database, the Comprehensive Hospital Abstract Reporting System. The Agency for Healthcare Research and Quality maintains 14 measures related to ACSC conditions, including 10 measures for individual conditions and four composite measures.

We present three composite measures in this report. The overall composite measure combines 10 individual acute and chronic conditions.⁶ Rates for the overall composite measure trended mainly down starting at 1,030 hospitalizations per 100,000 population in 2010 and ending at 826 per 100,000 in 2015. The overall composite rate was relatively flat between 2016⁷ and 2018.

⁶ Overall Composite includes hospitalizations for chronic conditions (diabetes short term complications, diabetes long term complications, uncontrolled diabetes, low-extremity amputation, chronic obstructive pulmonary disease (COPD), asthma, hypertension, and heart failure) and acute conditions (bacterial pneumonia, urinary tract infection).

⁷ The diagnostic classification standard for all clinical and research purposes changed from ICD 9 to ICD 10 in October 2015. This change in coding is represented by a break in the data series between 2015 and 2016.

Ambulatory care sensitive conditions – Acute composite

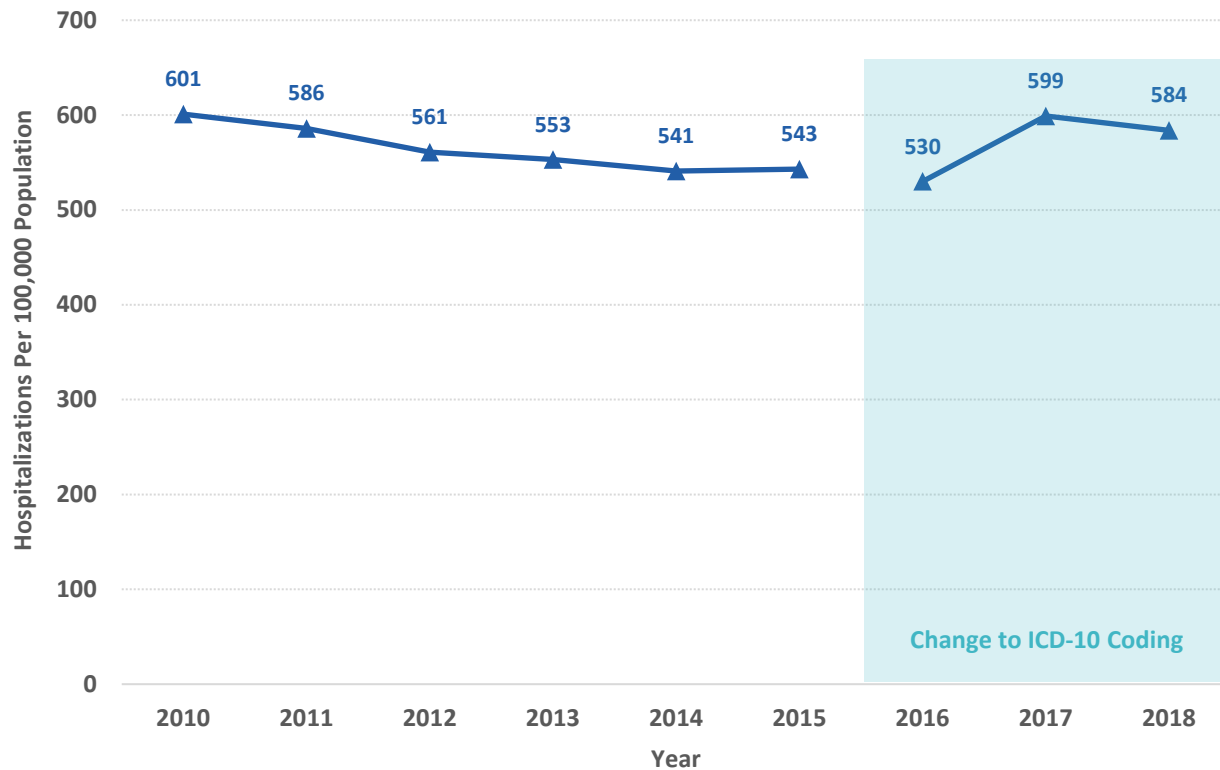


Source: Washington Comprehensive Hospital Abstract Reporting System (CHARS)

The acute composite measure combines hospitalizations for community-acquired bacterial pneumonia and urinary tract infections. Rates for acute conditions decreased over time, dropping from 444 hospitalizations per 100,000 population in 2010 to 291 per 100,000 in 2015.⁸ The rate dropped further between 2016 (209 per 100,000) and 2018 (170 per 100,000). Pneumonia is a common diagnosis in ACSC hospitalizations, but pneumonia rates are decreasing. This decline may indicate that more people are being vaccinated against the disease.

⁸ The diagnostic classification standard for all clinical and research purposes changed from ICD 9 to ICD 10 in October 2015. This change in coding is represented by a break in the data series between 2015 and 2016.

Ambulatory care sensitive conditions – Chronic composite



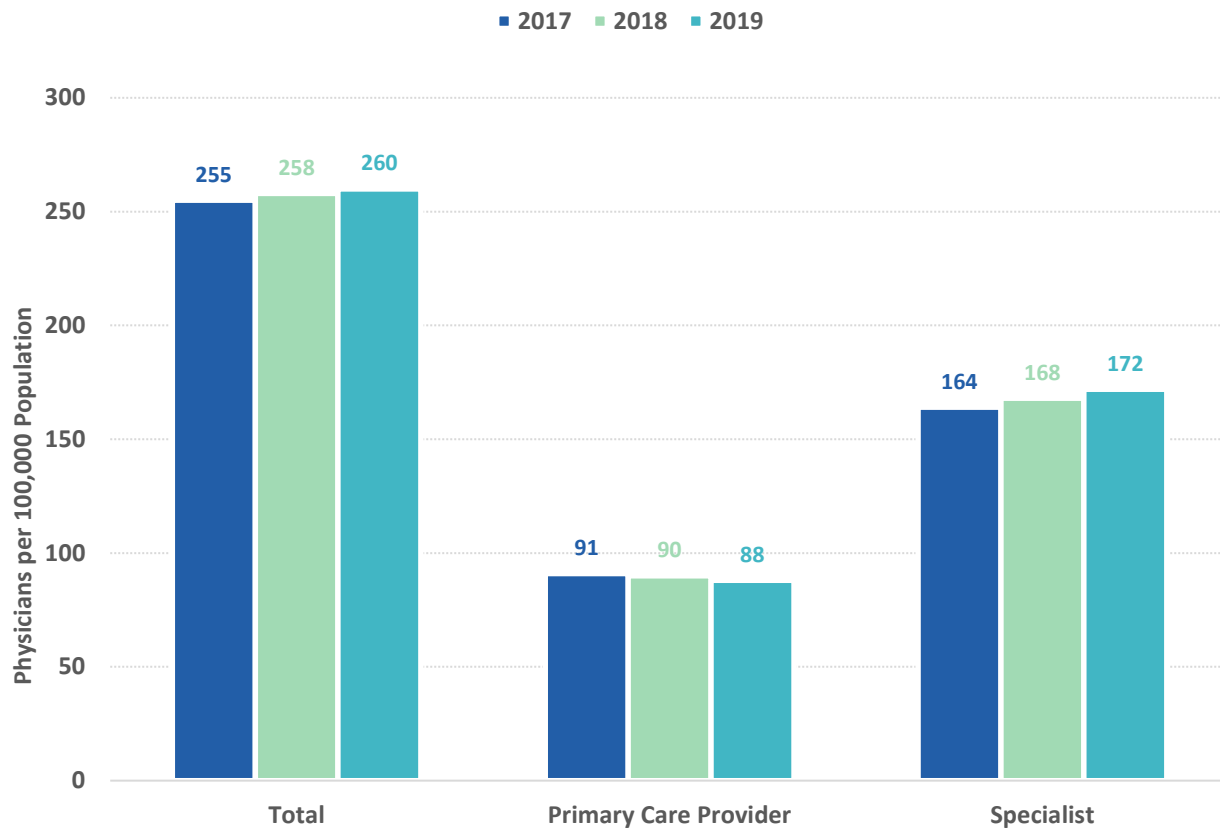
Source: Washington Comprehensive Hospital Abstract Reporting System (CHARS)

Rates for hospitalizations due to chronic conditions⁹ decreased from 601 hospitalizations per 100,000 population in 2010 to 543 per 100,000 in 2015.¹⁰ Between 2016 and 2018, the rate increased to 599 per 100,000 population in 2017 before decreasing slightly in 2018. Outcomes for chronic conditions other than diabetes are dominated by measures for chronic obstructive pulmonary disease (COPD) and heart failure, with opposite trends: hospitalizations for COPD are decreasing, while those for heart failure are increasing. This may mean that ACSC hospitalizations for chronic conditions have room for improvement.

⁹ Chronic composite measure includes hospitalizations for diabetes short-term complications, diabetes long-term complications, uncontrolled diabetes, low-extremity amputation, chronic obstructive pulmonary disease (COPD), asthma, hypertension, and heart failure.

¹⁰ The diagnostic classification standard for all clinical and research purposes changed from ICD 9 to ICD 10 in October 2015. This change in coding is represented by a break in the data series between 2015 and 2016.

Physicians per 100,000 population



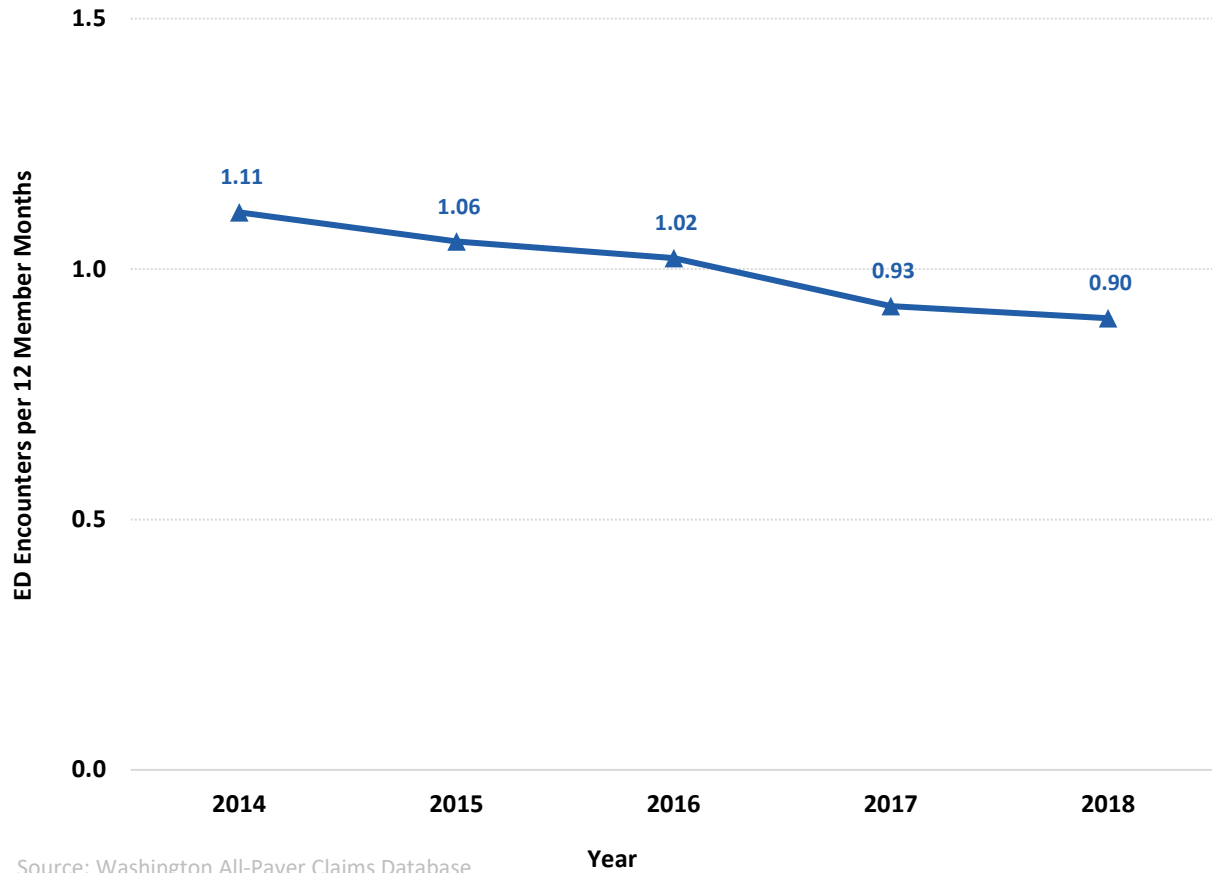
Source: OFM Physician Workforce Data System

Having a sufficient supply of physicians is critical for supporting the health care needs of the population. Washington’s physician supply grew slightly faster than the population between 2017 and 2019.¹¹ However, the growth came entirely from specialists while the supply of primary care physicians actually experienced a reduction. There were 255 physicians, overall, per 100,000 population in 2017, and the rate increased to 260 in 2019. During the same period, the rate of specialists grew from 164 to 172 per 100,000 population while primary care physicians decreased from 91 to 88 per 100,000 population.¹²

¹¹ Comparable data for earlier years are not available.

