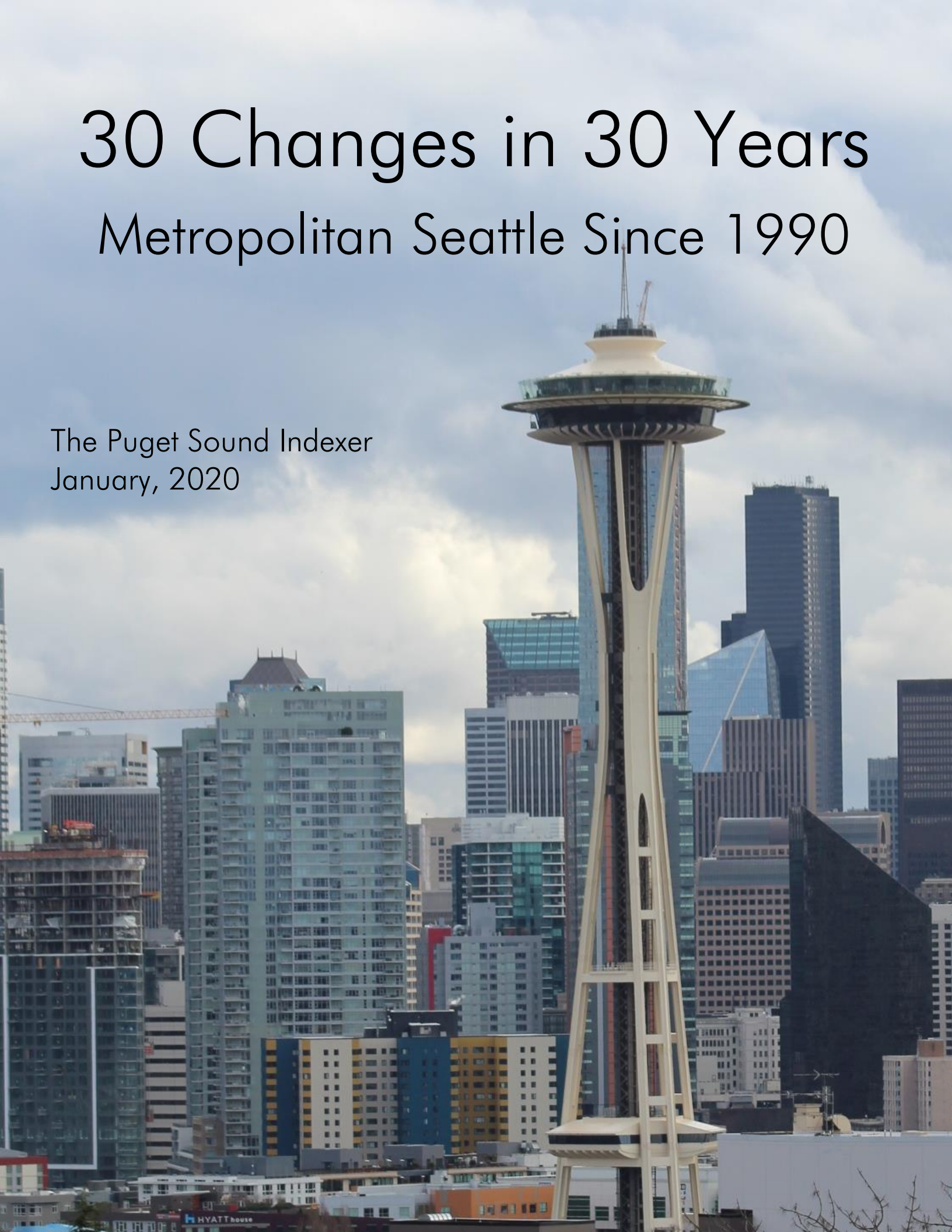
30 Changes in 30 Years

Metropolitan Seattle Since 1990



The Puget Sound Indexer
January, 2020

30 Changes in 30 Years

Metropolitan Seattle Since 1990

The Puget Sound Indexer

www.psindexer.com

January, 2020

For information about the Puget Sound Indexer,
contact us at info@psindexer.com

30 Changes in 30 Years

Introduction 2

Demographic

1. Regional Population Growth 5
2. Population Growth Within King County 6
3. National Metro Area Comparison 8
4. Natural Growth and Migration 10
5. Shifting Ethnic Diversity 12
6. Foreign-born Population 15
7. An Aging Population 17
8. Households in King County 18
9. Housing Types 20

Social

10. Education Attainment 21
11. Homicide Rates 24
12. Drug and Alcohol Deaths 25
13. Accident and Self-Harm Deaths 26
14. Transfer Payments 27
15. Unionization 29
16. Poverty 30
17. Housing Cost Burden 32

Economic

18. Regional Employment Growth 33
19. Employment Growth Within King County 34
20. Wage Growth 36
21. Per Capita Personal Income 37
22. Components of Personal Income 38
23. Per Capita Personal Income by Metro Area 39
24. Income Inequality 41
25. Industry Concentration 43
26. Cost of Living 45

Environmental

27. Air Quality 47
28. Commuting 48
29. Residential Density 50
30. Jobs-Housing Ratio 51

About the Puget Sound Indexer 52

Notes on Data Sources 54

Metropolitan Seattle Since 1990

Since its founding in 1851, the Seattle area has been among the fastest growing and most dramatically changing metropolitan areas in the U.S. It has been a timber town, a port and shipbuilding town, a center of aircraft manufacturing and a technology hub. As each new layer is added to the region, the old layers remain, giving Seattle a rich and diverse economy with a foot in the past and in the future.

Each new era of Seattle's evolution has been marked by an inflection point that sends the region in a new direction. One of those inflection points centered on 1990. These data explorations illustrate how the Seattle metropolitan area has changed since then, and what can happen, for good and bad, in 30 dynamic years[*].

Seattle in 1990

Few knew it at the time, of course, but in 1990 the Seattle region was on the cusp of some major demographic changes, driven by some even larger economic shifts.

The 1980s were a turbulent period for the region. The decade began with a double-dip recession that was the deepest since the Great Depression. Efforts to fight inflation hit the housing industry hard. Not only did this stall what had been a vigorous construction industry in the Seattle area, but it also crippled the region's still-important wood products industry. In the early 1980s, unemployment peaked at over 10 percent nationally, and over 12 percent in the Seattle area.

Things gradually improved during the 1980s. Boeing had debuted two new aircraft—the 757 and 767—in 1981 and was increasingly busy filling orders. It began a major redesign of the 747 in 1985 and launched the 777 in 1990.

In 1990, Seattle was still very much a Boeing town. Regional employment at the company itself was well over 100,000 in 1990. With an employment multiplier of 3.9, over 400,000 people—one quarter of the three-county workforce—owed their jobs to Boeing. No other private employer came even close to that impact.

This time period also saw a much reduced role for natural resource industries in the Seattle area. Environmental and resource conservation efforts led to downsizing in wood products and fisheries industries, and productivity improvements further reduced employment. Diminishing natural resource activity in the Northwest rippled through the commercial centers of Seattle.

[**] Well, not quite 30 years in most cases. The base year for most data is 1990, and the most recent year will vary. Public data always has some time lags, so the newest available figures may be several years old. Some data series started after 1990.

About 2.5 million people lived in the three-county metro area in 1990. King County had about 1.5 million people, split evenly between Seattle, suburban cities and unincorporated areas. Residential growth during the 1970s and 1980s had been entirely suburban. Between 1970 and 1990, Seattle's population dropped by 3 percent while the balance of King County grew by nearly 60 percent. In 1970, Seattle contained 46 percent of the county population, and this had fallen to 34 percent by 1990.

Outside of Seattle, Post-War homebuilding and population growth had mostly taken place in unincorporated areas. In 1980, about 22 percent of the county's population lived in 28 suburban cities, while 40 percent lived in unincorporated areas. Annexations and incorporations began to change that ratio in the 1980s, and by 1990, 32 percent of the county population lived in suburban cities, with 34 percent in unincorporated areas. The Washington State Growth Management Act was finalized in 1990, and this would drive large scale incorporations and annexations, significantly increasing the suburban city share of the population.

In 1990, about one percent of the U.S. population lived in the Seattle metro area, and this rose to 1.2 percent in 2019. Seattle was the 15th largest metro area in the country in 1990, and it retains that position in 2019.

How Seattle has Changed. . .or Not.

The 30 data points in this series show ways that the region has grown and changed, and how it compares with other metro areas in the country. In some cases, there is extensive change, and in other cases, not much change at all. Overall, the region is:

Much larger. Total population has grown by over 50 percent since 1990.

Much more affluent. After adjusting for inflation, the total amount of personal income circulating in the Puget Sound area is 2.5 times larger in 2019 than in 1990.

More diverse. The population identifying as something other than white has doubled from 13 percent to 27 percent, and several cities are majority-minority.

Less unequal than you might think. Inequality in the Seattle area remains lower than the national average, and has increased only modestly since 1990.

More breathable. Air quality has steadily improved since 1990, with few unhealthy days most years.

More dense. The state Growth Management Act has succeeded in its goal of increasing residential densities throughout the urbanized parts of the region.

Still living in detached houses and driving cars. Higher densities have not changed the region's tastes for living in single family homes and driving to work.

Some things to think about

Geographies. Urbanized areas are complex and fluid, with people, employers and institutions spread among many jurisdictions. The data presentations in these pages will use different geographies, depending on the information. The Census Bureau defines the Seattle-Tacoma-Bellevue Metropolitan area as King, Pierce and Snohomish counties. Data will often be presented for the three counties. A few data sets combine just King and Snohomish Counties. Other data will be presented for King County alone and may include a subset of the 39 cities contained in it. Indexer also uses school district boundaries and the 16 Public Use Microdata Areas (PUMAs), defined by the Census Bureau, which provide convenient subareas of King County.

Dates and ranges. We try to use the most recent data available, and note the years of the data. When the Census Bureau's American Community Survey (ACS) is used, the dates may be a single year, usually 2018. When the sample size is small, we use the ACS 5-year averages, and these are indicated by a range, usually 2014-2018.

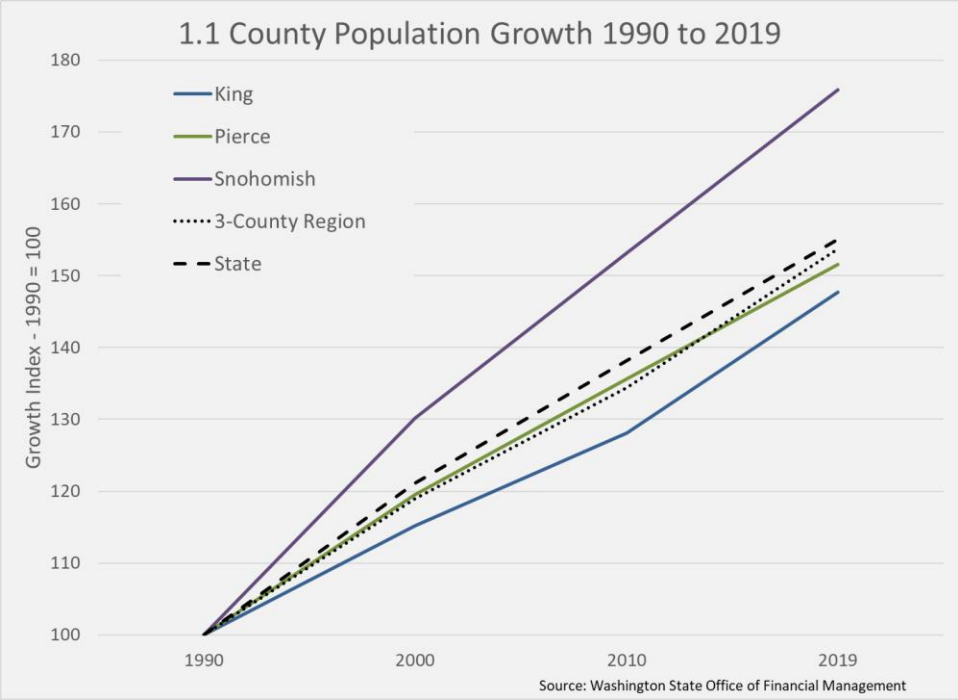
Data limitations. The Indexer uses both survey and administrative data, and no data source captures perfectly that which it is trying to measure. Some data is quite accurate, such as the number of births, which are recorded meticulously. Other data is much less accurate. Generally, the smaller the geographic unit, the greater the challenge of accuracy. Please refer to the descriptions of data sources and limitations which are in the back of this publication.

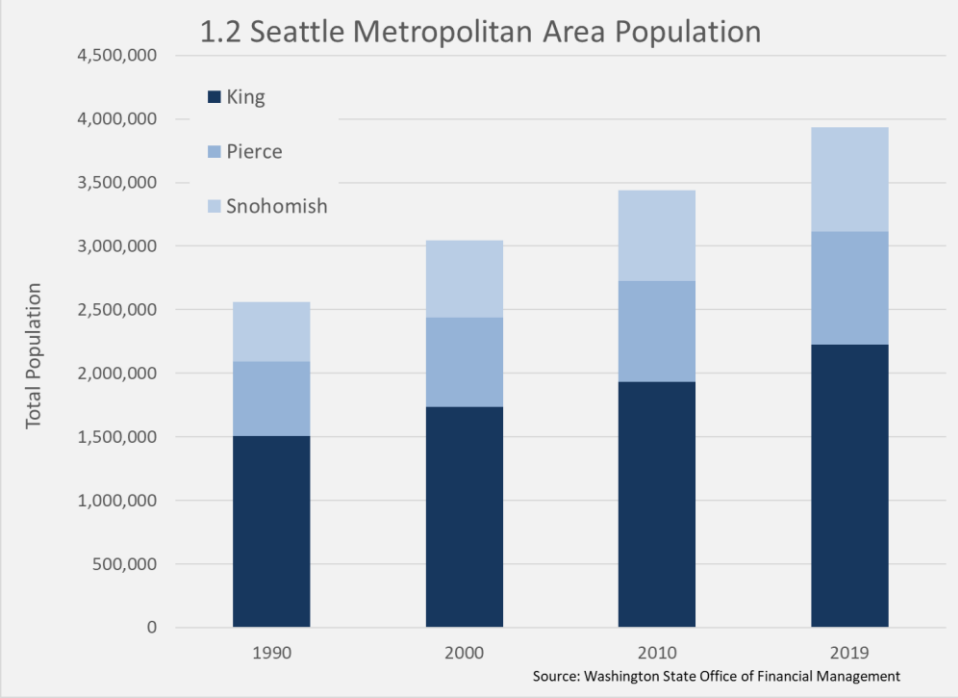
To see more data on the Seattle region, visit www.psindexer.com.

For more information, contact us at info@psindexer.com

30 Years of Change--Demographic

No. 1: Regional Population Growth





The three-county Seattle metropolitan area has grown from just over 2.5 million people in 1990 to nearly 4 million in 2019, with a growth rate exceeding 50 percent over that period. This equates to an average annual growth rate of 1.7 percent.