¹² Primary care physician in this report includes physicians whose primary specialty is family medicine/general practice, general internal medicine, general pediatrics or geriatrics.

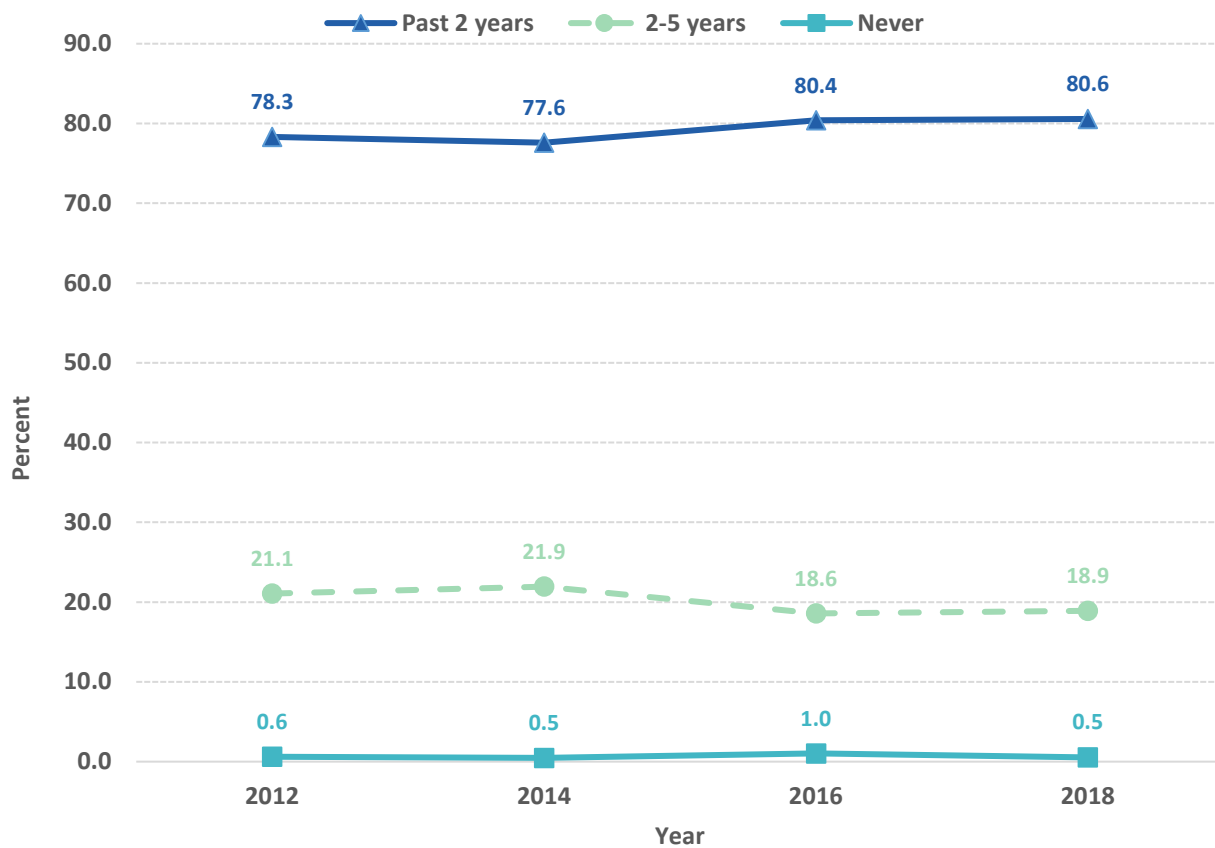
Emergency department visits per 12 member months



We expected the expansion of health care coverage under the ACA to reduce how many people used emergency department services since individuals with health coverage would have improved access to other sources of service. Washington did see a decline in ED use, decreasing from 1.11 encounters per 12 member months in 2014¹³ to 0.90 in 2018.

¹³ Although the WA-APCD contains data for 2013, the data was not comprehensive enough to use in this analysis.

Last dental visit for Washingtonians

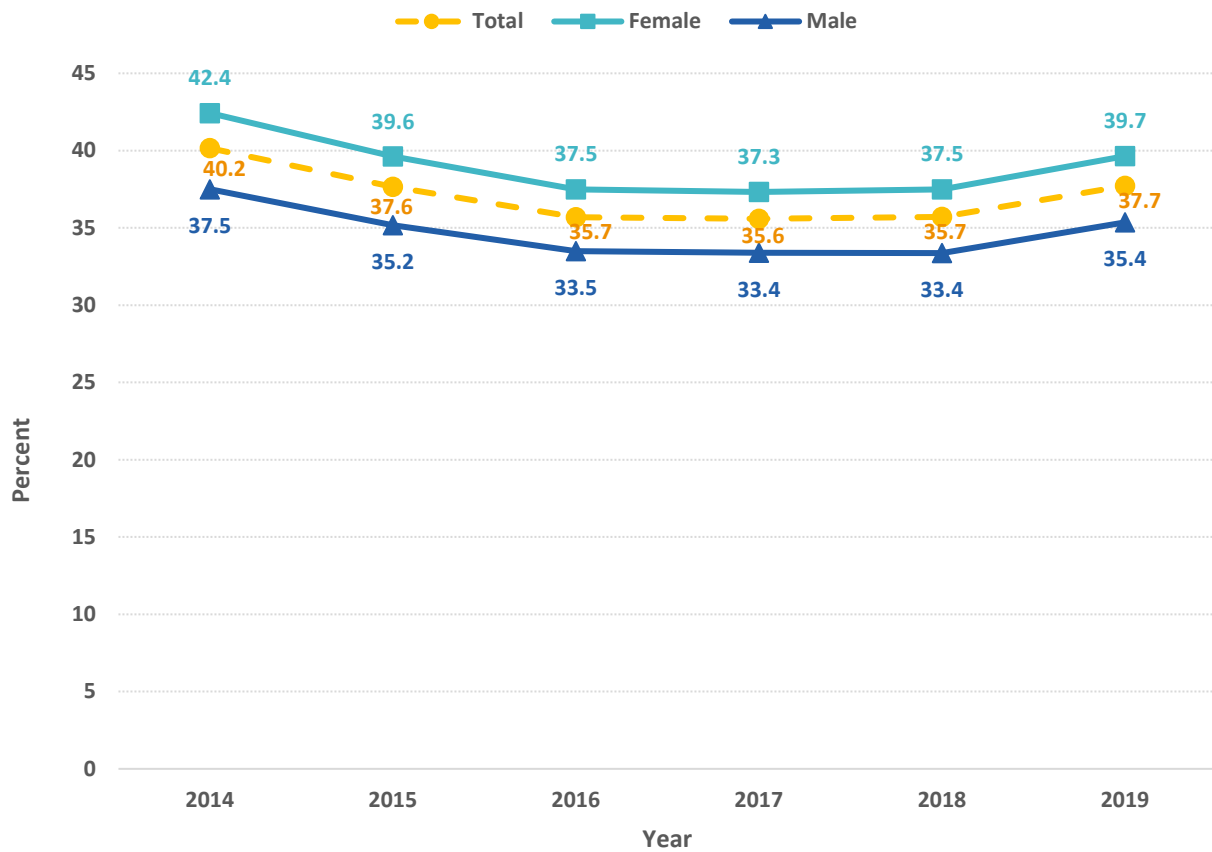


Source: Behavioral Risk Factor Surveillance System

Although dental coverage is not a provision in the ACA, many states began offering dental insurance plans in their exchanges. Washington started offering dental plans on the Washington Health Benefit Exchange for the 2020 plan year.

More than three-quarters of adults report visiting a dentist or dental clinic in the past two years for any reason. This proportion increased slightly from around 78% to more than 80%. Around 20% of adults reported the last time they visited a dentist was between two to five years ago. Around 1% of adults reported never seeing a dentist.

People with dental coverage who had a preventive visit

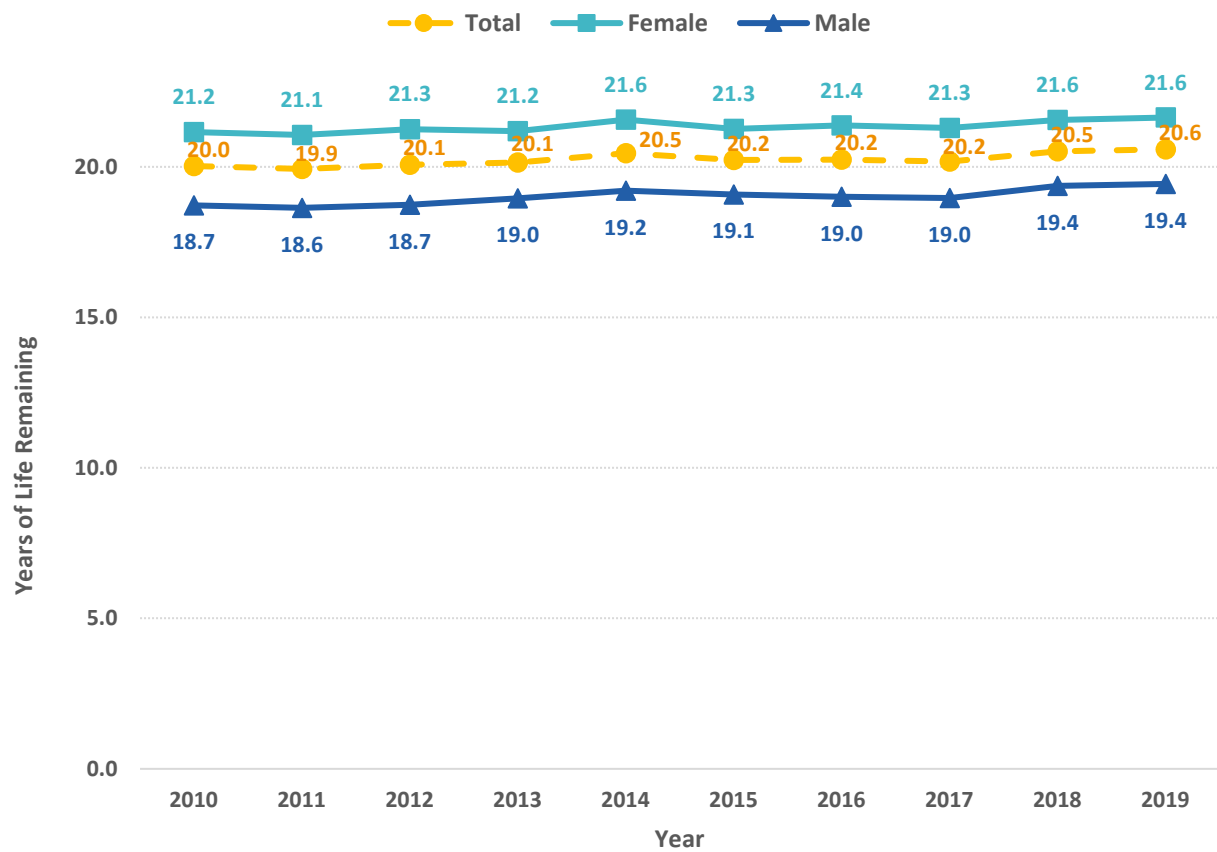


Source: Washington All-Payer Claims Database

Despite having dental coverage, many people still don't visit the dentist for preventive care. The percentage with a preventive visit actually declined between 2014 and 2019, dropping from 40.2% to 35.6% in 2017 before rising to 37.7% for all persons. The pattern was similar for males and females in 2019. In 2014, 42.4% of females had a preventive dental visit, while 37.3% had a visit in 2017, and 39.7% in 2019. Males had a similar pattern. In 2014, 37.5% of males had a preventive dental visit, 33.4% in 2017, and 35.4% in 2019.

Health outcomes

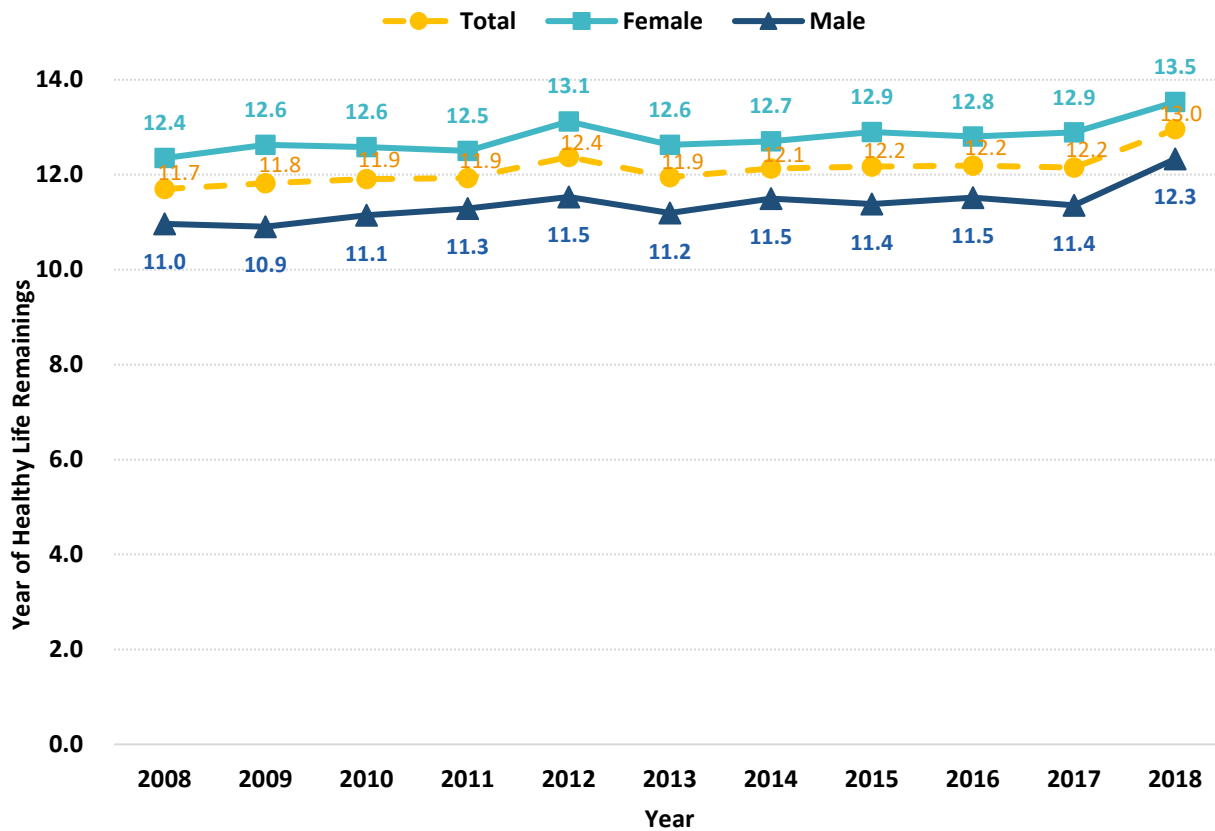
Life expectancy at age 65



Source: Washington State Death Certificates

Individuals with better health care have better health outcomes including longer life expectancy. From 2010 through 2019, life expectancy at age 65 years in Washington increased from 20 years to 20.6 years – a 2.8% change. Both males and females experienced an increase in life expectancy at age 65 years: for females expectancy increased by 0.4 years to 21.6 years and for males, by 0.7 years to 19.4 years.

Healthy life expectancy at age 65



Source: Washington State Death Certificates, American Community Survey

Healthy life expectancy (HLE) measures population health. It combines mortality and morbidity, or incidence of disease, into a single metric.^{14,15} We can interpret HLE as the number of remaining years of life spent in good health past a given age, where “good health” can be defined in a number of different ways.¹⁶ In this measure, we examine trends in healthy life expectancy using disability status from the American Community Survey as our indicator for poor health.

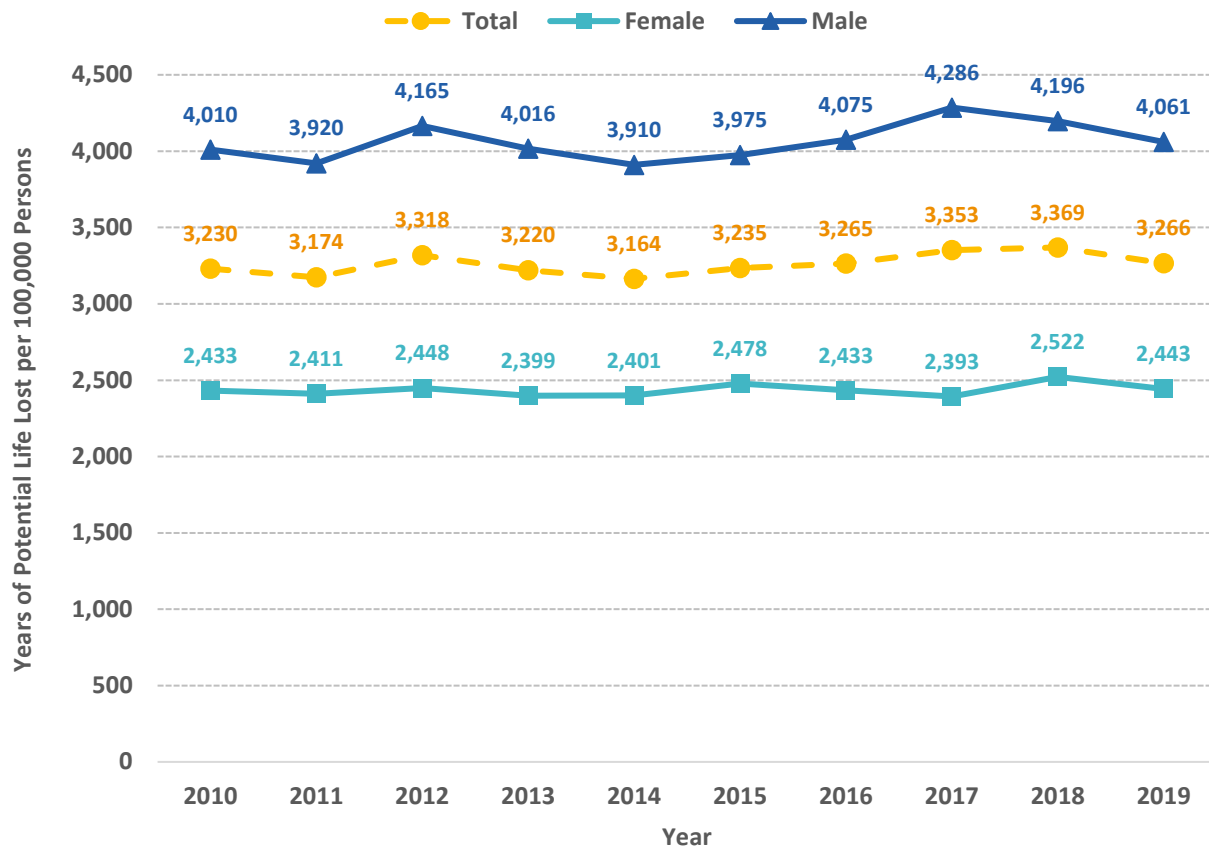
In 2008, at age 65, healthy life expectancy was 11.0 years for men, 12.4 years for women, and 11.7 for the total population. HLE at age 65 increased over the following 10 years reaching 12.3 years for men, 13.5 years for women, and 13.0 years for the total population in 2018. In that year, men at age 65 could expect 7.2 years of disability, while women at age 65 could expect 8.1 years of disability.

¹⁴ Sullivan DF. A single index of mortality and morbidity. HSMHA Health Reports 86, 347-354. 1971.

¹⁵ World Health Organization. WHO methods for life expectancy and healthy life expectancy. Global Health Estimates Technical Paper WHO/HIS/HSI/GHE/2014.5

¹⁶ Murray, CJL and AD Lopez, Regional patterns of disability-free life expectancy and disability-adjusted life expectancy: Global Burden of Disease Study. Lancet. 5/10/1997, Vol. 349 Issue 9062, p1347.