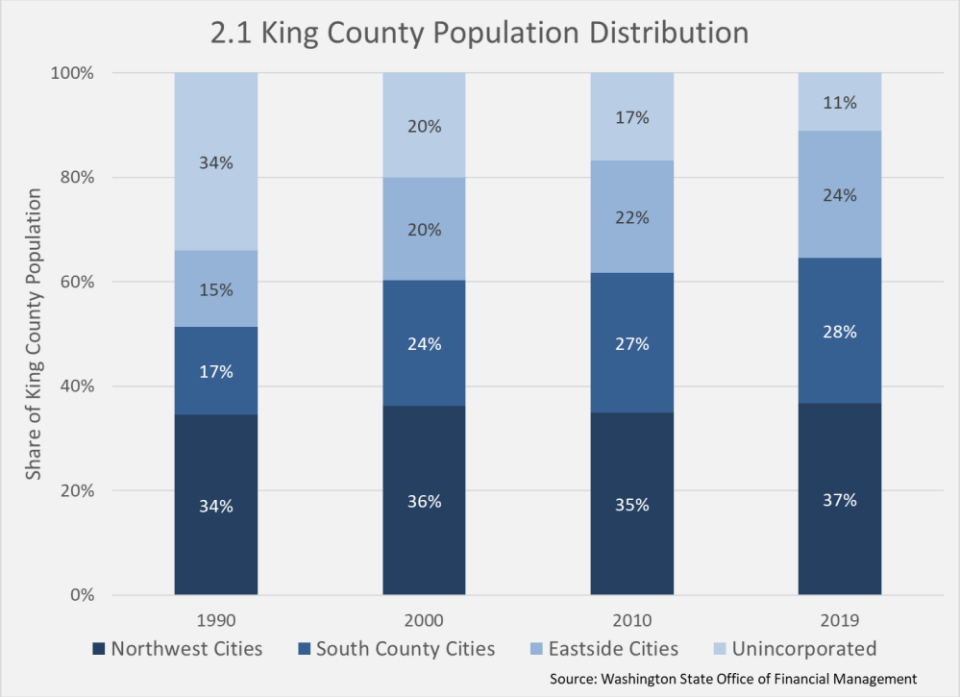
As seen in figure 1.1, the region has grown slightly more slowly than the state as a whole. Areas such as Clark, Thurston and Whatcom Counties, and the Tri-Cities have grown at a faster rate over this time period.

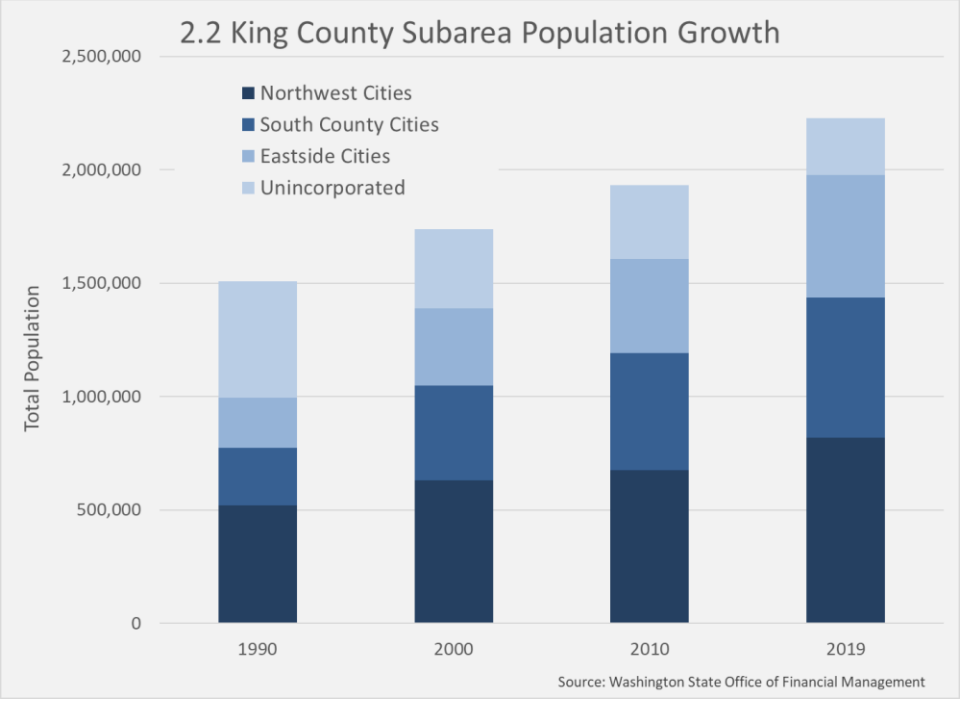
Within the three-county region, King County grew the slowest, with just under 50 percent population growth. The index in figure 1.1 shows that for every 100 people in King County in 1990, there were 147 people in 2019. Pierce County grew at about the state level, and Snohomish County grew over 75 percent in 29 years.

In 1990, King County made up about 59 percent of the regional population, and by 2019 that had fallen to 56 percent.

30 Years of Change--Demographic

No. 2: Population Growth Within King County





Population growth has been steady across the urbanized areas of King County. The distribution of population within subareas and cities has shifted. The most dramatic shift has involved the shrinking of population living in unincorporated King County, and the expansion of suburban cities.

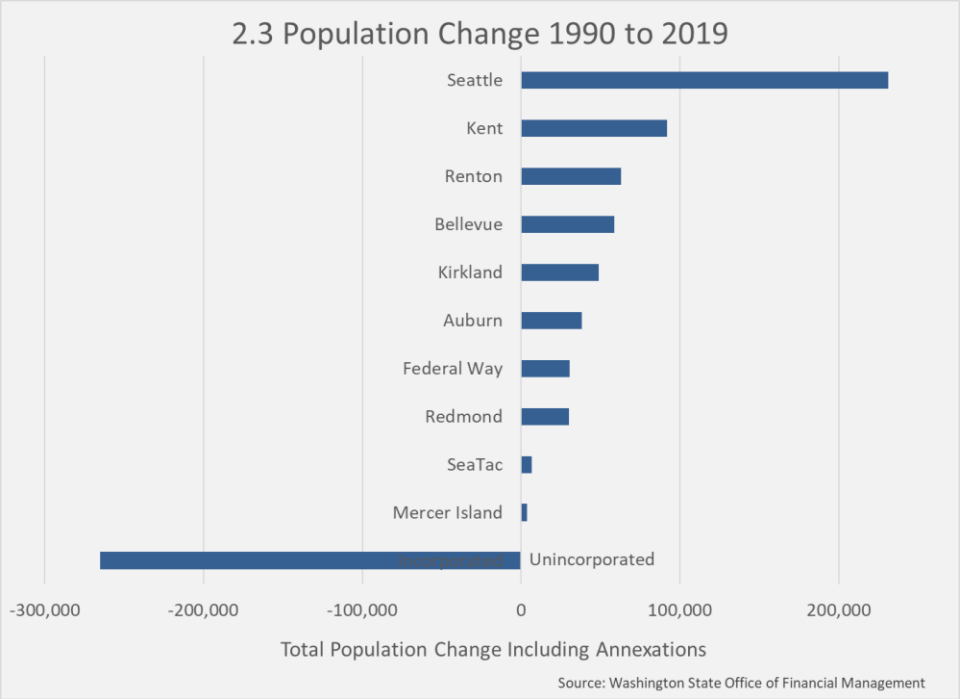
Figure 2.1 shows that in 1990, 34 percent of the county's population lived outside of cities. By 2019, only 11 percent of the population lived in unincorporated areas. This is due to two factors, both tied to the Washington State Growth Management Act (GMA), which has, as a goal, to maximize the amout of urbanized area served by municipal government.

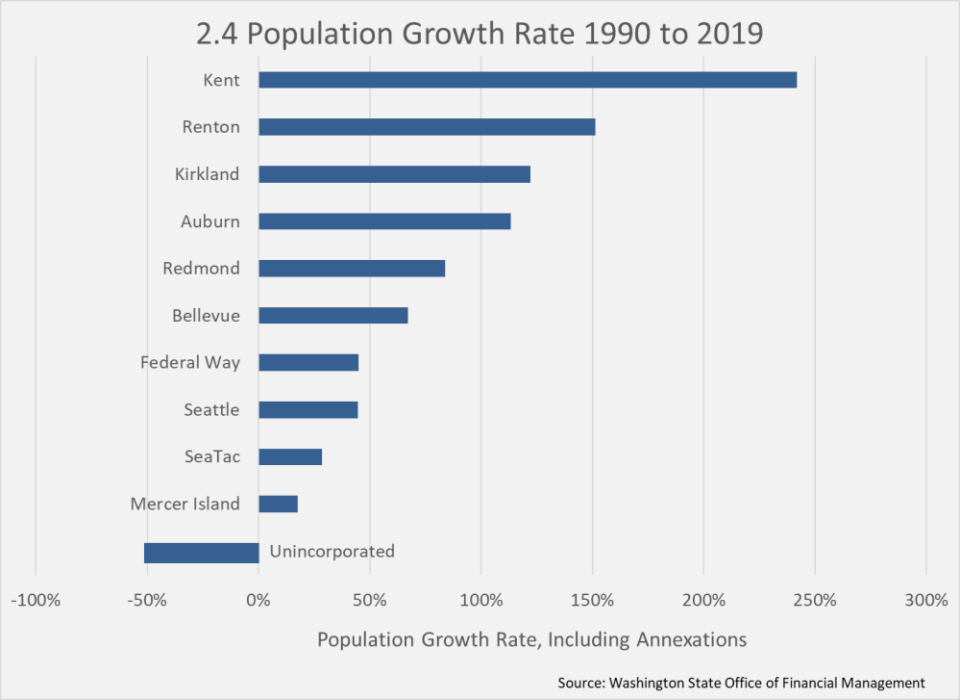
The first factor is the rapid pace of incorporation and annexation that took place after passage of the GMA. Ten new cities were created in King County in the 1990s, and over the past 30 years a great deal of unincorporated area has been annexed to existing cities.

The second factor is the institution of the Urban Growth Boundary under the GMA, which dramatically reduced the amount of unincorporated area land available for homebuilding. This led to an increase in homebuilding activity—and therefore population growth—in infill sites within existing cities.

Figure 2.2 shows the degree to which unincorporated areas lost a major share of their population, and the subareas of South and East King County grew dramatically. It also shows bump in growth in Seattle between 2010 and 2019.

Figure 2.3 shows population growth of the cities that were the largest in King County in 1990. Seattle's growth is due entirely to expanded housing, as it has not





annexed any land in the past 30 years. All of the major cities shown, except Mercer Island and SeaTac, have undertaken annexations over the past 30 years, and have also experienced infill growth in their existing areas.

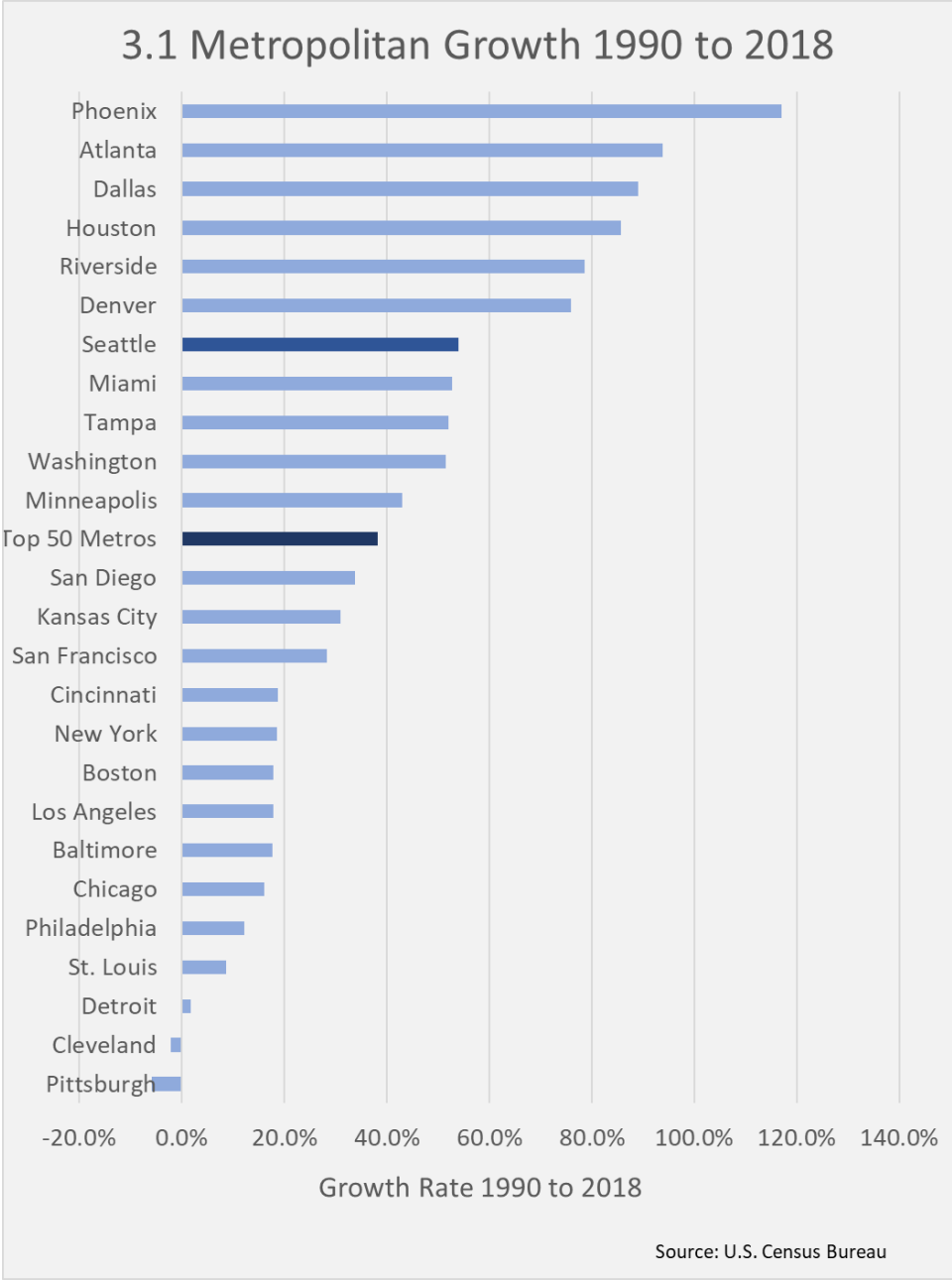
Figure 2.3 shows that in 2019 the unincorporated part of King County had 265,000 fewer people than it had in 1990. The areas that remain unincorporated have had some housing growth, so the actual shift of population to cities through annexations and incorporations has been larger than 265,000.