Years of potential life lost before age 65

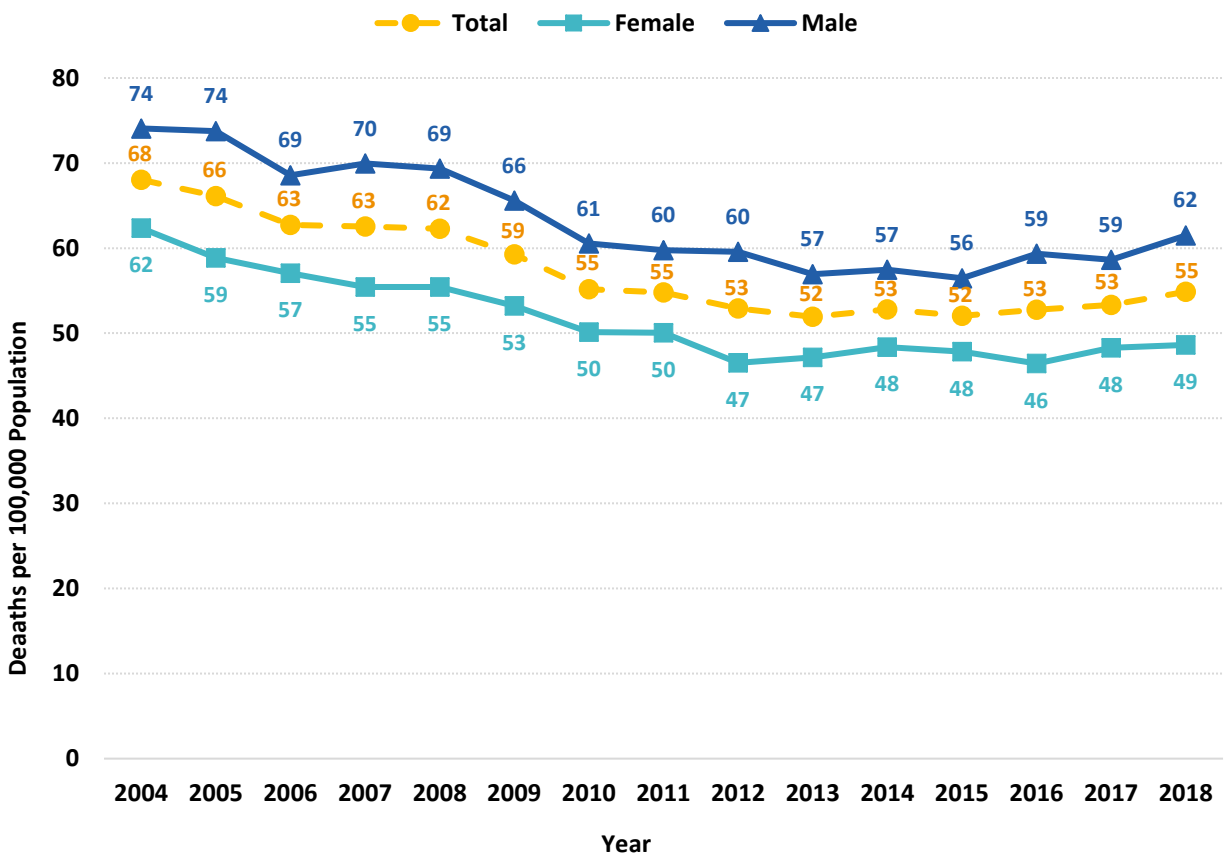


Source: Washington State Death Certificates

With improved access to health care, individuals are expected to live longer, healthier lives. Without appropriate care, individuals may die prematurely. Years of potential life lost (YPLL) estimates the average number of years a person would have lived if they had not died prematurely, before age 65, which provides an indication of the health of the population.

Between 2010 and 2019, the overall rate of years of potential life lost before age 65 fluctuated between 3,164 YPLL per 100,000 persons and 3,369. Males consistently have a higher YPLL rate. The YPLL rate for males was approximately 4,000 YPLL per 100,000 persons while for females the YPLL rate was closer to 2,500 YPLL per 100,000 persons.

Amenable deaths

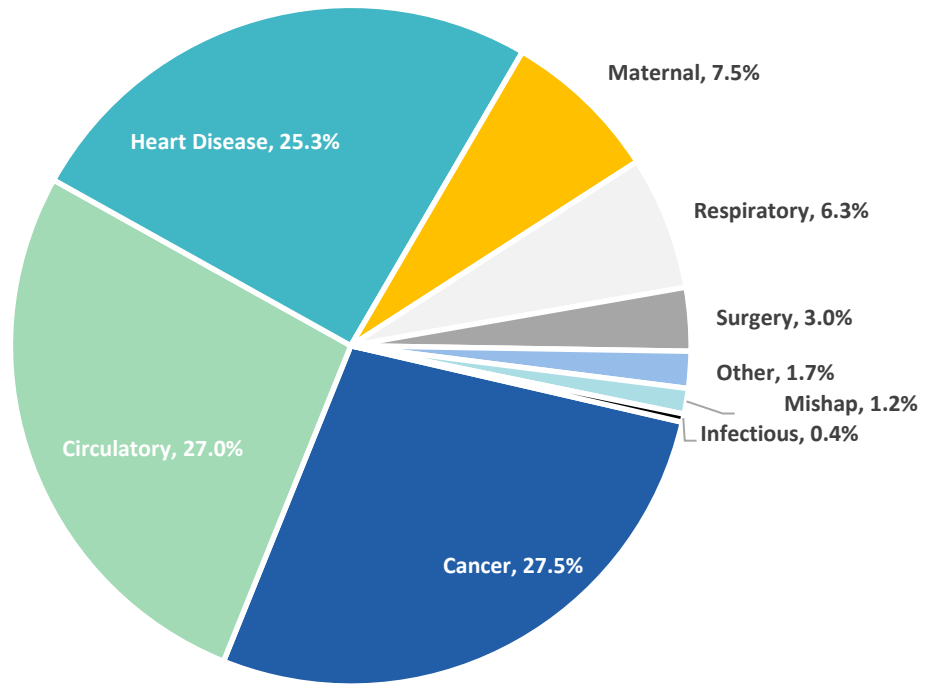


Source: Washington State Death Certificates

Amenable mortality means deaths from conditions for which recognized treatments exist, and where one would expect that death could be prevented through timely and effective health care. In Washington, age-standardized amenable death rates for population under age 75 declined steadily from 68 deaths per 100,000 population in 2004 to 52 in 2013. Since 2013, rates increased slightly to 55 in 2018. Rates are higher for men than for women in all years. In 2018, the amenable death rate was 62 for men, and 49 for women.

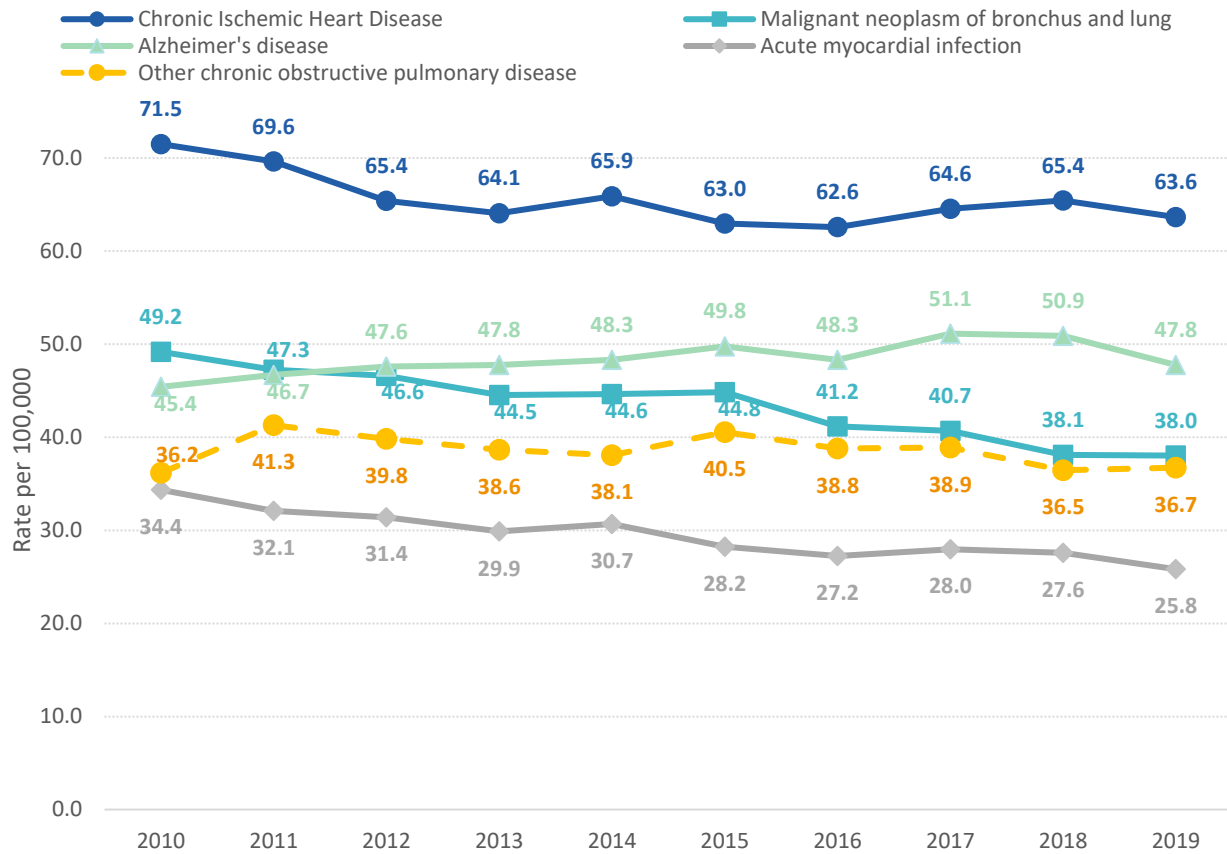
Amenable deaths due to cancer (27%), circulatory causes (27%) and ischemic heart disease (25%) account for three-fourths of amenable deaths in Washington during 2016-18.

Categories of Amenable Deaths in Washington State, 2016-2018, Combined



Source: Washington State Death Certificates

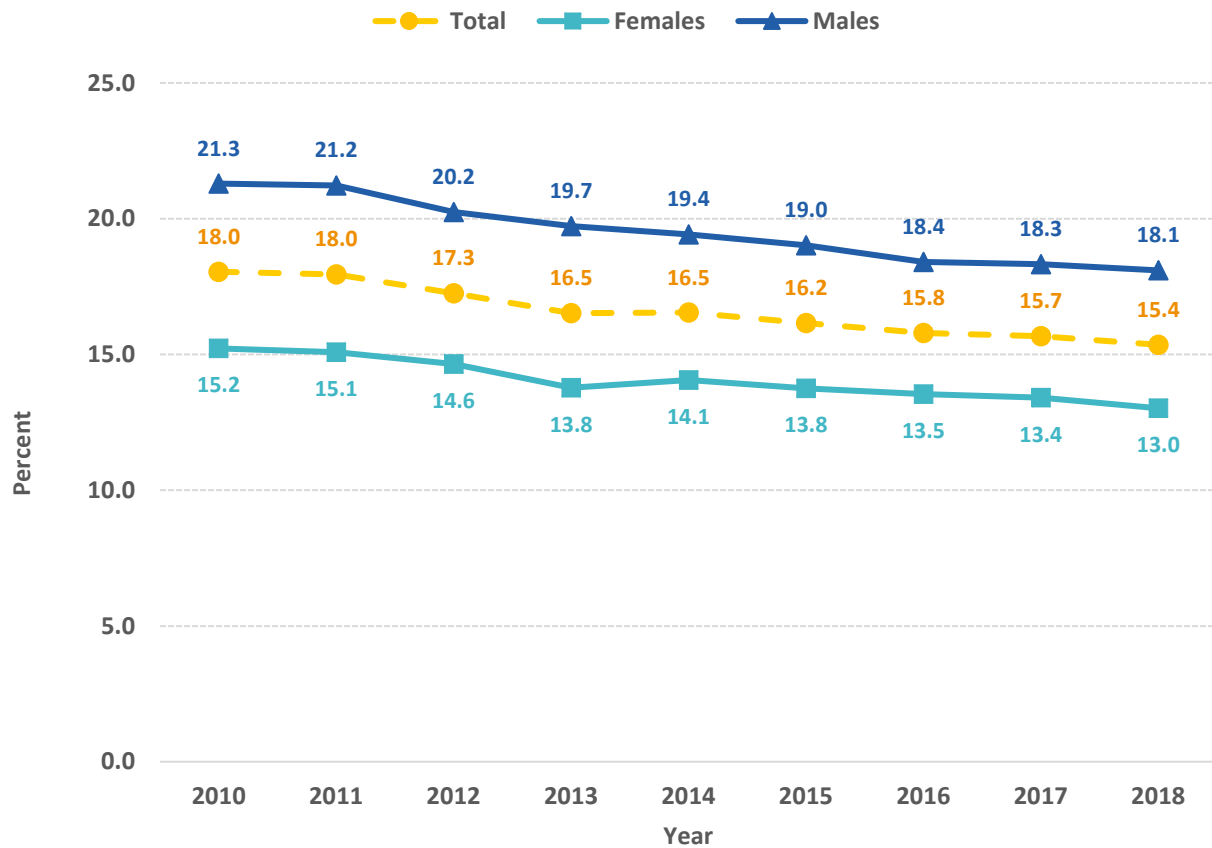
Top causes of death



Source: Washington State Death Certificates

Over the 10-year period that ended in 2019, the top five causes of death remained relatively consistent. Chronic ischemic heart disease is the leading cause of death, followed by Alzheimer's disease in the last eight years of the decade. Malignant neoplasm of bronchus and lung, other chronic obstructive pulmonary diseases, and acute myocardial infections round out the top five causes.