Figure 2.4 shows the growth rate of these larger cities from 1990 to 2019. In 1990, the city of Kent was centered mostly in the Green River Valley. Over 30 years Kent has annexed large areas of both the East Hill and West Hill. It has also experienced major housing growth in all of its areas. Renton was similarly centered on the older industrial areas, and has absorbed large areas to the east. Kirkland added a very large area to the north of the city in 2011 and Auburn has annexed areas to the East.

All of these areas have seen infill housing growth, as high housing demand has encouraged builders to use land they might have ignored in the absence of the urban growth boundary. A shrinking supply of buildable land within the urban growth area of King County has resulted in slowing construction of single family homes. At the same time, construction of multi-family housing has been robust, resulting in a skewing of population growth to Seattle in the most recent time period.

30 Years of Change--Demographic

No. 3: National Metro Area Comparison



The three-county Seattle-metro area has grown faster than the U.S. and faster than the average of the largest 50 Metro areas in the country. Figure 3.1 show the growth rate of what, in 1990, were the largest 25 metro areas.

The story of metropolitan growth in the U.S. in the past 30 years has three important subplots.

First is the shift of population to metro areas that are economically successful, warm and relatively inexpensive. That is, the Sunbelt. The metro areas at the top of the list in figure 3.1 illustrate this.

Second, is the stagnation and/or shrinking of metro areas in the Northeast that have seen industries struggle, have less desirable weather and a perception of fewer opportunities.

Third, and less well known until recently, is the stagnation of the large California metro areas as they become very expensive and labor under difficult conditions for homebuilders. Los Angeles, San Francisco and San Diego all show below average growth. Riverside, which has grown rapidly, is in the inland, more affordable part of Southern California.

Metropolitan Seattle does not fit into any of these narratives. Along with Denver, Seattle has defied the trend toward moving to places with warm winter weather. Seattle's' industrial economy did not suffer permanent deterioration during the 1970s and 1980s, and even when it did experience downturns, it did not see a large population exodus ("Last person please turn out the lights" is largely a myth). And despite its growing affordability problems, Seattle has not seen the stagnation of the California cities. In fact, it probably benefits from that stagnation.

3.2 Largest Metro Areas* by Decade

	1990	2000	2010	2018
1	New York	New York	New York	New York
2	Los Angeles	Los Angeles	Los Angeles	Los Angeles
3	Chicago	Chicago	Chicago	Chicago
4	Philadelphia	Philadelphia	Dallas	Dallas
5	Detroit	Dallas	Philadelphia	Houston
6	Boston	Miami	Houston	Washington
7	Washington	Washington	Washington	Miami
8	Miami	Houston	Miami	Philadelphia
9	Dallas	Detroit	Atlanta	Atlanta
10	Houston	Boston	Boston	Boston
11	San Francisco	Atlanta	San Francisco	Phoenix
12	Atlanta	San Francisco	Detroit	San Francisco
13	Riverside	Riverside	Riverside	Riverside
14	St. Louis	Phoenix	Phoenix	Detroit
15	Seattle	Seattle	Seattle	Seattle
16	Minneapolis	Minneapolis	Minneapolis	Minneapolis
17	San Diego	San Diego	San Diego	San Diego
18	Pittsburgh	St. Louis	St. Louis	Tampa
19	Baltimore	Baltimore	Tampa	Denver
20	Phoenix	Pittsburgh	Baltimore	St. Louis
21	Cleveland	Tampa	Denver	Baltimore
22	Tampa	Denver	Pittsburgh	Orlando
23	Cincinnati	Cleveland	Portland	Charlotte
24	Denver	Cincinnati	Charlotte	San Antonio
25	Kansas City	Portland	Sacramento	Portland

*Shown are Metropolitan Statistical Areas, as defined by the U.S. Census Bureau. Each metro area is listed by its "Principal City." Most metro areas have full names including other cities. Seattle is defined as "Seattle-Tacoma-Bellevue" and includes all of King, Pierce and Snohomish Counties.

Source: U.S. Census Bureau

Even with its impressive growth, the Seattle region has retained its exact position in the size rankings of U.S. metro areas. Figure 3.2 shows the top 25 metro areas by population after each census and in 2018.

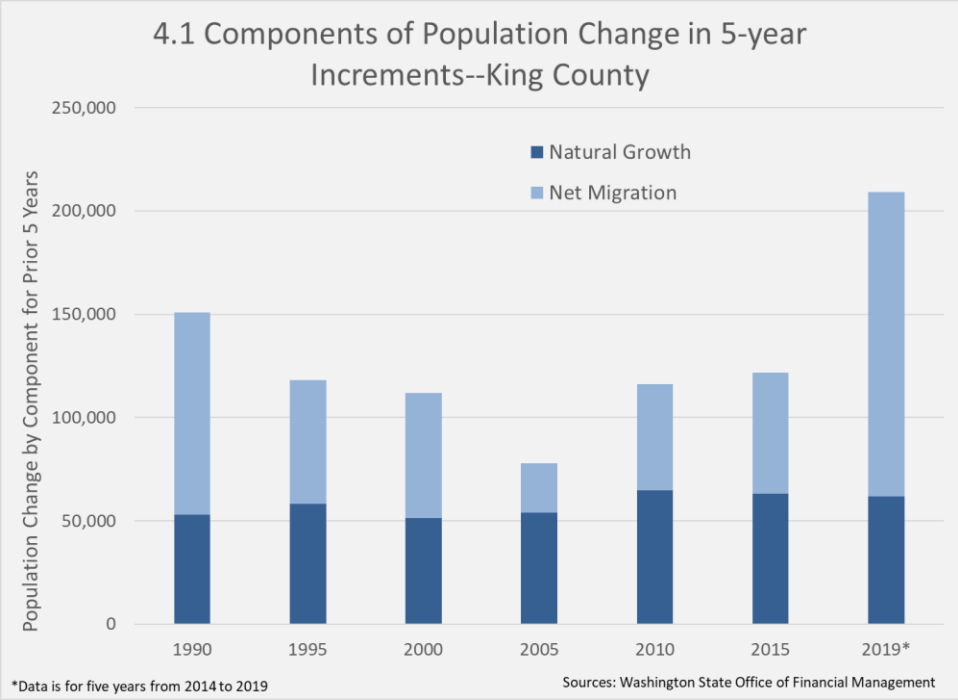
In each decade, the Seattle metro area ranks as the fifteenth largest metro area in the country. Riverside, Minneapolis and San Diego similarly retain their rankings.

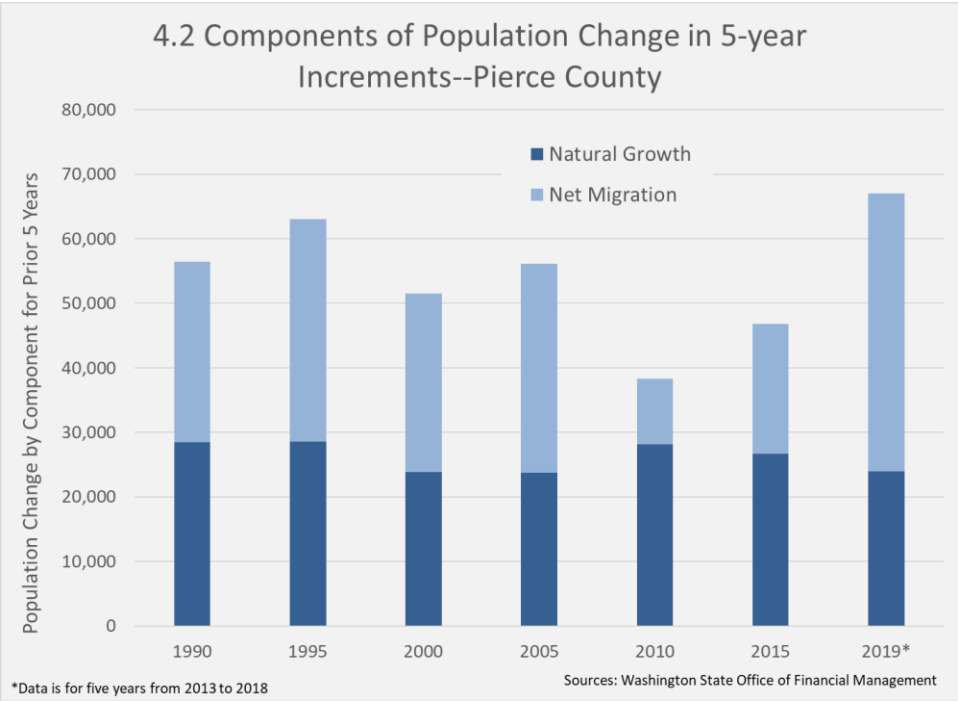
Other metro areas rise and fall. Dallas and Houston move up from 9 and 10 to 4 and 5, respectively. Phoenix moves from 20 to 11. Philadelphia drops from 4 to 8, Detroit drops from 5 to 14 and St. Louis drops from 14 to 20. Cleveland and Cincinnati fall off the table and Orlando and Charlotte make an appearance.

All of these movements are consistent with the three narratives: Sunbelt cities rise, rustbelt cities fall and California cities stay the same.

30 Years of Change--Demographic

No. 4: Natural Growth and Migration





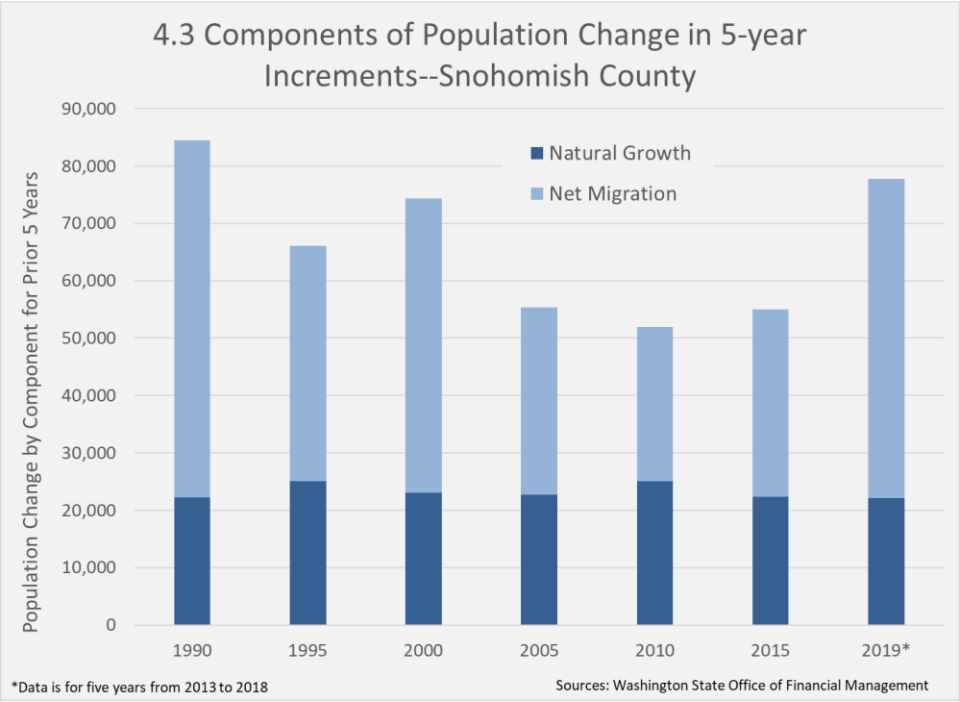
Population growth has two components: natural growth and net migration.

Natural growth is measured as births minus deaths. Births are attributed to the home addrss of the mother and deaths are attributed to the last permanent resident of the individual. Data on the number of births and deaths is quite accurate, since nearly all births and deaths are accounted for by county and state health authorities. There will be some uncertainty about location for both.

Net migration is measured as in-migrants minus out-migrants. Since there are no specific requirements to inform any public agency about a move, migration is difficult to measure. The Washington State Office of Financial Management (OFM) which tracks population for the state, uses a "residual" method that estimates total growth and then assumes that any growth not accounted for by births and deaths must be net migration (with no attempt to measure total in-migration and out-migration.) The U.S. Census Bureau measures domestic and foreign migration using a combination of IRS tax records and American Community Survey Data. Census updates its data as more information becomes available, which OFM does not do.

Figures 4.1, 4.2 and 4.3 use OFM data for both natural growth and net migration.

All three counties show a relatively steady natural population growth rate across these time periods. Net migration, however, varies significantly across the past 30 years. Net migration was particularly slow during the period from 2005 to 2015, with the impact of the Dot-Com bubble in the early 2000s and the Great Recession in



the 2010s. Net in-migration has picked up dramatically since about 2012, especially foreign in-migration

The nature of this migration is quite different among the three counties.

IRS tax return data, as well as Census data, show that King County has a net negative migration rate with respect to the balance of the state (more Washingtonians move out of King County than move in) in much of the 30 year period. At the same time, King County has very strong net in-migration from the other 49 states and from other countries.

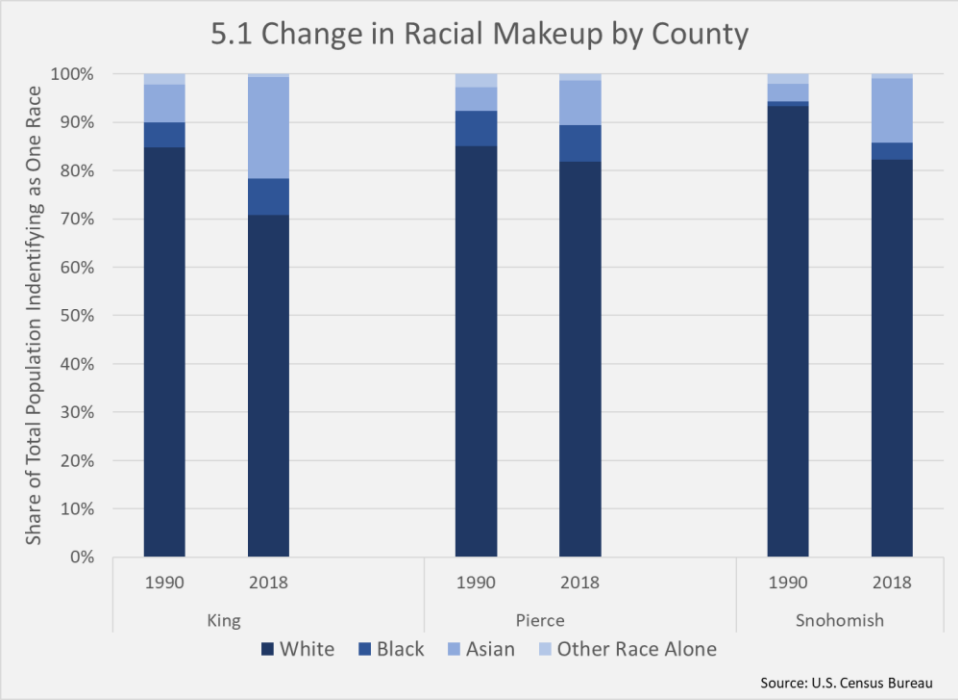
Pierce and Snohomish Counties are on the receiving end of much of the out-migration from King County. IRS data show that household sizes migrating out of King County are larger than those migrating in, confirming the strong anecdotal sense that families in search of affordable single family homes are finding those neighborhoods in the adjacent counties.