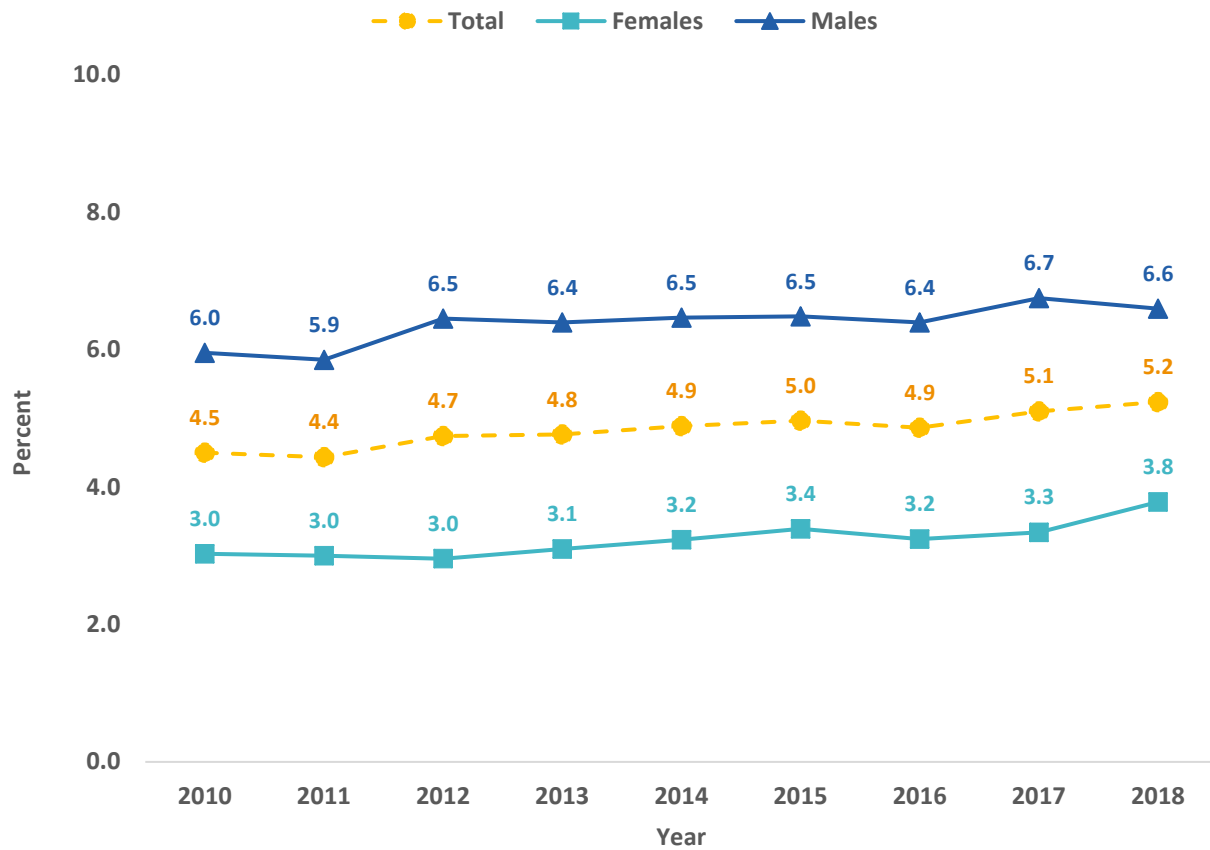
Smoking-attributable deaths as a percentage of total deaths



Source: Washington State Death Certificates

The ACA requires that most health plans cover smoking cessation programs. With greater program availability, over time smoking rates should decline and, ultimately, so should smoking-attributable deaths. The overall smoking-attributable deaths as a percentage of all deaths decreased from 18% in 2010 to 15.4% in 2018. Smoking-attributable deaths account for over 18% of deaths for males and over 13% of deaths for females during the 2010-18 period.

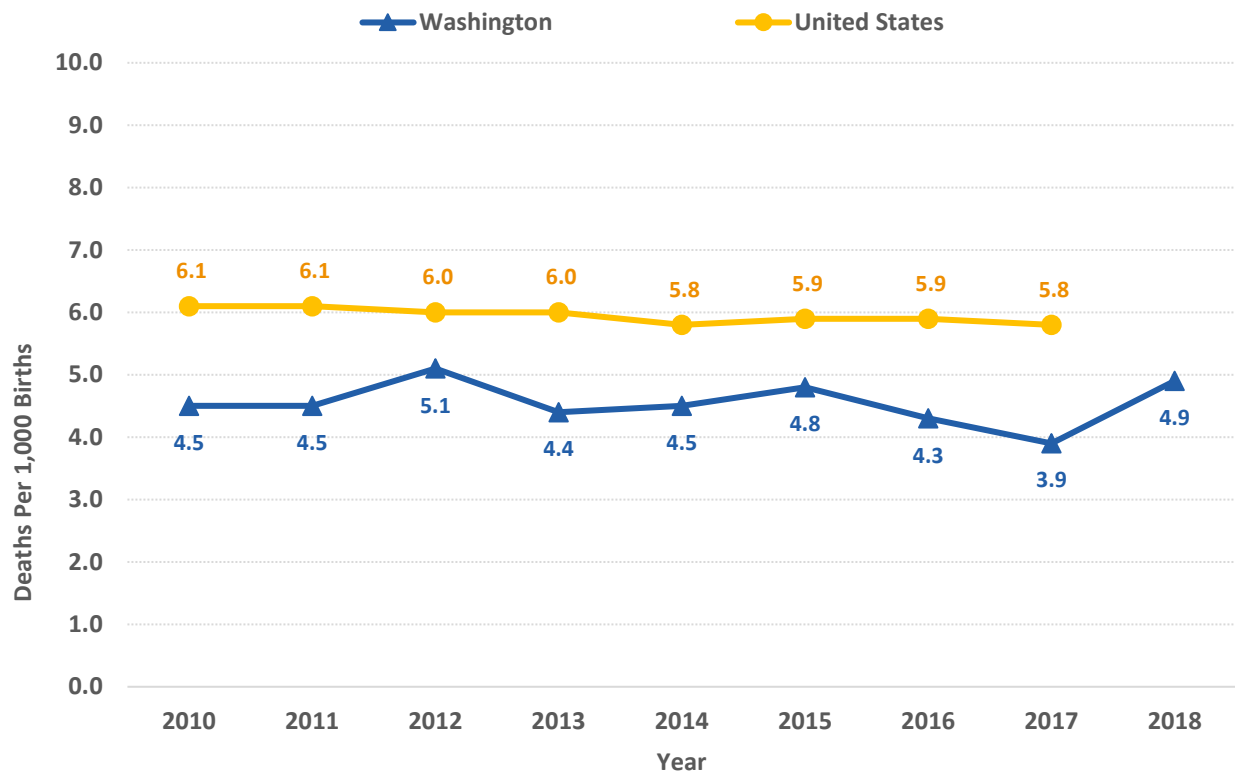
Alcohol-attributable deaths as a percentage of total deaths



Source: Washington State Death Certificates

The overall alcohol-attributable deaths as a percentage of all deaths increased from 4.5% in 2010 to 5.2% in 2018. Alcohol-attributable deaths account for over 6% of deaths for males and over 3% of deaths for females during the 2010-2018 period.

Infant mortality in Washington and the U.S.

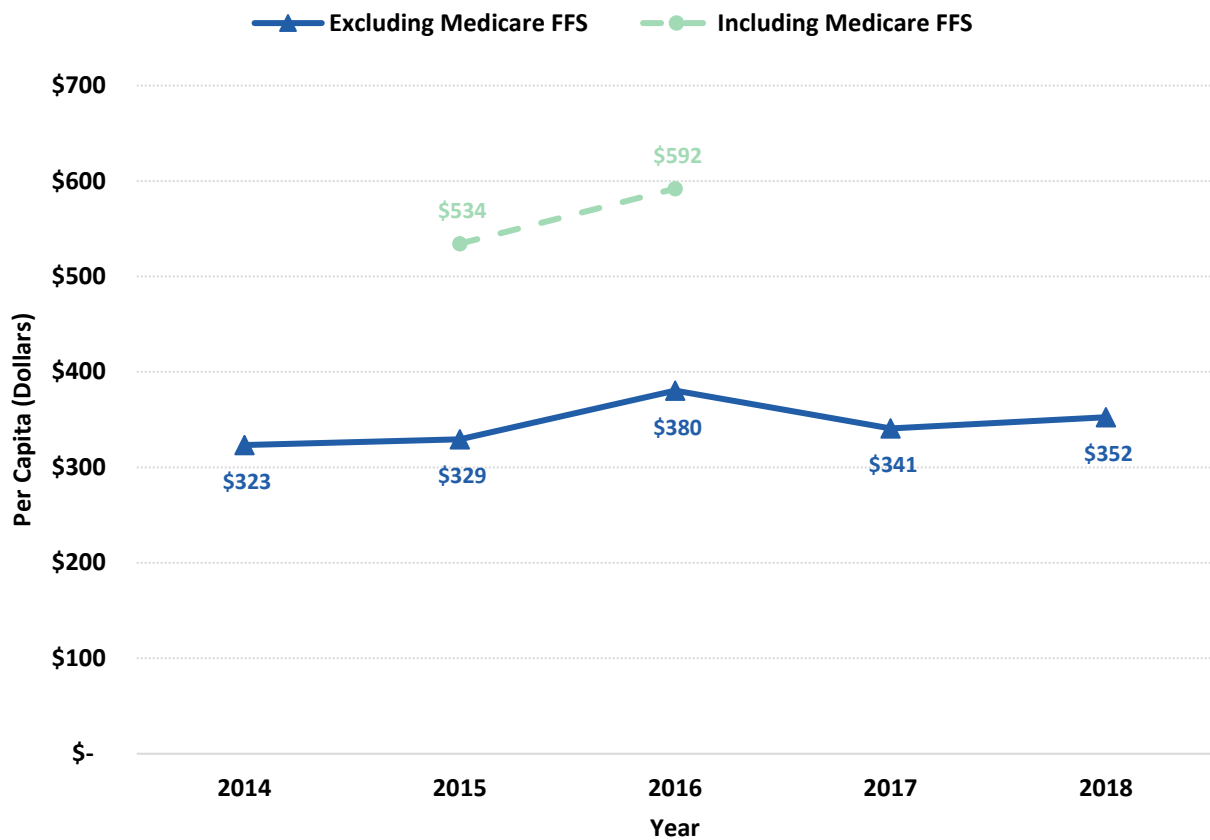


Source: Department of Health (WA); Centers for Disease Control and Prevention

Access to health care, and specifically pre-natal care, can reduce the infant mortality rate. Washington’s infant mortality rate fluctuated around 4.5 deaths per 1,000 births during the years between 2010 and 2018 with no observable decline since 2014. The state’s rate, one of the lowest in the country, has remained consistently below the U.S. rate over the decade.

Affordability and cost

Out-of-pocket cost sharing



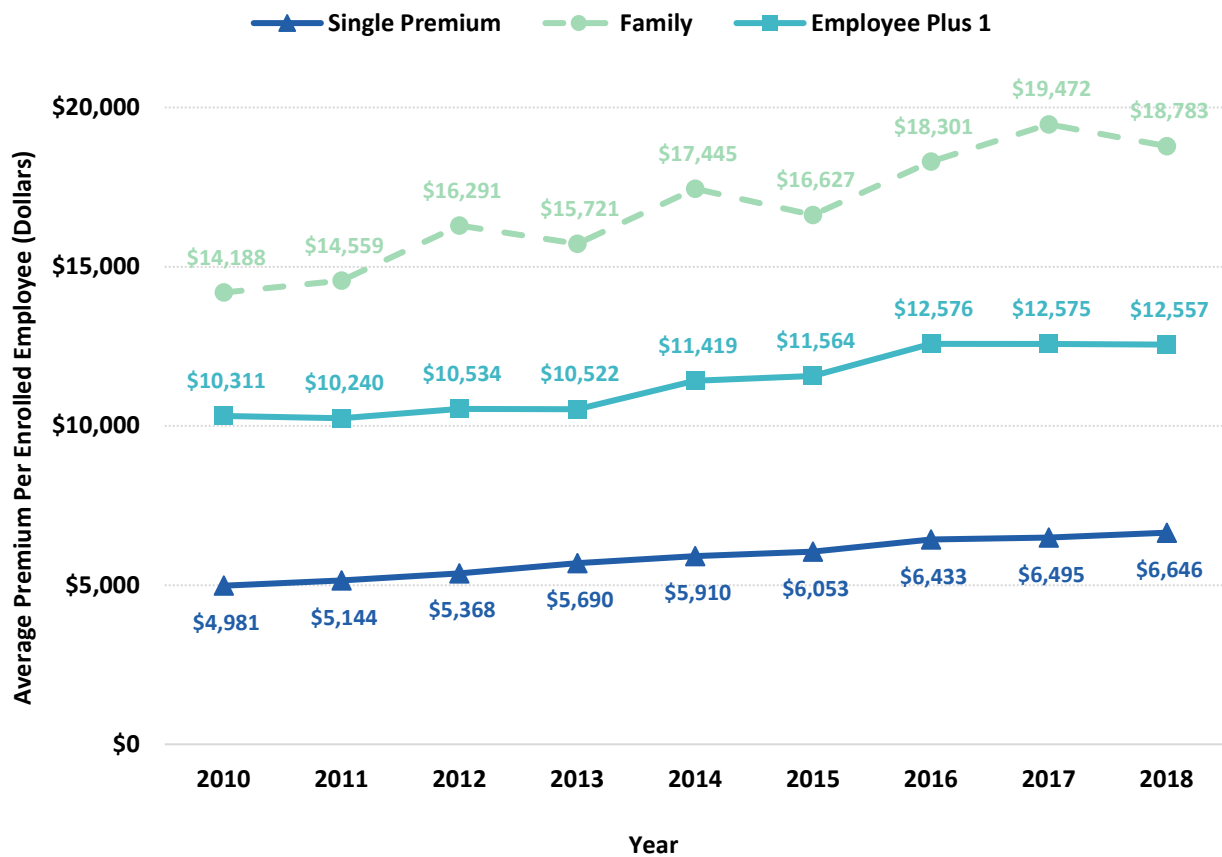
Source: Washington All-Payer Claims Database

Out-of-pocket (OOP) cost sharing includes deductible, copay, and coinsurance amounts for insurance-paid claims. We assessed OOP cost sharing using medical and pharmacy claims data in the Washington All-Payer Claims Database (WA-APCD).

Per-member OOP cost sharing did not change significantly between 2014 and 2018. Though WA-APCD includes Medicare Advantage for all years, at the time of writing, Medicare fee-for-service data were only available in WA-APCD for 2015 and 2016. Excluding Medicare fee-for-service, WA-APCD members paid an average of \$345 per year in OOP cost sharing between 2014 and 2018. Including both Medicare Advantage and Medicare fee-for-service claims, members paid an average of \$563 per year out of pocket for cost sharing between 2015 and 2016.

Cost sharing on insurance-paid claims represents only a portion of the total OOP costs that patients incur. We did not include insurance premiums, denied claims, and unsubmitted insurance costs in these totals. The National Health Expenditure report shows that the per capita OOP for the U.S. in 2018 was \$1,148. Washington's total health expenditure was about 11-13% lower than the U.S. total health expenditure during 2010-14, according to the report.

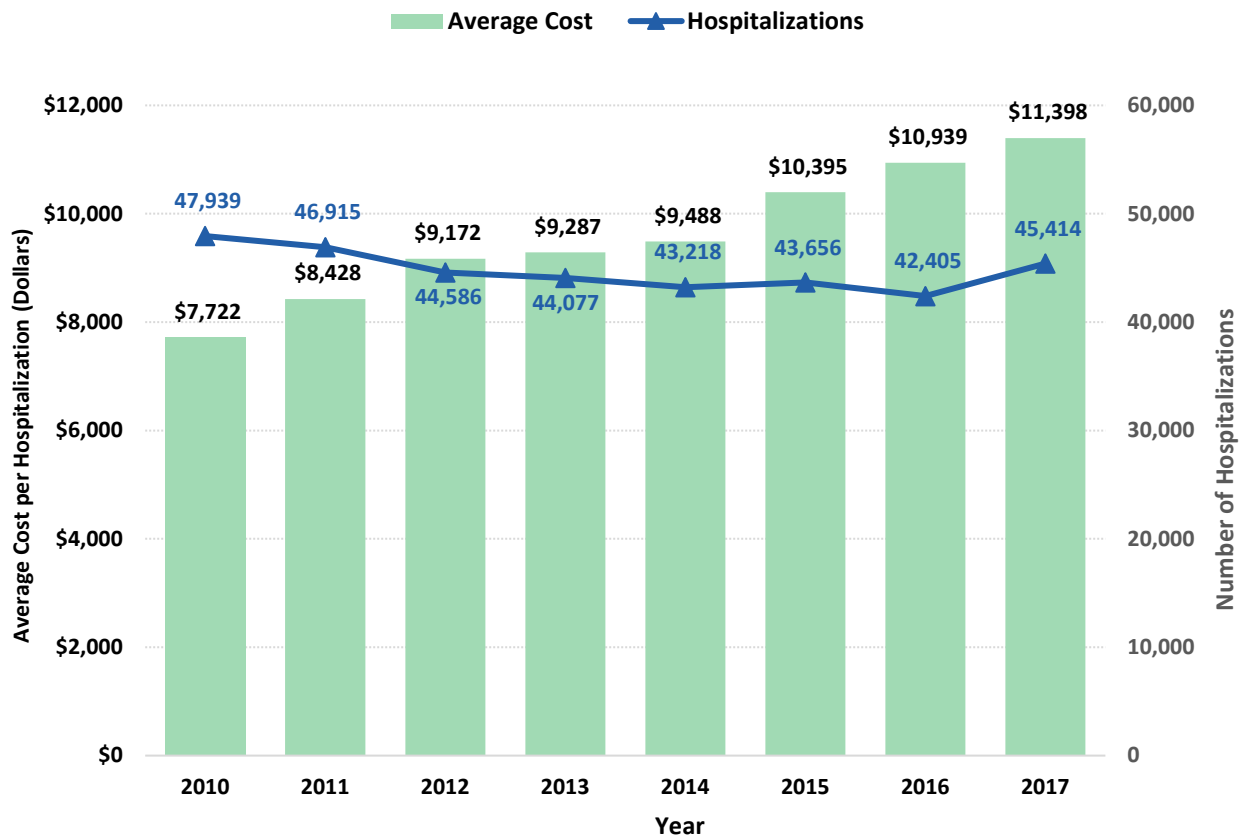
Average total premium per enrolled employee



Source: Medical Expenditure Panel Survey

Affordability of health coverage premiums is a key component of the ACA. Between 2010 and 2018, average total premiums per enrolled employee increased across three categories of coverage: Single (Individual) Coverage, Family Coverage, and Employee Plus 1 Coverage. The average Single premium increased from just under \$5,000 per year in 2010 to \$6,646 per year in 2018, or an average of 3.7% increase per year. Average Employee Plus 1 premiums increased from \$10,311 in 2010 to \$12,557 per year in 2018, or 2.6% per year. Finally, average Family premiums increased from \$14,188 in 2010 to \$18,783 per year, or an average of 3.8% per year.

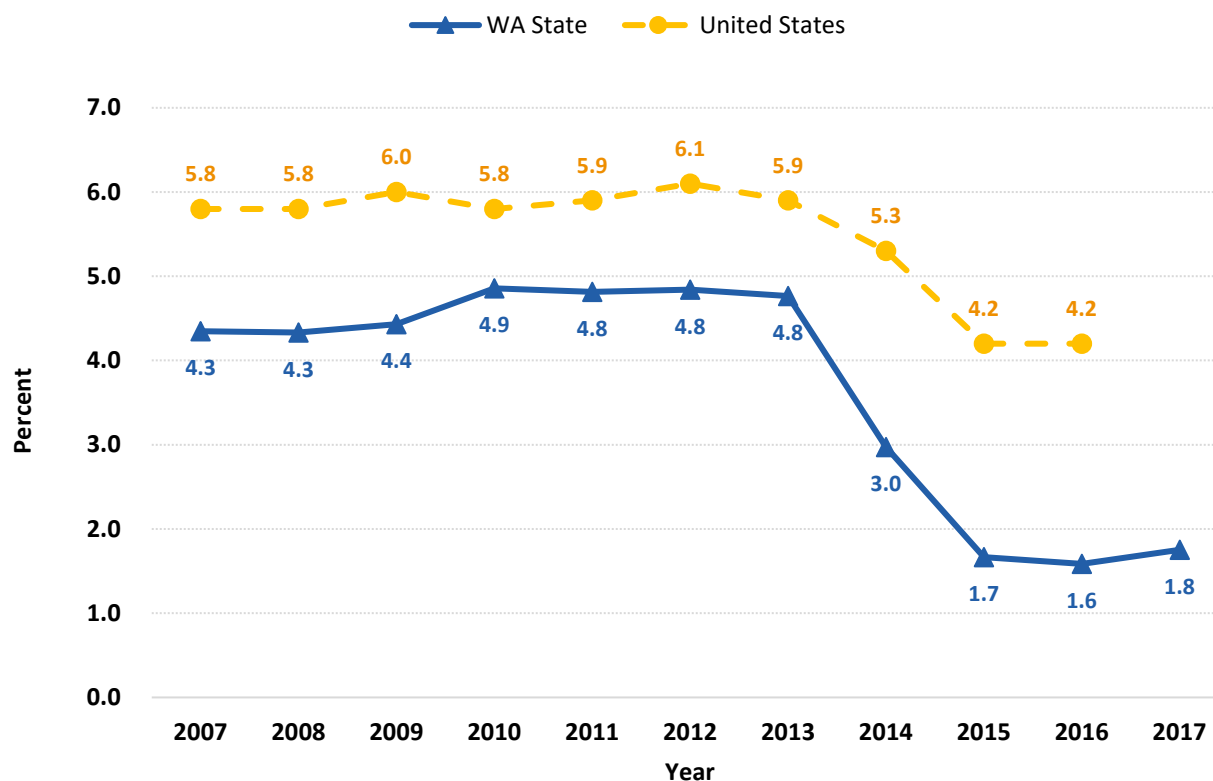
Ambulatory care sensitive conditions hospitalizations and costs



Source: Washington Comprehensive Abstract Reporting System

For ambulatory care sensitive conditions hospitalizations in Washington, the average cost per hospitalization rose from almost \$8,000 in 2010 to just over \$11,000 in 2017, a 47% increase. This increase occurred even as the number of ACSC hospitalizations decreased from 2010 to 2016, with a rise in 2017. Non-ACSC hospitalization costs increased at a lower rate overall (42%).