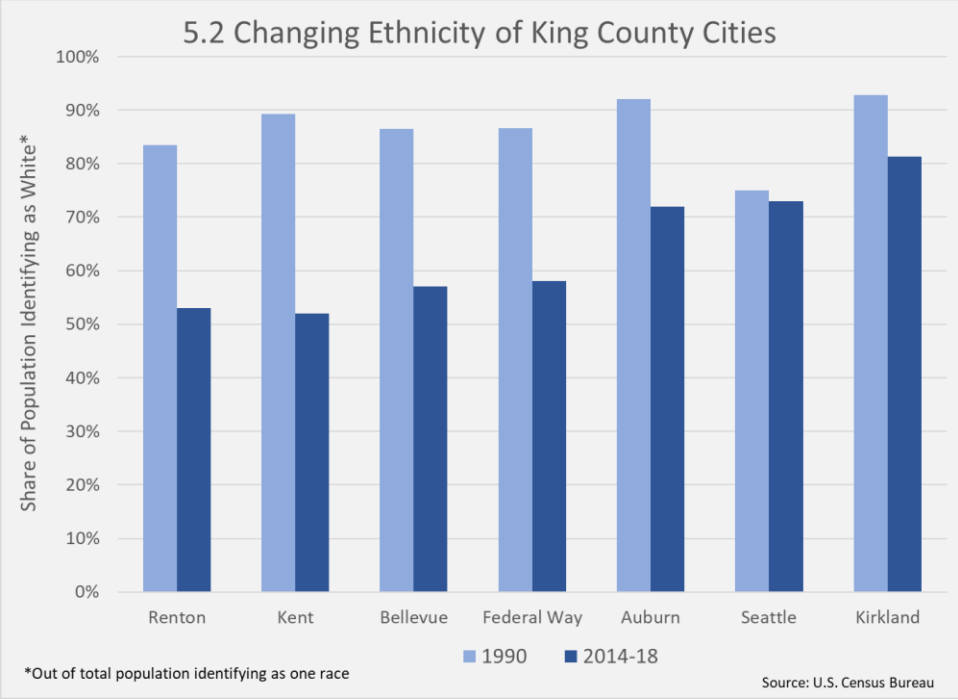
Pierce County migration data is confounded by the presence of a large military installation, Joint Base Lewis-McChord. Military personnel and their families can move frequently, as they enter and leave the service and are assigned to new bases. They may live in on-base housing or off-base. The limited data sources on net-migration do not capture military personnel movements well.

Also of note is that a focus on “net” migration masks much larger total movements of individuals and families. Even when net migration is low, large total migration continues, and these movements can alter the demographics of communities. During periods of slow total growth there may be large changes happening beneath the surface.

30 Years of Change--Demographic

No. 5: Shifting Ethnic Diversity





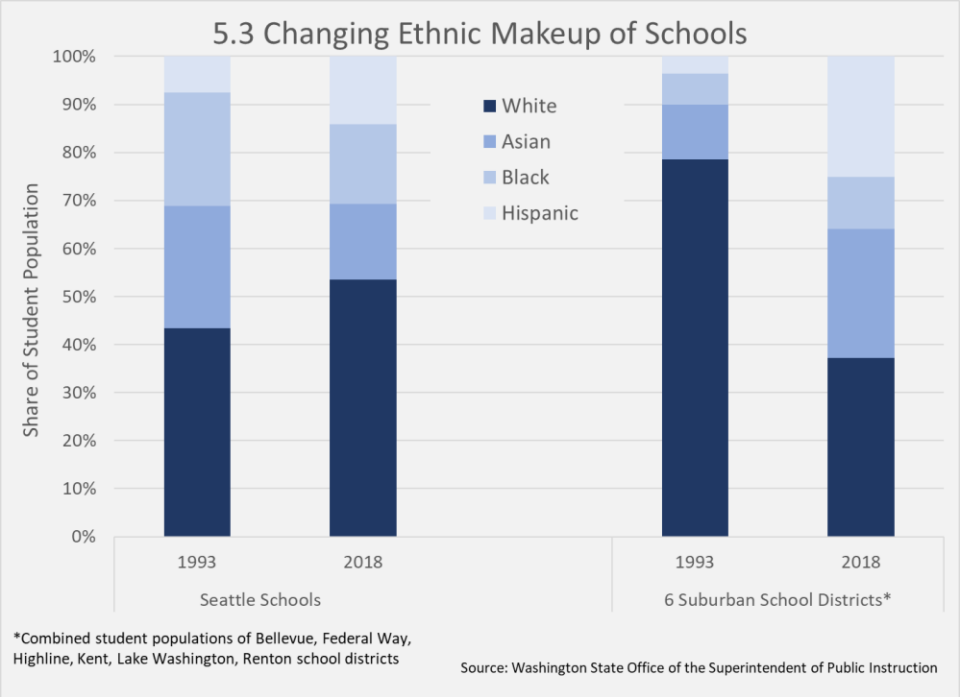
As with the rest of the U.S., the population of the Seattle Metro Area that identifies as "white" has been shrinking. Figure 5.1 shows the basic ethnic makeup of the three counties in 1990 and 2018. (The Census Bureau considers Hispanic to be an ethnicity, and not a race) All three counties have seen a reduction in those identifying as white.

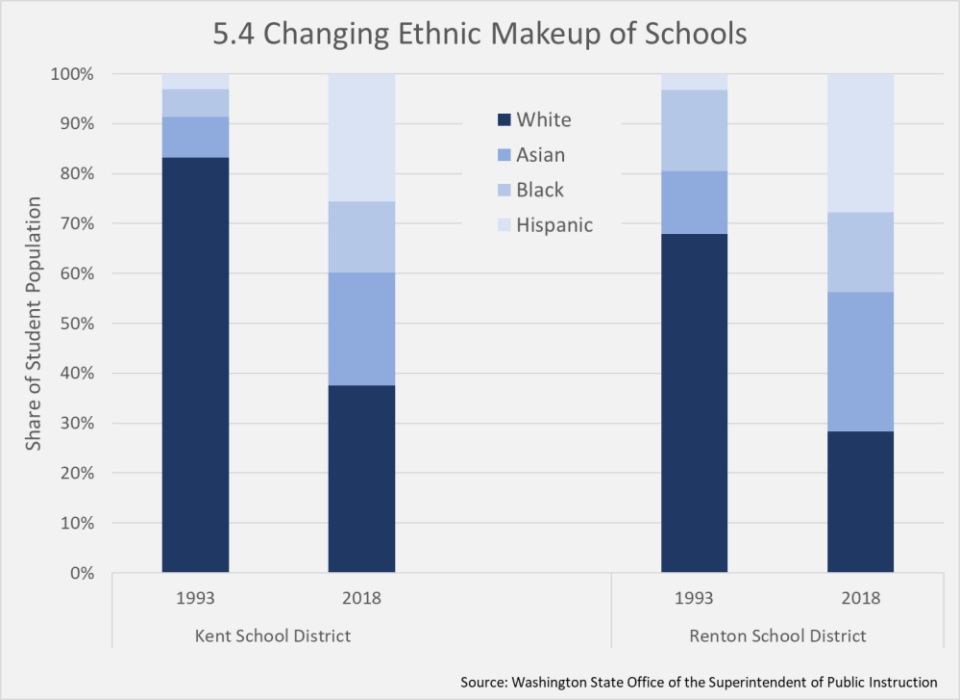
At the same time, the Black population of the region has increased slightly from 4.8 to 6.4 percent. The portion of the population identifying as Asian has more than doubled to 16 percent across the three counties and nearly 20 percent in King County.

In King County the shift in ethnicity has taken place almost entirely outside of Seattle. From 1990 to the 2014-2018 period, when the countywide population identifying as white dropped by 17 percent, the white population of Seattle dropped less than 2 percent. Figure 5.2 shows the drop in white population for the larger cities in King County. Less than 60 percent of the populations of Renton, Kent, Bellevue and Federal Way now identify as white.

This shift is remarkable, considering that in 1990, Seattle had by far the largest non-white share of its population, and is now far whiter than most of the large suburbs.

The ethnic shift in King County has come about largely as a result of in-migration, particularly from Asia. As will be seen in figures 5.3 through 5.6, Asian families have been settling overwhelmingly within suburban school districts.





Figures 5.3 to 5.6 use school district race and ethnicity data to further illustrate the trend towards greater diversity in the suburban areas. (Unlike the Census Bureau, school districts use Hispanic as a race category) Changes in the characteristics of young families show the leading edge of trends in the community at large. Schools began collecting this data in 1993.

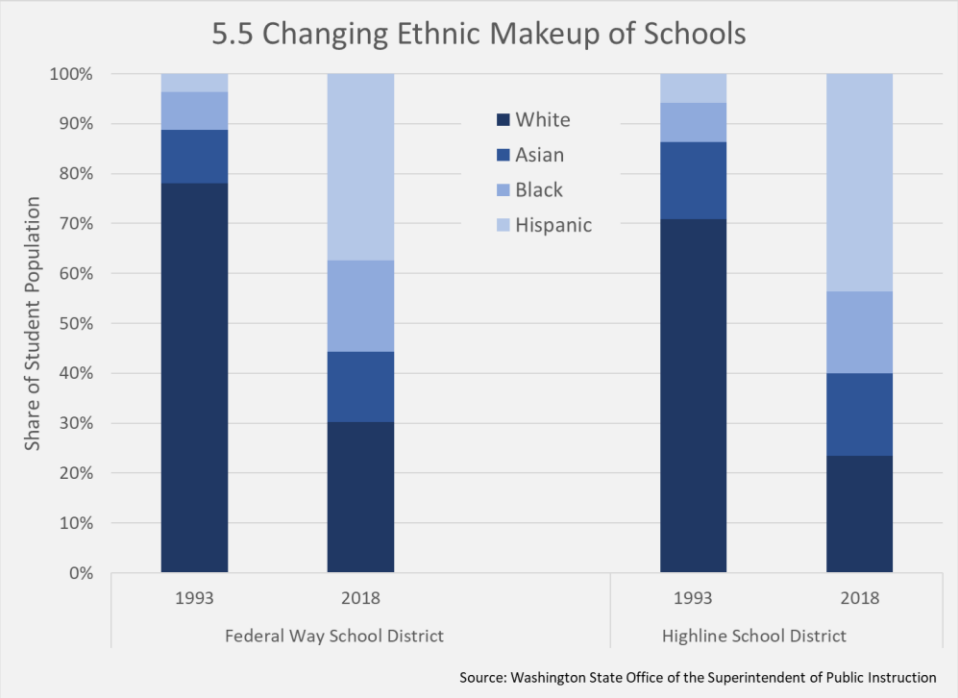
Figure 5.3 compares the change in ethnicity of student bodies between Seattle Public Schools and the combined student bodies of six large suburban districts (Seattle had about 49,000 students in 2018 and the total of the six suburban districts was about 126,000).

In 1993, 43 percent of Seattle students identified as white, while 78 percent of suburban students did. By 2018, Seattle schools had increased their share of white students to 54 percent while the suburban districts had seen the share of white students fall to 37 percent, or less than half of the 1990 share.

This very dramatic change is illustrated in figures 5.4, 5.5 and 5.6.

Figure 5.4 shows the ethnicity shifts in the Kent and Renton school districts, where, as seen in figure 5.2, there has been a major shift toward more diversity over the past 30 years. Of note are the large increases in the black student population in the Kent district and the very large increase in the Hispanic population in both districts. Census data on ethnicity (which identifies those of Hispanic origin) shows that the Hispanic population increased from 2.7 percent to 13.7 percent in Renton and from 3.3 percent to 15.9 percent in Kent.

And as will be seen in all the suburban districts, the share of students identifying as Asian increased substantially in both districts.



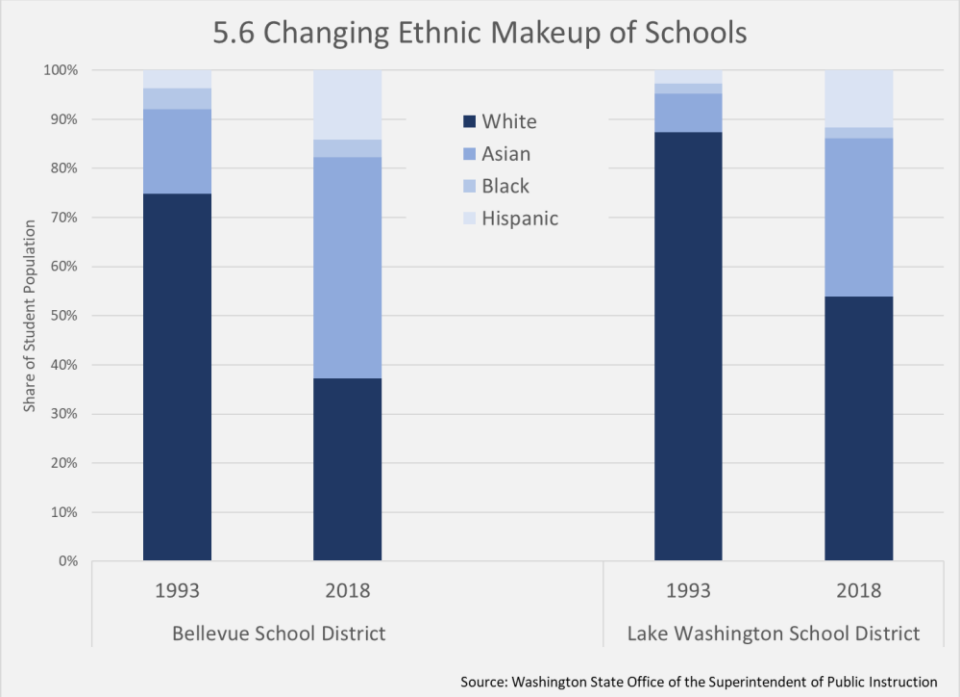


Figure 5.5 shows changes in the racial makeup of the school districts west of Interstate 5. In the Highline district, which covers Burien, SeaTac, Des Moines and White Center, fewer than 25 percent of students identified as white in 2018.

Both districts show a large increase in the share of Hispanic students, which grew from 4 to 37 percent in Federal Way and from 6 to 44 percent in Highline. The Black student population has doubled in both districts, but the Asian student population has increased less than in other large suburban districts.

Figure 5.6 shows changes in two districts in East King County that cover Bellevue, Kirkland, Redmond, half of Sammamish and several smaller cities. The major trend in these districts is the growth in the Asian student population. This share has grown from 17 to 45 percent in the Bellevue district and from 8 to 32 percent in Lake Washington.

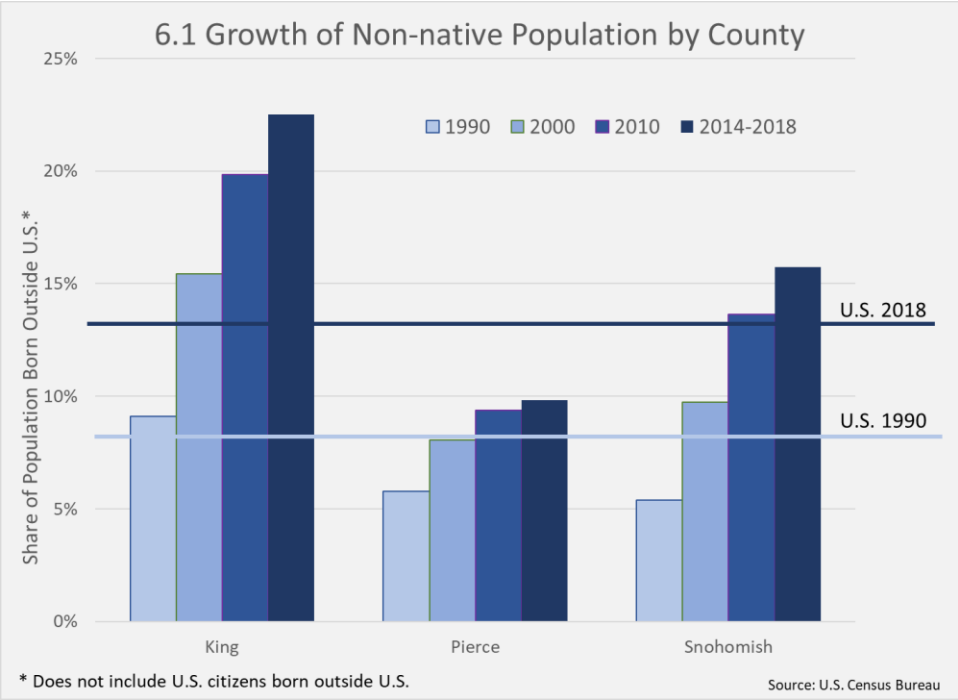
The growth in Asian student populations on the Eastside has been rapid. In the 2018-2019 school year, 35 percent of Bellevue seniors identified as Asian while 43 percent of first graders did. In the Lake Washington district that year, 17 percent of seniors identified as Asian while 33 percent of first graders did.

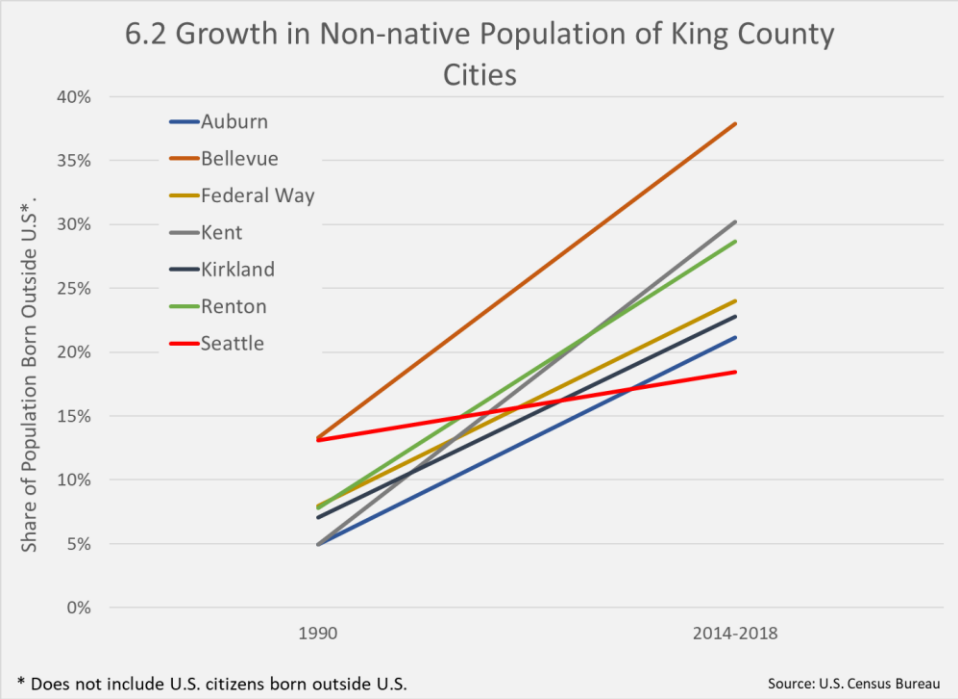
Both districts also saw a notable increase in the share of Hispanic students, with that share more than tripling in both districts. 32 percent of Bellevue first graders and 45 percent of Lake Washington first graders now identify as white.

The picture that emerges from this data is a clear trend away from the stereotype of ethnically diverse central cities and predominantly white suburbs. This is, to some extent, the result of higher birth rates among Hispanic residents, but mostly a result of immigration and the trends identified in No. 4, which shows high levels of international migration to King County.

30 Years of Change--Demographic

No. 6: Foreign-born Population



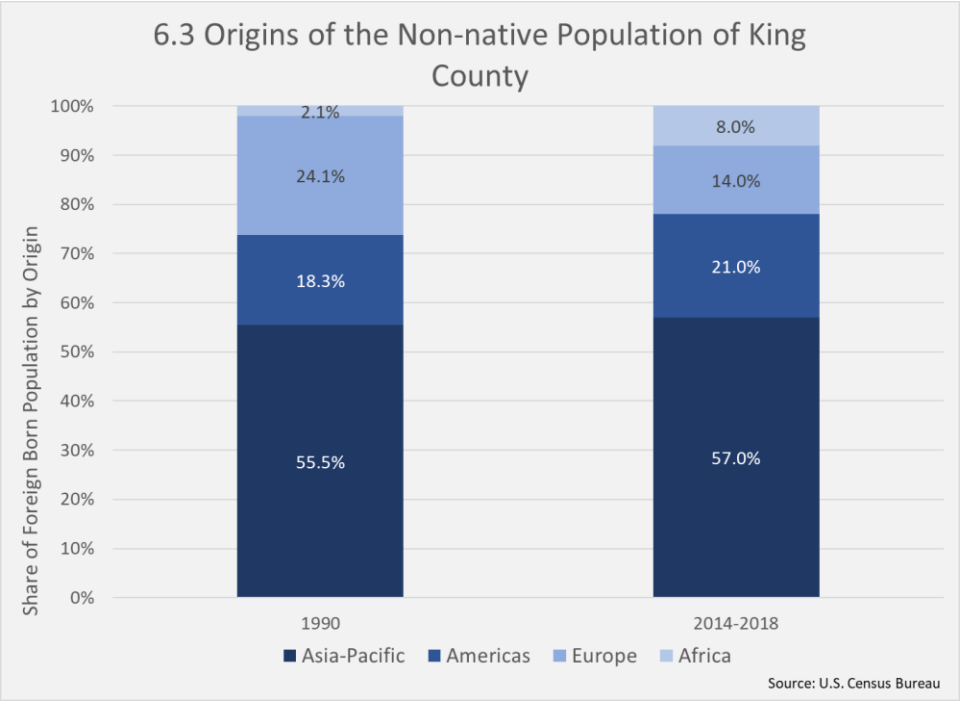


Until the 1980s, the U.S. had experienced decades of slow foreign immigration. As such, the foreign-born population of the country, and the Seattle area, remained relatively low. Since the 1980s, a combination of national policy and regional economic opportunities has caused the foreign-born population of the Seattle metro area to grow substantially.

Figure 6.1 shows the share of county population consisting of foreign-born individuals, including those naturalized as U.S. citizens. (It does not include people who were born oveseas to U.S. citizens.) It also shows the national share of foreign-born people for 1990 and 2018.

Note that in 1990, King County had a slightly larger share of foreign-born residents than the national rate, but that the foreign-born share of Pierce and Snohomish Counties was lower than the national level. King and Snohomish counties experienced substanital growth in their foreign-born populations and now exceed the national level, while Pierce County has seen more modest growth in foreign-born populations and remains below the national level.

Consistent with the information shown in figure 5.2, the growth in the foreign-born population has not been uniform throughout King County. Figure 6.2 shows the growth in foreign-born population for the larger cities in King County. As with ethnic diversity in general, the suburban cities begin the period with low levels of foreign-born populations and experienced rapid growth in them, while Seattle begins with the highest level (tied with Bellevue) but, by the 2014-2018 period, has the lowest level among these cities.

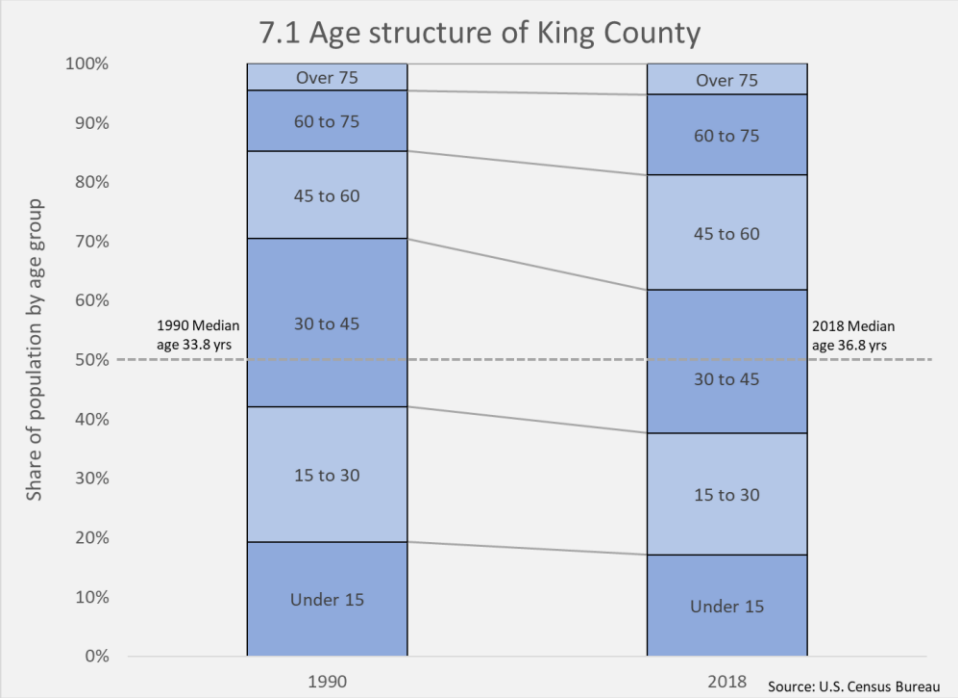


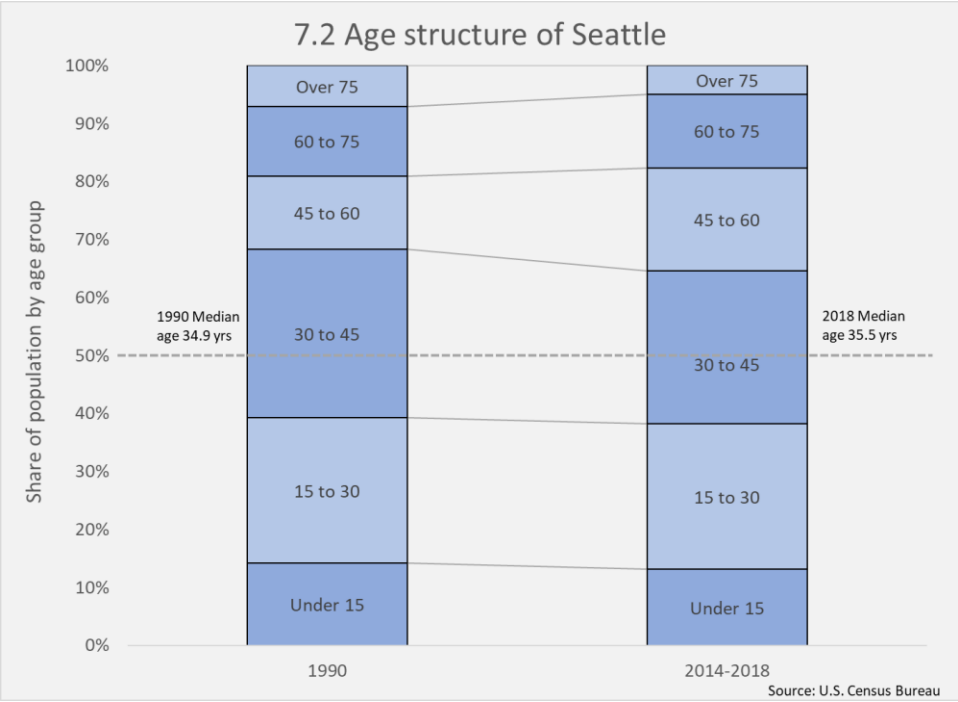
Immigrants to the Seattle area are showing a clear preference for living in suburban cities, both the higher cost cities of the Eastside and the more affordable cities of South King County.

The origins of the foreign born residents of King County have shifted as well. The share from the Asia-Pacific region is the largest and has not shifted very much. The share from the Americas (Canada as well as Latin America and the Caribbean) has growth slightly. The share from Europe has fallen quite a bit, reflecting the general trend of immigration policy away from an emphasis on Europe.

The biggest change has been the growing share of immigration from Africa. The share of King County residents born in Africa has grown nearly four-fold, and Pierce and Snohomish counties have seen similar growth in immigration from Africa.

No. 7: An Aging Population





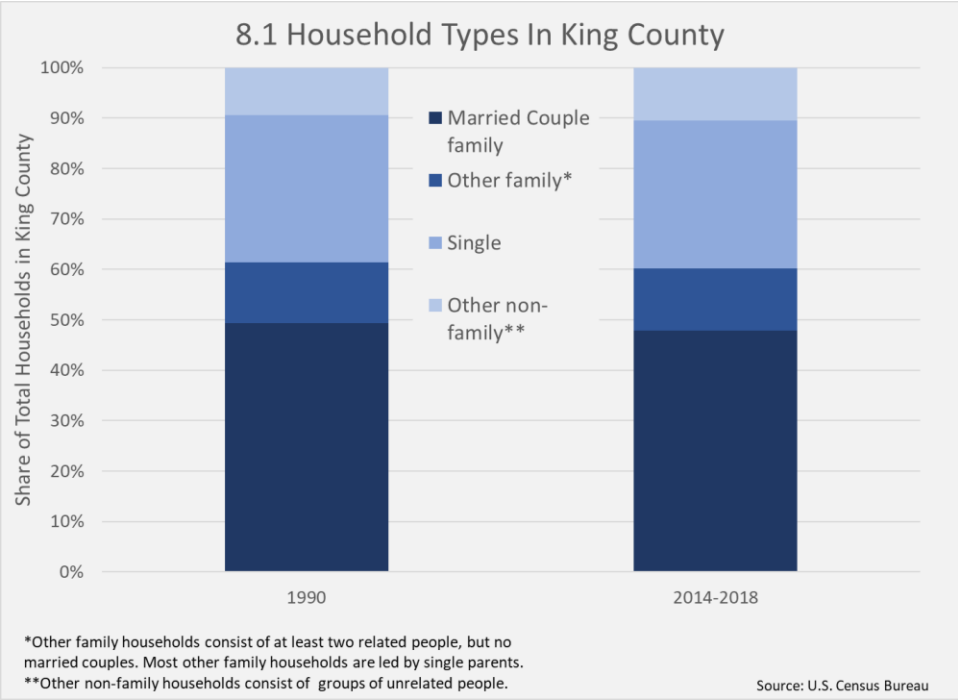
As the rest of the nation—and the Western world, for that matter—ages, King County is aging too. Figure 7.1 shows how the composition of the county population is broken out by age groups. For a snapshot, it also shows the median age of the county for 1990 and 2018. (At the median age, half the population is older, and half younger) The median age of King County has risen from 33.8 years to 37.1 over this time.