Uncompensated care as a percentage of total cost – Washington and the U.S.



Source: Washington State Department of Health

Hospitals in Washington cannot deny patients access to care based on inability to pay. They also can't adopt admission policies that significantly reduce charity care.¹⁷ Hospitals must maintain a charity care policy that ensures access to appropriate medical services for indigent patients¹⁸, people with family income below 200% of the federal poverty level.

Hospital uncompensated care includes charity care (care provided at no or reduced cost for patients who cannot afford it) and bad debt (other unrecovered cost that does not qualify as charity care). Uncompensated care in Washington increased rapidly from \$514 million estimated cost (\$1.2 billion billed charges) in 2007 to \$815 million estimated cost (\$2.3 billion billed charges) in 2013. This is a nearly 200% increase in six years. After we implemented key provisions of the ACA in 2014 – the individual mandate, Medicaid expansion, and the creation of health benefit exchange – uncompensated care cost decreased substantially to \$321 million estimated cost (\$980 million billed charges) by 2016.

Uncompensated care as a percentage of total cost in Washington is lower than the national percentage. Uncompensated care in Washington comprised 4.8% of total hospital costs in 2013, declining to 1.6% in 2016. There are signs that uncompensated care may be trending up again, with \$339 million in estimated cost (\$1.1 billion billed charges) in 2017. In 2017, charity care amounted to 1.8% of total cost.

¹⁷ <https://app.leg.wa.gov/rcw/default.aspx?cite=70.170>

¹⁸ <https://apps.leg.wa.gov/wac/default.aspx?cite=246-453-040>

Methods

Coverage Measures

Percent Uninsured

Source: American Community Survey

Percent Uninsured by Age

Source: American Community Survey

Percent Uninsured by Race/Ethnicity

Source: American Community Survey

Health Coverage Type by Source

Source: American Community Survey

Medicaid Participation Rate

Source: American Community Survey

For adults, an individual was considered eligible for Medicaid if their family income was at or below 138% of the federal poverty level (FPL). For children, income was at or below 210% of the FPL.

Access to Care Measures

Percent of Adults 18 and Older Reporting Having No Personal Doctor

Source: Washington State Behavioral Risk Factor Surveillance System

Percent of Adults 18 and Older Reporting Delay of Care Due to Cost

Source: Washington State Behavioral Risk Factor Surveillance System

Ambulatory Care Sensitive Conditions – Overall Composite

Ambulatory Care Sensitive Conditions – Acute Composite

Ambulatory Care Sensitive Conditions – Chronic Composite

Source: Washington Comprehensive Hospital Abstract Reporting System (CHARS)

CHARS reports data on inpatient hospitalizations discharges. The analysis includes data from 2010-2018 for hospitalization and 2010-2017 for hospitalization costs.

Currently the Agency for Health Research and Quality maintains 14 measures related to Ambulatory Care Sensitive Conditions.¹⁹ We base this calculation on International Classification of Disease (ICD) diagnosis and procedure codes recorded in hospitalization records. Following U.S. procedures, this analysis reviewed CHARS data for ICD version 9 codes through September 2015 and ICD version 10 codes from October 2015 to classify discharges as ACSC or non-ACSC. Of the 14 measures, 10 are for individual conditions and four are composites. Three composites include all hospitalizations within categories related to diabetes, acute, or chronic conditions. The fourth composite includes all individual categories. If a hospital stay meets criteria for inclusion in more than one individual measure in a composite measure, it is counted only once

¹⁹ https://www.qualityindicators.ahrq.gov/Modules/PQI_TechSpec_ICD10_v2019.aspx

in the composite. Obstetric admissions are excluded from the measures. To avoid double counting, cases are excluded if the patient was admitted by transfer from a different hospital or health care facility. Cases are excluded from the numerator if the record is missing data on patient gender or age, quarter or year, principal diagnosis, or county of residence.

Measures for ACSC hospitalizations are reported as rates per 100,000 of the general adult population. For example, the 2018 age standardized rate for community-acquired bacterial pneumonia was just under 96. This means that, of 100,000 people in the state’s adult population, in 2018 about 96 were hospitalized for pneumonia where the hospitalization could have been avoided with proper primary care.

ACSC rates were age adjusted using the 2000 US Census population as a standard population. This process accounts for year-to-year changes in the age breakdown of the Washington population. This means we can more meaningfully compare rates for different years.

Overall composite	Combines all ten individual measures	Discharges for patients 18 and older that meet the inclusion and exclusion rules for the numerator in any of the individual measures; a discharge included in more than one individual measure is counted only once for the composite	Population aged 18 or older
Acute composite	Combines individual measures for acute conditions	Discharges for patients 18 and older that meet the inclusion and exclusion rules for either: <ul style="list-style-type: none"> • Community-acquired bacterial pneumonia • UTI A discharge included in both individual measures is counted only once for the composite	Population aged 18 or older
Chronic composite	Combines individual measures for chronic conditions	Discharges for patients 18 and older that meet the inclusion and exclusion rules for the numerator in any of the measures for: <ul style="list-style-type: none"> • Diabetes short-term complications • Diabetes long-term complications • Chronic obstructive pulmonary disease or asthma in older adults • Hypertension • Heart failure • Uncontrolled diabetes • Asthma in younger adults • Lower-extremity amputation among patients with diabetes A discharge included in more than one individual measure is counted only once for the composite	Population aged 18 or older

Physicians per 100,000 Population

Source: OFM Physician Workforce Data System

Emergency Department Visits

Source: Washington All-Payer Claims Database (WA-APCD)

This metric is constructed to analyze numbers of emergency department (ED) encounters within insured populations. Members were classified as Medicaid or commercial insurance patients based on primary coverage as determined in WA-APCD data. Members may be insured for only a portion of a calendar year. For that reason, the denominator for the analysis consists of the sum of the number of months in the year that each person was insured, according to the monthly member data. All persons who were insured contribute the number of months they were insured to the sum. This approach helps provide a more complete picture of how many persons were insured and how often they sought emergency care. The number of encounters was divided by the sum of member months and multiplied by 12 to create a rate of ED encounters per 12 member months, or one member year.

Last Visit to Dentist

Source: Washington State Behavioral Risk Factor Surveillance System

To estimate the timeframe of the last dental visit, we used the Behavioral Risk Factor Surveillance System from years 2012, 2014, 2016, and 2018 – the years that dental information was collected. The last visit was determined by asking adults how long it had been since they last visited a dentist or dental clinic for any reason. We grouped responses into the following categories: Never, past two years, and between two to five years ago.

Persons with Dental Coverage Who Had a Preventive Visit

Source: Washington All-Payer Claims Database

To estimate preventive dental visits, we used dental procedure codes D1000 through D1999 for each year 2014 through 2019. Estimates are overall for commercial, Medicare, and Medicaid coverage and include all ages.

Health Outcome Measures

Life Expectancy at Age 65

Source: Washington State Death Certificates; Yearly population estimates

To estimate life expectancy at age 65, we adapted methods for constructing abridged life tables by 5-year age groupings^{20,21}. We calculated both sex- and age-specific life expectancies.

Healthy Life Expectancy at Age 65

Source: Washington State Death Certificates

Disability-Free Life Expectancy (DFLE) is a simplified form of Healthy Life Expectancy (HLE) where the health / disability severity weights are simple binary health status – with or without disease

²⁰ Greville, TNE (1943). "Short methods of constructing abridged life tables." *Rec Am Inst of Actuaries*, 32:29-42.

²¹ Reed, LJ and Merrell, M. (1939). "A short method for constructing an abridged life table." *Am J Hygiene*, 30:33-62.

/ disability.^{22,23,24} DFLE was calculated using the Sullivan method²⁵, as described in the World Health Organization (WHO) report²⁶ and in Murray and Lopez.²⁷

- A standard life table was constructed using all-cause mortality by age and sex data obtained through the WA State DOH online dashboard
<https://www.doh.wa.gov/DataandStatisticalReports/HealthDataVisualization/MortalityDashboards/AllDeathsDashboard>
- Disability prevalence by age and sex used 1-year American Community Survey estimates by year and 5-year estimates by county, obtained through data.census.gov.
 - Disability status was defined as having any of the following:²⁸
 - Hearing difficulty: Deaf or having serious difficulty hearing.
 - Vision difficulty: Blind or having serious difficulty seeing, even when wearing glasses.
 - Cognitive difficulty: Because of a physical, mental, or emotional problem, having difficulty remembering, concentrating, or making decisions
 - Ambulatory difficulty: Having serious difficulty walking or climbing stairs.
 - Self-care difficulty: Having difficulty bathing or dressing.
 - Independent living difficulty: Because of a physical, mental, or emotional problem, having difficulty doing errands alone such as visiting a doctor's office or shopping.
- Calculation of HLE, using standard life table symbology:
 - For each age group, i and health status j , the number of person-years spent in health status j by survivors in age group i is $L_i(h) = L_i * P_i(h)$, where $P_i(h)$ is the prevalence of healthy (disability free) state at age i , and L_i is the number of person years of life remaining at age i .
 - Total number of life years remaining disability free from age i is the sum $T_i(h) = \sum(L_k(h))$ where $k \geq i$
 - Disability-free life expectancy from age i is obtained by dividing the disability-free person years at age i by the number of survivors at age i , i , as $e_i(h) = T_i(h) / l_i$

²² Murray, CJL and AD Lopez, Regional patterns of disability-free life expectancy and disability-adjusted life expectancy: Global Burden of Disease Study. *Lancet*. 5/10/1997, Vol. 349 Issue 9062, p1347.

²³ State-Specific Healthy Life Expectancy at Age 65 Years — United States, 2007–2009, Centers for Disease Control MMWR, July 19, 2013

²⁴ Jean Marie Robine, Karen Ritchie, Healthy life expectancy: evaluation of global indicator of change in population health. *BMJ* 302:457-460 23 Feb 1991.

²⁵ Sullivan DF. A single index of mortality and morbidity. *HSMHA Health Reports* 86, 347-354. 1971.

²⁶ World Health Organization. WHO methods for life expectancy and healthy life expectancy. *Global Health Estimates Technical Paper WHO/HIS/HSI/GHE/2014.5*

²⁷ Glossary, American Community Survey, US Census Bureau.
<https://www.census.gov/topics/health/disability/about/glossary.html>

²⁸ Washington State Department of Health, Center for HealthStatistics, Death Certificate Data, 2000-2018, Community Health Assessment Tool (CHAT), October 2019.

Years of Potential Life Lost Before 65

Source: Washington State Death Certificates, Yearly population estimates

We calculated years of potential years of life lost by subtracting the age at death from age 65 years. These years were summed by sex and overall and divided by the sex-specific total population for that year. We multiplied the result by 100,000 to calculate YPLL rate per 100,000 persons. The younger the person is at the time of death, the higher the YPLL rate.

Amenable Deaths

Source: Washington State Death Certificates

Amenable mortality denotes deaths from conditions for which recognized treatments exist, and where one would expect that death should be preventable through timely and effective health care. Amenable mortality has been computed in various ways by different researchers^{29,30,31}. In this section we examine trends of amenable mortality rates per 100,000 population age 0-74 in Washington from 2004 – 2018, following the methods of Nolte and McGee. Nolte and McGee identify International Classification of Diseases, Version 10 (ICD 10) codes for healthcare amenable conditions in nine broad categories: cancer, ischemic heart disease, respiratory conditions, circulatory conditions, infectious diseases, maternal mortality, routine surgery, medical mishaps, and other conditions. For ischemic heart disease, 50% of deaths are considered to be health care amenable, based on estimates that 40-50% of the decline in heart disease deaths in developed countries is attributable to improvements in health care. For all other conditions, 100% of deaths are considered health care amenable. Death rates per 100,000 population age 0-74 are age-standardized to the 2010 US census.

Health care amenable death underlying causes based on International Classification of Diseases, 10 th Edition (ICD-10) codes.		
Category	Age range	Underlying cause ICD-10 codes (first 3 characters)
Infectious	Age < 15	A00, A01, A02, A03, A04, A05, A06, A07, A08, A09, A37
	Age < 75	A15, A16, A17, A18, A19, B90, A35, A36, A80
	Age 1-14	B05
Cancer	Age < 75	C18, C19, C20, C21, C44, C50, C53, C62, C81
	Age < 45	C54, C55, C91, C92, C93, C94, C95

²⁹ Nolte, E and M. McGee, In Amenable Mortality—Deaths Avoidable Through Health Care—Progress In The US Lags That Of Three European Countries. Health Affairs 31, No. 9 (2012): 2114–2122

³⁰ Murray, C. J. L. Healthcare Access and Quality Index based on mortality from causes amenable to personal health care in 195 countries and territories, 1990–2015: a novel analysis from the Global Burden of Disease Study 2015 www.thelancet.com Vol 390 July 15, 2017

³¹ Vergara-Duarte, M., Borell, C., Perez, G., Martin-Sanchez, G.C., Cleries, R., Buxo, M., et. al., Sentinel Amenable Mortality: A New Way to Assess the Quality of Healthcare by Examining Causes of Premature Death for Which Highly Efficacious Medical Interventions Are Available. BioMed Research International. Volume 2018, Article ID 5456074.

Diabetes	Age < 50	E10, E11, E12, E13, E14
Ischemic Heart Disease*	Age < 75	I20, I21, I22, I23, I24, I25
Circulatory	Age < 75	I05, I06, I07, I08, I09, I10, I11, I12, I13, I15, I60, I61, I62, I63, I64, I65, I67, I68, I69
Respiratory	Age 1-14	JXX
	Age < 75	J10, J11, J12, J13, J14, J15, J16, J17, J18
Surgery	Age < 75	K25, K26, K27, K35, K36, K37, K38, K40, K41, K42, K43, K44, K45, K46, K80, K81, N00, N01, N02, N03, N04, N05, N06, N07, N17, N19, N25, N26, N27, N40
Medical mishap	Age < 75	Y60, Y61, Y62, Y63, Y64, Y65, Y67, Y68, Y83, Y84
Maternal	Age < 75	A33, OXX (exclude O99A), PXX, Q20, Q21, Q22, Q23, Q24, Q25, Q26, Q27, Q28
Other	Age < 75	E00, E01, E02, E03, E04, E05, E06, E07, G40, G41

*For ischemic heart disease, 50% of deaths are considered to be health care amenable.

Top Causes of Death

Source: Washington State Death Certificates

Smoking Attributable Deaths as a Percentage of Total Deaths

Source: Washington State Death Certificates

To estimate smoking-attributable deaths, we adapted methods used in the Smoking-Attributable Mortality, Morbidity, and Economic Costs (SAMMEC) calculator and updated methods and conditions included in the 2014 Surgeon General’s Report³². The Centers for Disease Control and Prevention created the SAMMEC system to estimate smoking attributable mortality, years of potential life lost, and productivity losses caused by smoking³³. Sex- and age-specific smoking attributable deaths were calculated for a variety of cancers, cardiovascular disease, respiratory diseases, perinatal conditions, and secondhand smoke.

Smoking-attributable Causes of Death
Malignant neoplasms
Acute myeloid leukemia
Cervix uteri
Colon and rectum
Esophagus

³² U.S. Department of Health and Human Services. The Health Consequences of Smoking: 50 Years of Progress. A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2014. Printed with corrections, January 2014.

³³ Centers for Disease Control Prevention (CDC). Office of Smoking and Health. Smoking-Attributable Mortality, Morbidity, and Economic Costs. <https://www.cdc.gov/oshdata/HealthConsequencesAndCosts.html>. 2017.

Kidney and renal pelvis
Larynx
Lip, oral cavity, pharynx
Liver
Lung cancer
Stomach
Pancreas
Trachea
Urinary bladder
Cardiovascular diseases
Atherosclerosis
Aortic aneurysm
Cerebrovascular disease
Coronary heart disease
Other heart disease including rheumatic heart disease, pulmonary heart disease, and others
Other arterial disease
Type 2 diabetes mellitus
Respiratory diseases
Bronchitis, emphysema
Chronic Obstructive Pulmonary Disease (COPD)
Influenza, pneumonia
Perinatal conditions
Prenatal conditions
Sudden infant death syndrome
Secondhand smoke
Coronary heart disease
Lung cancer

We calculated all smoking attributable deaths ages 35 and older except for sudden infant death syndrome and deaths due to prenatal conditions. Deaths due to second hand smoke exposure were calculated for ages 20 and older. The SAMMEC calculator uses different attributable fractions for males and females.

Alcohol-Attributable Mortality Rate

Source: Washington State Death Certificates

To estimate alcohol-attributable deaths due to excessive alcohol use for Washington, we used the Alcohol-Related Disease Impact (ARDI) online application. ARDI was developed for the Centers for Disease Control and Prevention (CDC) to calculate mortality and years of potential life lost.³⁴ The software was later updated to include additional diagnoses and moved to an online platform available free of charge: www.cdc.gov/alcohol.³⁵ ARDI uses alcohol-attributable fractions applied to deaths from 52 conditions (See table below). Several conditions are 100% alcohol-attributable, while other conditions have a direct estimate of alcohol attribution or an indirect estimate that uses the relative risk estimates from meta-analyses and the prevalence of alcohol use from the Behavior Risk Factor Surveillance System. Alcohol-attributable deaths from chronic conditions are estimated for people aged 20 years and older except for several

³⁴ Shultz, JM, Rice, DP, Parker, DL, Goodman, RA, Stroh, G, Chalmers, N. (1991). Quantifying the Disease Impact of Alcohol with ARDI Software. *Public Health Reports*, July-Aug 106(4); 443-450.

³⁵ Stahre, MA, Midanik, LT, Chaloupka, FJ, Saitz, R, Toomey, TL, Fellows, JL, Dufour, M, Landen, M, Brownstein, PJ, Brewer, RD, Naimi, TS, Miller, JW. (2004). Alcohol-Attributable Deaths and Years of Potential Life Lost – United States, 2001. *MMWR* Sept 24, 53(37); 866-870.

conditions related to maternal drinking during pregnancy that affect newborns. Deaths from acute conditions or injuries are calculated for individuals aged 15 years and older except for motor-vehicle traffic crashes and child maltreatment.

Alcohol-attributable Causes of Death Included in ARDI
Chronic Causes of Death
100% Alcohol-attributable Deaths
Alcoholic psychosis
Alcohol abuse
Alcohol dependence syndrome
Alcohol polyneuropathy
Degeneration of nervous system due to alcohol
Alcoholic myopathy
Alcohol cardiomyopathy
Alcoholic gastritis
Alcohol liver disease
Fetal alcohol syndrome
Fetus and newborn affected by maternal use of alcohol
Alcohol-induced chronic pancreatitis
<100% alcohol-attributable, alcohol-attribution determined by direct estimates
Acute pancreatitis
Chronic pancreatitis
Epilepsy
Esophageal varices
Gastroesophageal hemorrhage
Liver cirrhosis, unspecified
Portal hypertension
Spontaneous abortion
< 100% alcohol-attributable, alcohol-attribution determined by indirect estimates
Breast cancer, females
Cholelithiasis
Chronic hepatitis
Esophageal cancer
Hypertension
Ischemic heart disease
Laryngeal cancer
Liver cancer
Low birth weight, prematurity, intrauterine growth retardation or death
Oropharyngeal cancer
Prostate cancer
Psoriasis
Supraventricular cardiac dysrhythmia
Acute Causes of Death
100% Alcohol-attributable deaths
Alcohol poisoning
Suicide by and exposure by alcohol
Excessive blood level of alcohol
< 100% alcohol-attributable, alcohol-attribution determined by direct estimates
Air-space transport
Aspiration
Child maltreatment
Drowning injuries
Fall injuries
Fire injuries
Firearms

Homicide
Hypothermia
Motor-vehicle nontraffic crashes
Motor-vehicle traffic crashes
Occupational and machine injuries
Other road vehicle crashes
Poisoning (non alcohol)
Suicide
Water transport

Infant Mortality

Source: Washington State Department of Health; Centers for Disease Control and Prevention

Affordability and Cost

Out-of-Pocket Cost Sharing

Source: Washington State All-Payer Claims Database

We assessed out-of-pocket cost sharing was assessed using medical and pharmacy claims data in the Washington All-Payer Claims Database. To account for all out-of-pocket cost sharing (copay, coinsurance, and deductible), primary claims were matched to secondary claims for the same service. We totaled all out-of-pocket costs for the following claims:

- Primary claims: claim status code = 1 (processed as primary) or 19 (processed as primary and forwarded to secondary)
- Secondary claims if associated with a primary claim.
 - Claim status code = 2 (secondary claim) AND non-commercial payer AND
 - For medical claims match to a primary claim with
 - Same service date
 - Same rendering provider
 - Same principal procedure code
 - Positive paid amount
 - For pharmacy claims match to a primary claim with
 - Same prescription filled date
 - Same prescriber
 - Same pharmacy
 - Same National Drug Code
 - Positive paid amount
- Out-of-state claims were excluded.

Average Total Premium per Enrolled Employee

Source: Medical Expenditure Panel Survey

<https://www.meps.ahrq.gov/mepsweb/>

Ambulatory Care Sensitive Conditions Hospitalizations and Costs

Source: Washington Comprehensive Hospital Abstract Reporting System (CHARS)

CHARS data includes total charges for each hospitalization. For this analysis, total charges were adjusted using cost to charge ratios from AHRQ and indexing for inflation. Charges were

analyzed through 2017, the most recent year for which cost to charge ratios are available from AHRQ.

Uncompensated Care as a Percentage of Total Cost

Source: Department of Health produces annual publicly available reports

<https://www.doh.wa.gov/DataandStatisticalReports/HealthcareinWashington/HospitalandPatientData/HospitalPatientInformationandCharityCare/CharityCareinWashingtonHospitals>

Hospitals submit financial data regarding charity care to the Washington State Department of Health. Hospitals report total billed charges, and the amount written off as charity care, as well as bad debt – failure to pay by patients not classified as charity care. The Department of Health produces annual publicly available reports to the Legislature summarizing charity care in Washington.³⁶ In this section, we present charity care charges for acute care hospitals as reported by DOH. Because billed charges are typically higher than the amount hospitals actually receive from insurance, we also present estimated cost based on hospital cost-to-charge ratios produced by the Healthcare Cost and Utilization Project.³⁷

³⁶ Department of Health, “2017 Charity Care in Washington Hospitals” Pub #346-084

<https://www.doh.wa.gov/DataandStatisticalReports/HealthcareinWashington/HospitalandPatientData/HospitalPatientInformationandCharityCare/CharityCareinWashingtonHospitals>

³⁷ Healthcare Cost and Utilization Project (HCUP) Cost-to-Charge Ratio <https://www.hcup-us.ahrq.gov/db/state/costtocharge.jsp>