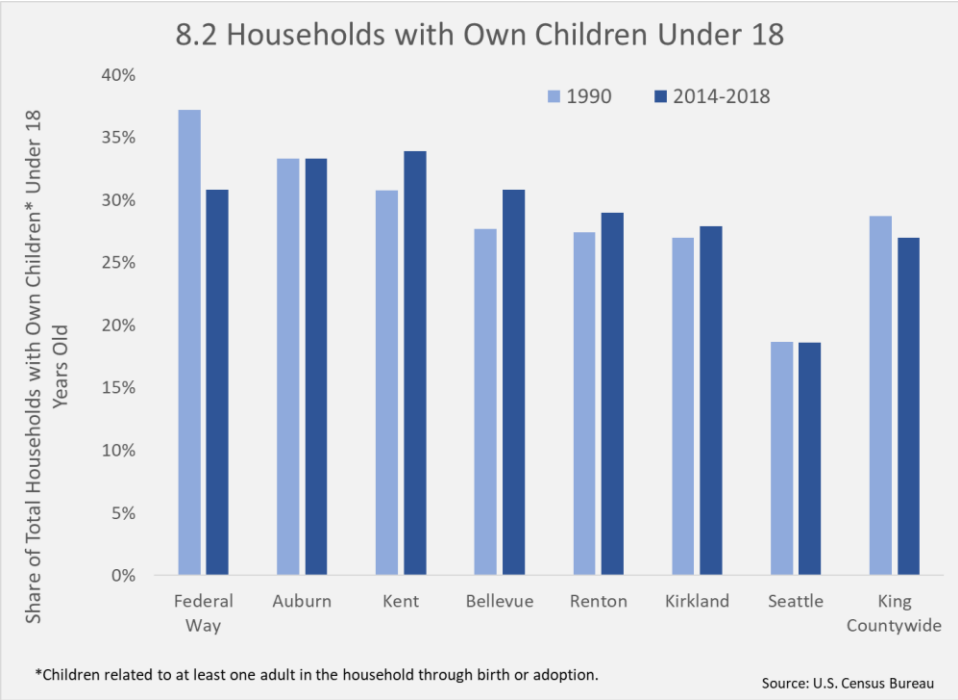
A few things to notice. First, the two groups between 45 and 75 have become a much larger share of the population. This is the Baby Boom. In 1990, the Boomers were mostly in the 30 to 45 bracket. In these breakouts, the Millennial generation is in the under 15 bracket in 1990 (but only about 60 percent of that generation had been born by then) and straddling the 15 to 30 and the 30 to 45 bracket in 2018.

Figure 7.2 shows the same data for the City of Seattle. Here the story is somewhat different. The median age has barely moved up, compared to the county. The Boomer brackets have grown, but not as much, and the Millennial brackets have grown, consistent with the trend of younger people moving into the rapidly expanding multi-family housing stock of Seattle. Seattle's median age has actually fallen by two years since its peak in 2008.

Note that the over 75 bracket, which grew slightly at the county level has shrunk in Seattle, not just as a percentage, but in actual numbers—while Seattle's population has grown by one third since 1990, the city has 2,000 fewer people over 75.

No. 8: Households in King County





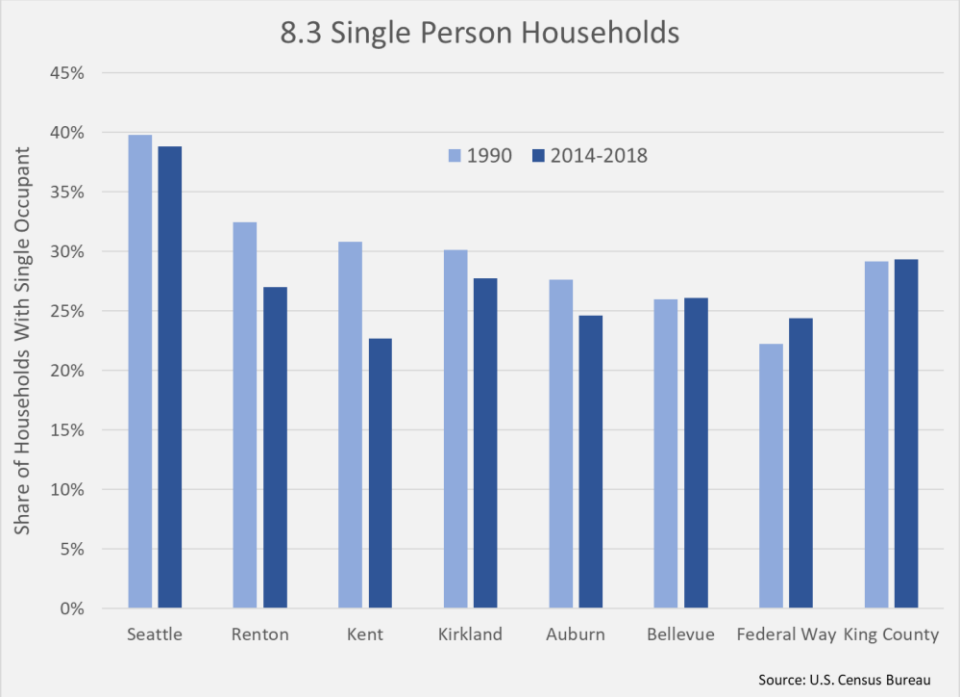
The basic household structure of King County has remained remarkably stable over 30 years, as seen in figure 8.1. "Family" households, defined as having at least two related people living in them, have fallen very slightly from 61 percent to 60 percent. Non-family households, consisting of singles and unrelated groups, make up the balance.

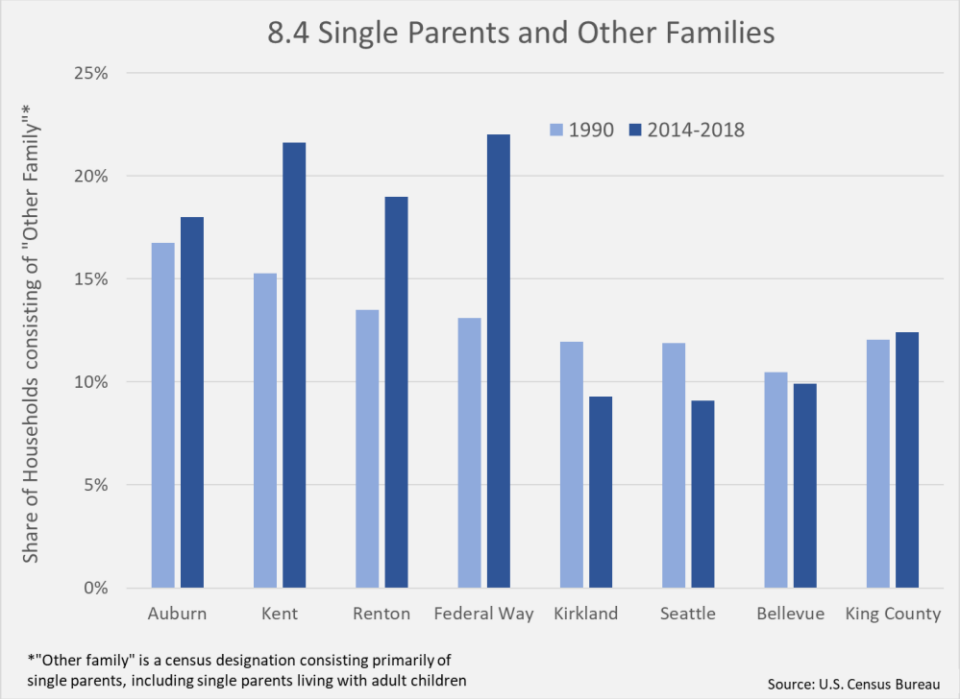
Nationally, family households fell from over 70 percent in 1990 to 65 percent in 2018. In 2018, families made up 68 percent of households in Pierce County and 70 percent in Snohomish County.

An important demographic marker is the share of households with children under 18. Figure 8.2 shows that the share of households with children under 18 has fallen in King County from 29 to 27 percent. This is consistent with national trends, child-households having fallen from 33 percent in 1990 to 27 percent in 2018.

Change in child households is not uniform across the county. Figure 8.2 shows that the share of households with children has increased in a number of cities. In the case of Kent, Renton and Kirkland this is due in large part to annexation of residential areas.

Bellevue has seen significant turnover in real estate as younger families have moved in. Seattle, which has a very low rate of child-households by national big-city standards, has bucked the national and countywide trend by holding steady.





The number of single-person households has remained steady across King County since 1990, ticking up from 29 to 30 percent of all households. Nationally single-person households have grown from 25 percent to 28 percent.

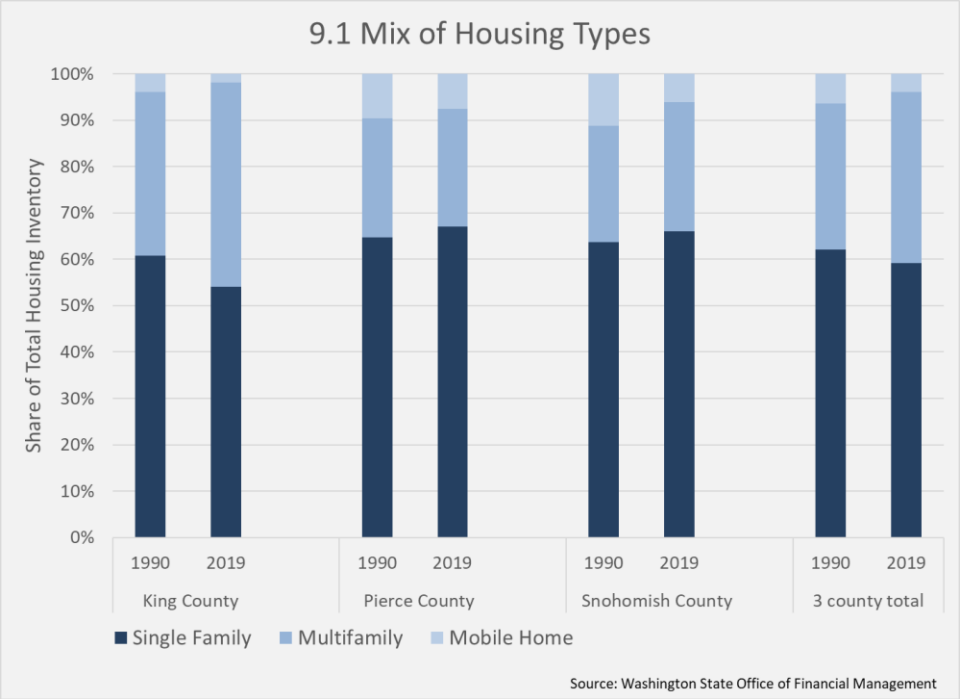
Within the county, the share of single-person households has fallen in a number of cities, again mostly due to annexation of neighborhoods dominated by single family housing. Seattle, in spite of a major apartment-building boom, has seen a slight drop in single-person households. This is consistent with the finding in figure 7.2 that Seattle has fewer elderly residents, who often live alone.

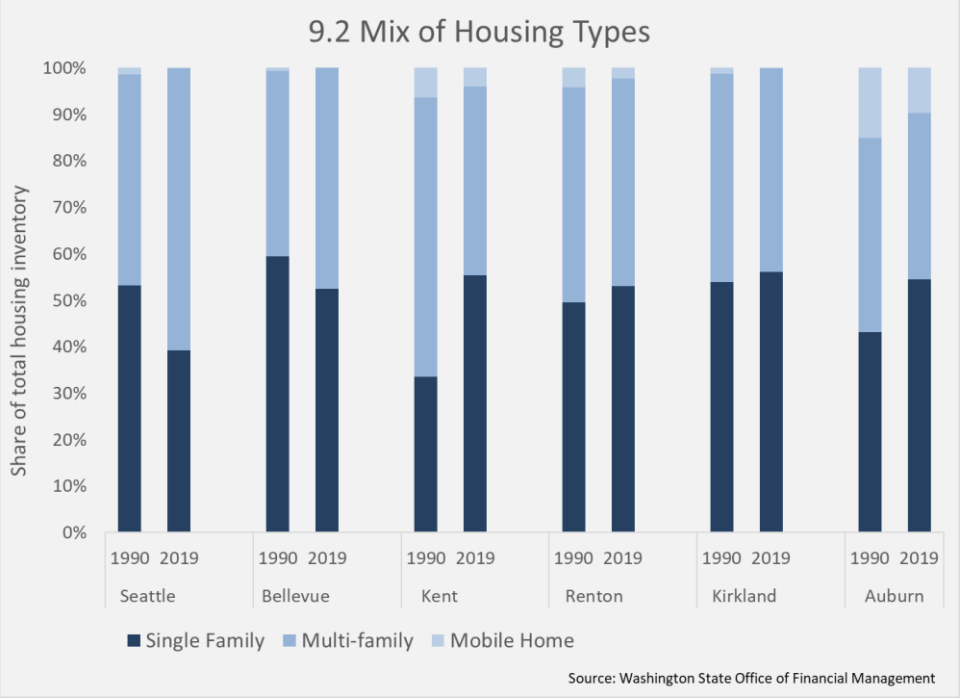
The category of "other family" consists of households with at least two related people, but none married to each other. This may mean adult siblings living together or adult children living with one or both parents. But about half of "other family" households consist of single parents with children under 18. About 70 percent of single-parent households are headed by a mother.

Figure 8.4 shows a very uneven shift in other family households since 1990. These households have increased slightly countywide, and fallen as a share in Seattle, Kirkland and Bellevue. They have become a larger share in the South County cities.

30 Years of Change--Demographic

No. 9: Housing types





The Washington State Growth Management Act, had, as an underlying assumption, that the Puget Sound region would experience population density increases (see No. 29). The most effective way to achieve higher residential densities is to have a larger share of households living in multi-family housing and a smaller share in single family housing.

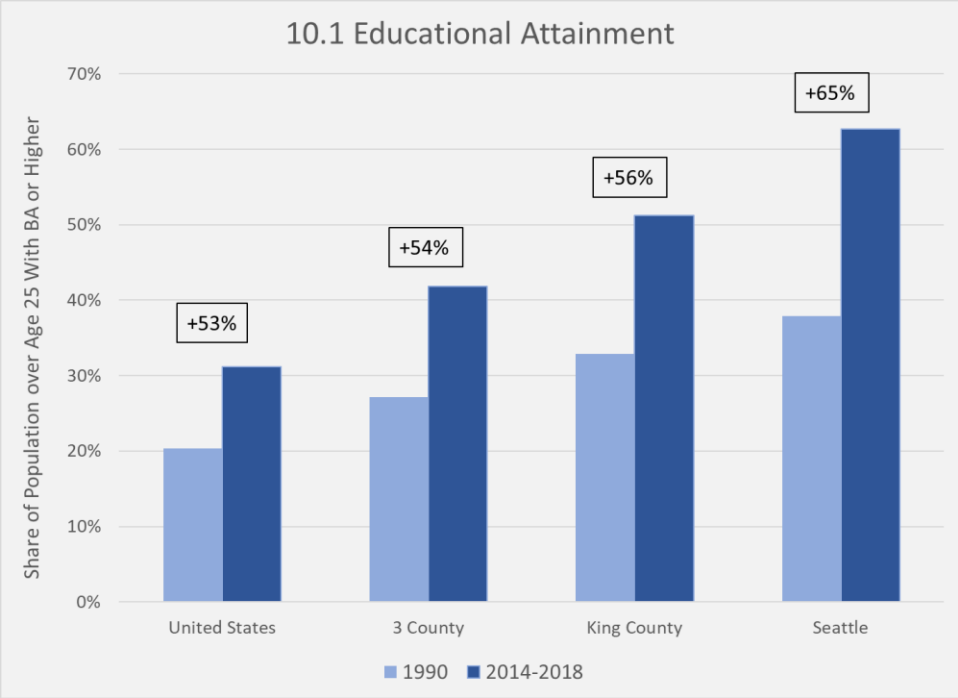
Figure 9.1 shows the shift in the housing stock from 1990 to 2019 across the three county region. The region, as a whole, has seen multi-family housing expand from 31 percent to 36 percent of the housing stock, and single family fall from 62 percent to 60 percent. The share of mobile/manufactured homes fell from 6 percent to 4 percent.

This shift has not been uniform. While King County's single family share fell from 61 percent to 55 percent, Pierce and Snohomish counties each saw single family rise by about 2.5 percent of their housing stock. This confirms anecdotal evidence of King County families seeking more affordable single family neighborhoods in Pierce and Snohomish counties.

Figure 9.2 shows that among large cities, the housing mix shift away from single family has been most pronounced in Seattle and Bellevue. The shift toward single family in the remaining cities shown in figure 9.2 is mostly attributable to annexations of unincorporated areas that were dominated by single family neighborhoods.

The reduction in the stock of mobile/manufactured homes has been dramatic. While Pierce County has seen some growth in the stock, there are now fewer of these affordable units in the three county area in 2019 than in 1990.

No. 10: Education Attainment



Education attainment, measured as the highest level of education received by an individual, has risen nationally over time, as fewer people fail to complete high school and more complete a college degree.

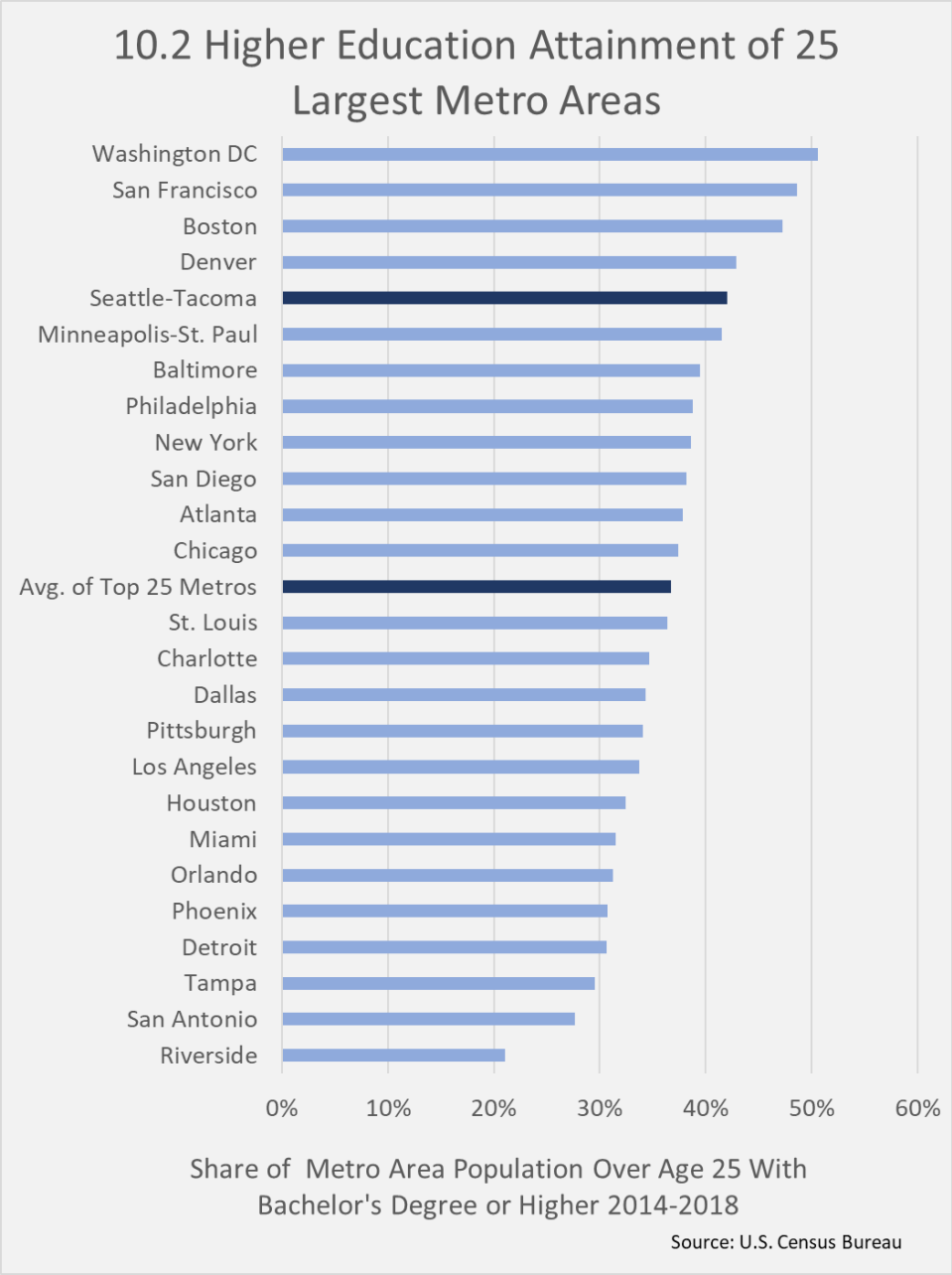
Figure 10.1 shows that while the three-county region and King County have higher college completion levels than the nation, the rate of increase has been the same regionally as nationally. The story within the city limits of Seattle is different. Not only does Seattle have twice the national level of college degree holding, the growth in degree holding has been substantially higher than the nation.

The Seattle metro area has among the highest levels of college degree holding among the largest metro areas in the nation. Figure 10.2 shows that Metro Seattle trails only four of the 25 largest metro areas in this measure.

Figures 10.3 and 10.4 show education attainment levels for the three county region and for each of the counties. The improvements in education outcomes in the region since 1990 are mostly seen in each category.

Non-completion of high school has fallen from 13 to 8 percent of the population. This reflects, in part, the passing of older generations for whom high school completion was not necessarily the norm. Universal high school did not become a standard in the U.S. until the 1920s, and as late as 1950 only half of students completed high school. The generational improvement is offset to some degree by the arrival of immigrants who had not completed high school in their native countries.

The share of residents who stop at just high school completion has fallen as well, and in all three counties. Thus, the number of people with a high school diploma or less—considered the most difficult status from which to obtain high paying employment—has fallen from 39 percent to 28 percent in the region.



The next category—some college or associate degree—is more problematic. This category has fallen only slightly across the region and has remained steady in Snohomish County and grown in Pierce County.

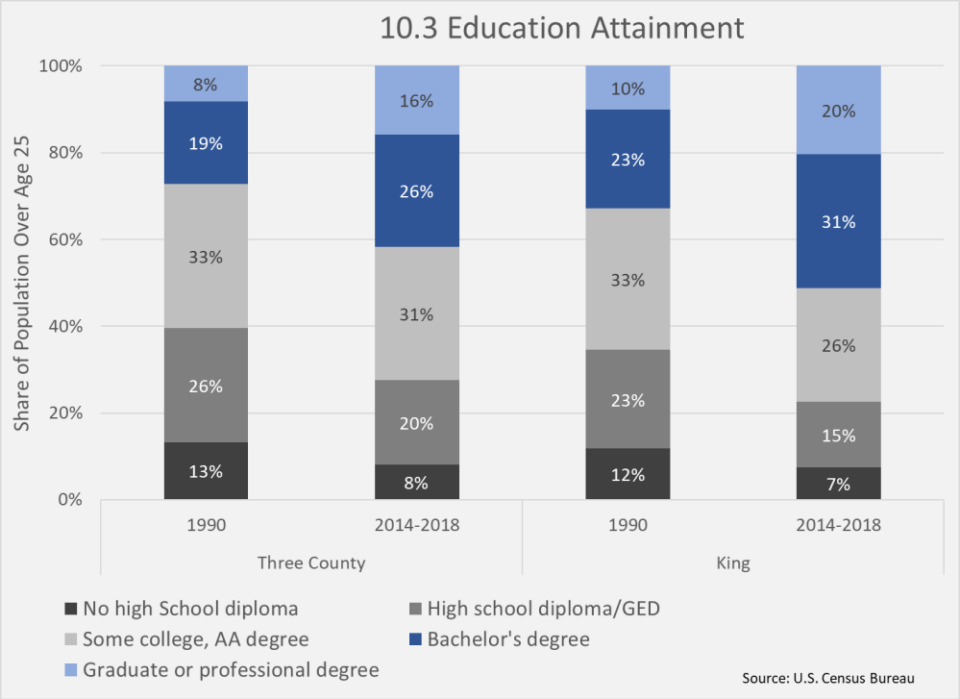
Although it remains a topic of some debate, there is evidence that an associate degree in an academic subject (as opposed to a vocational program) or a partially completed bachelor's degree offer little in the way of employment or wage benefit. Moreover, many of those in this category have taken on loans that will be difficult to pay back without a wage increase.

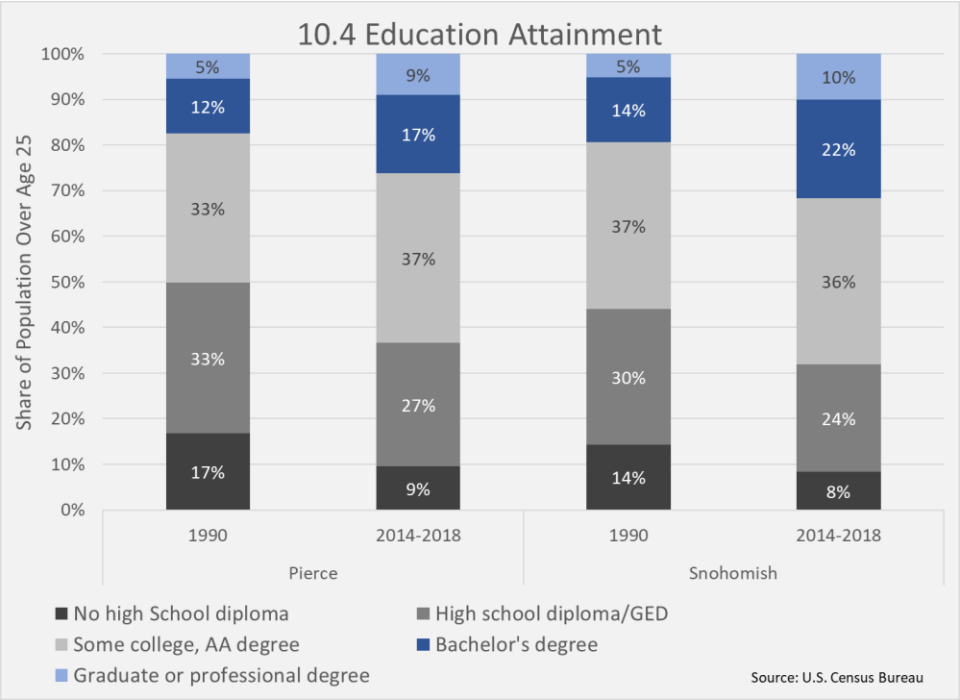
The rate of holding bachelor's and advanced degrees has risen across the region, but remains uneven. Over half of King County residents over age 25 hold a bachelor's degree or higher, while 26 percent of Pierce County adults and 32 percent of Snohomish County adults have completed at least a bachelor's degree.

The incidence of college completion rose 52 percent regionwide. It rose 62 percent in Snohomish County, 53 percent in King County and 48 percent in Pierce County.

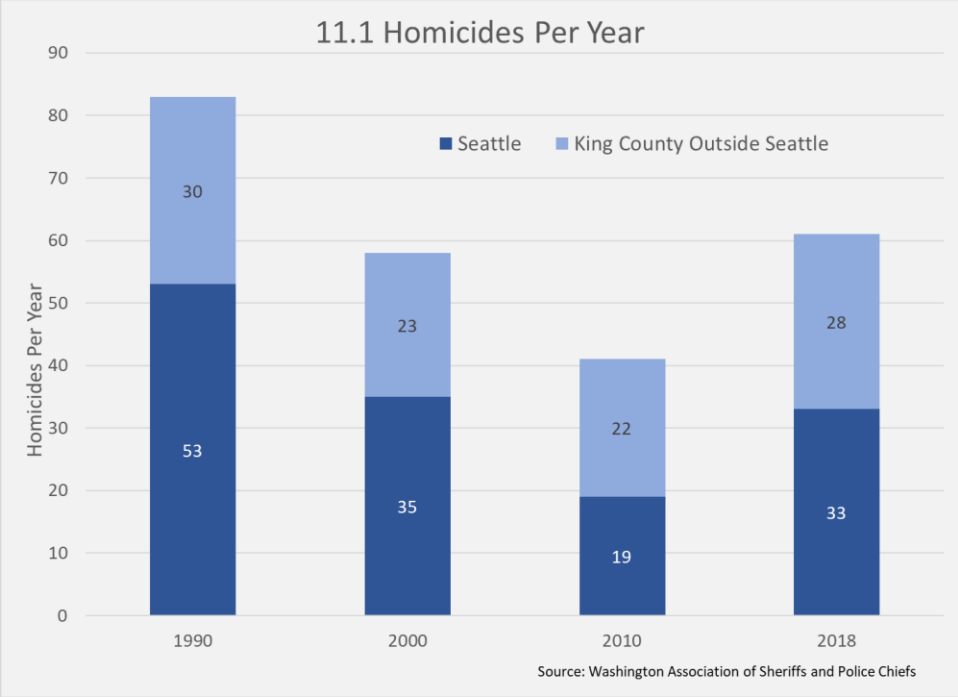
The difference in college completion rates among the counties is due, in large part, to patterns of in-migration, as seen in No. 4. King County has experienced high levels of in-migration from outside of Washington State, and among those in-migrants, 66 percent hold at least a bachelor's degree.

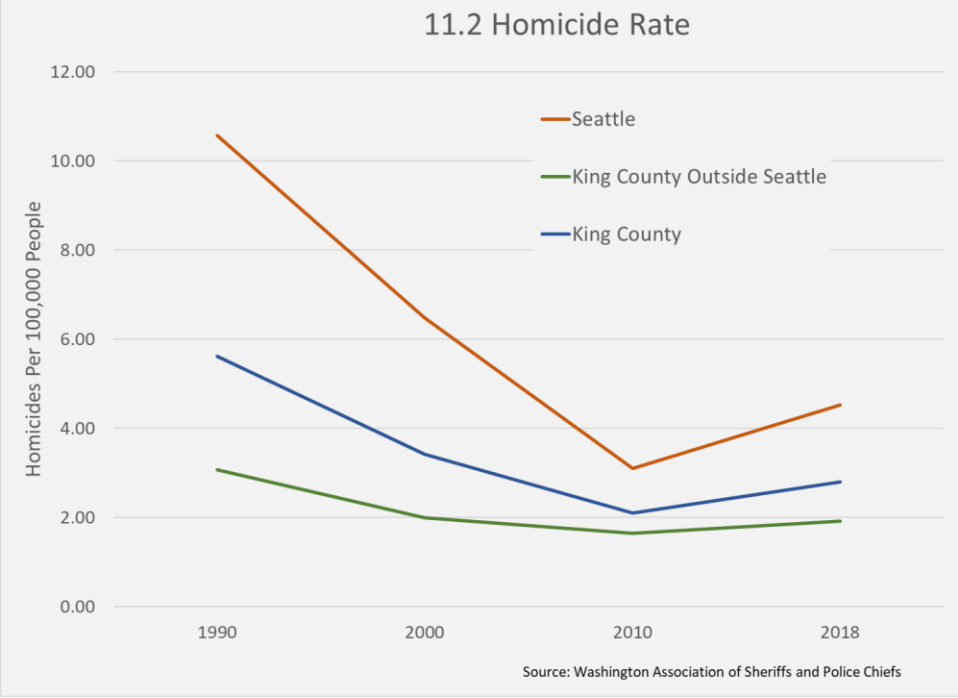
.


10.3 Education Attainment
Share of Population Over Age 25
100%
80%
60%
40%
20%
0%
8%
19%
33%
26%
13%
16%
26%
31%
20%
8%
10%
23%
33%
23%
12%
20%
31%
26%
15%
7%
1990
2014-2018
1990
2014-2018
Three County
King
No high School diploma
High school diploma/GED
Some college, AA degree
Bachelor's degree
Graduate or professional degree
Source: U.S. Census Bureau


10.4 Education Attainment
Share of Population Over Age 25
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
5%
12%
33%
33%
17%
9%
17%
37%
27%
9%
5%
14%
37%
30%
14%
10%
22%
36%
24%
8%
1990
2014-2018
1990
2014-2018
Pierce
Snohomish
No high School diploma
High school diploma/GED
Some college, AA degree
Bachelor's degree
Graduate or professional degree
Source: U.S. Census Bureau

No. 11: Homicide Rates





Crime rates are a key indicator of social wellbeing, effective government and quality of life. While agencies at the federal, state and local level collect vast amounts of data on crime, consistency and definitional issues make comparisons difficult.

In Washington State, the Washington Association of Sheriffs and Police Chiefs collects crime data from cities and counties. The Association made a major change in its reporting process in 2012, making it difficult to compare specific crime rates before an after that date.

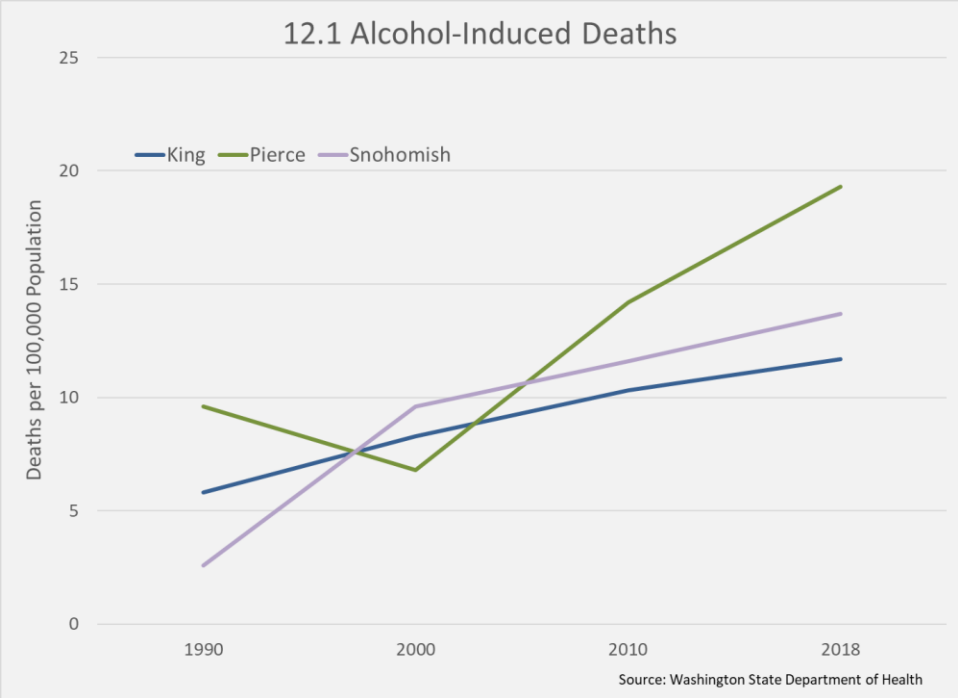
Because homicide is less ambiguous and subject to data collection inconsistencies, that data is presented here for King County.

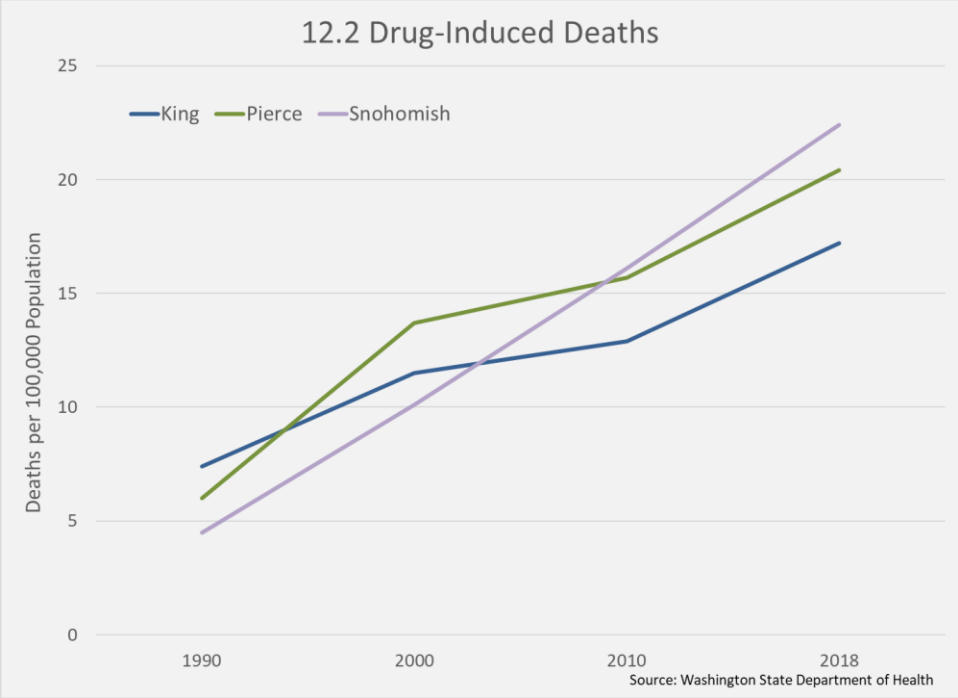
Following the national trend since 1990, when homicide rates reached their peak, homicides fell to regional lows in the 2010s. And again, as with the national picture, homicides have increased in recent years.

Figure 11.1 shows that the total number of homicides in King County fell by half, and figure 11.2 shows that the rate fell by 57 percent countywide. Of note, however, is the shift in homicides from Seattle to suburban areas. In 1990, nearly two thirds of homicides took place in Seattle, and by 2010, over half of homicides took place outside Seattle. Since 2010, homicides have increased in Seattle, and by 2018 more homicides took place in Seattle than in suburban areas. Between 1990 and 2018 the homicide rate fell by 57 percent in Seattle but only 37 percent in the balance of the county.

30 Years of Change--Social

No. 12: Drug and Alcohol Deaths





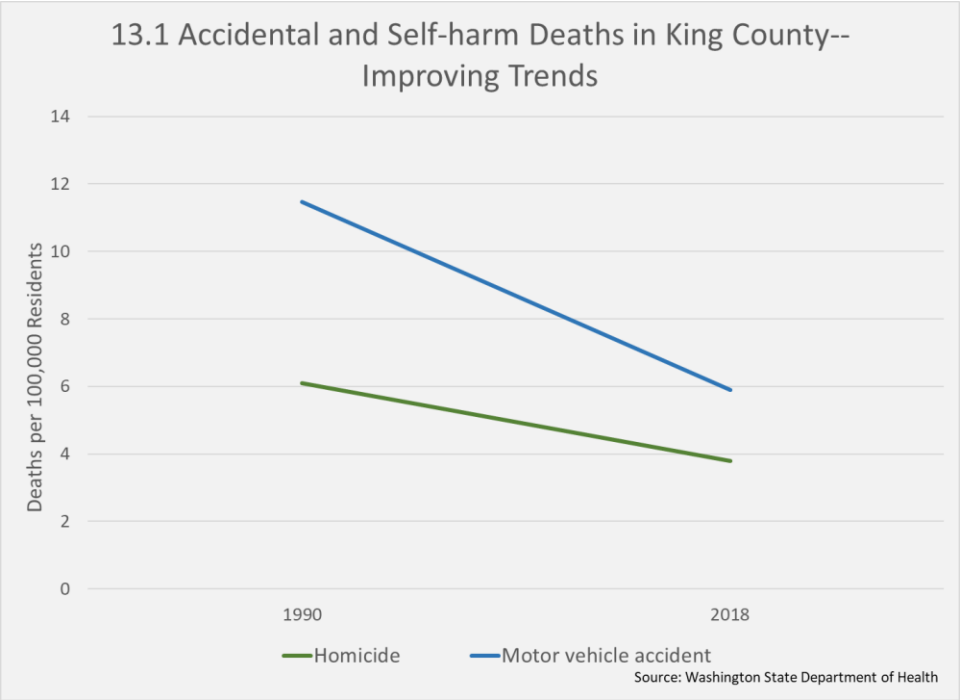
The rise in homelessness across the Seattle area has highlighted the increase in deaths due to accidental drug and alcohol poisoning and other deaths induced by drugs and alcohol.

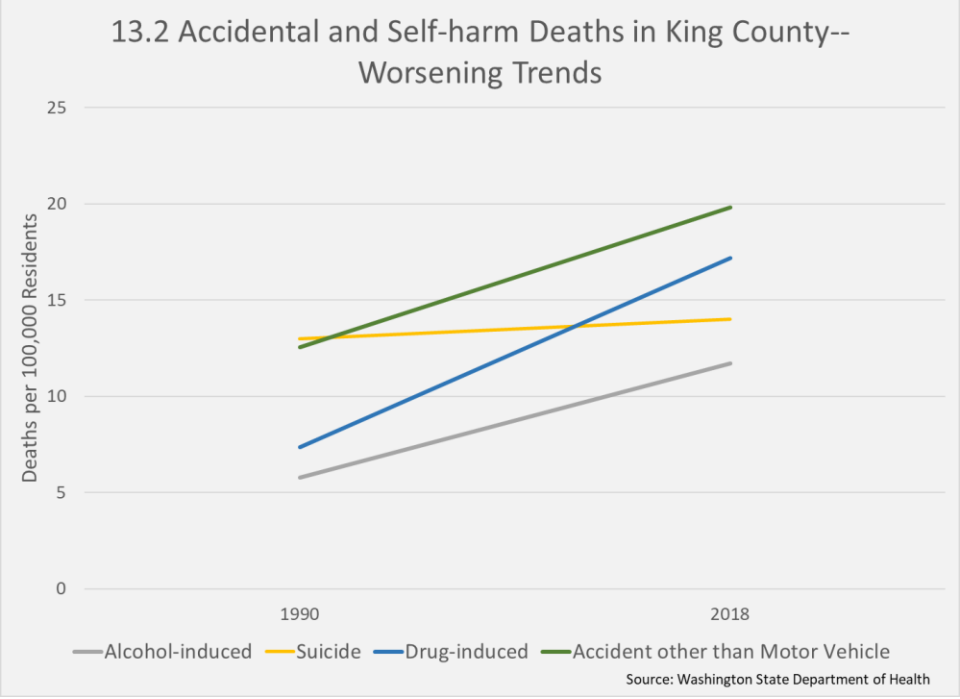
These unfortunate incidents have been rising steadily across the region. Figure 12.1 shows the rise in alcohol-induced deaths in the three counties, and Figure 12.2 shows the increase in drug-induced deaths. ("Drug-induced" and "Alcohol-induced" deaths cover a list of cause-of-death codes)

Most alarming is the dramatic increase in these deaths in Snohomish County. While both kinds of death have been more prevalent in Pierce County, the rate has increased far more in Snohomish. Alcohol-induced deaths rose seven-fold since 1990 and drug-induced deaths rose almost four-fold.

Regional trends follow national trends. Nationally, drug overdose deaths increased four-fold from 1999 to 2018. Although much national attention has been given to drug-related deaths in small cities and rural areas, the death rate from drugs has increased slighly more in large metropolitan areas.

No. 13: Accidental and Self-harm Deaths





Figures 13.1 and 13.2 show trends since 1990 in the death rates from six categories of accident, assault and self-harm deaths.

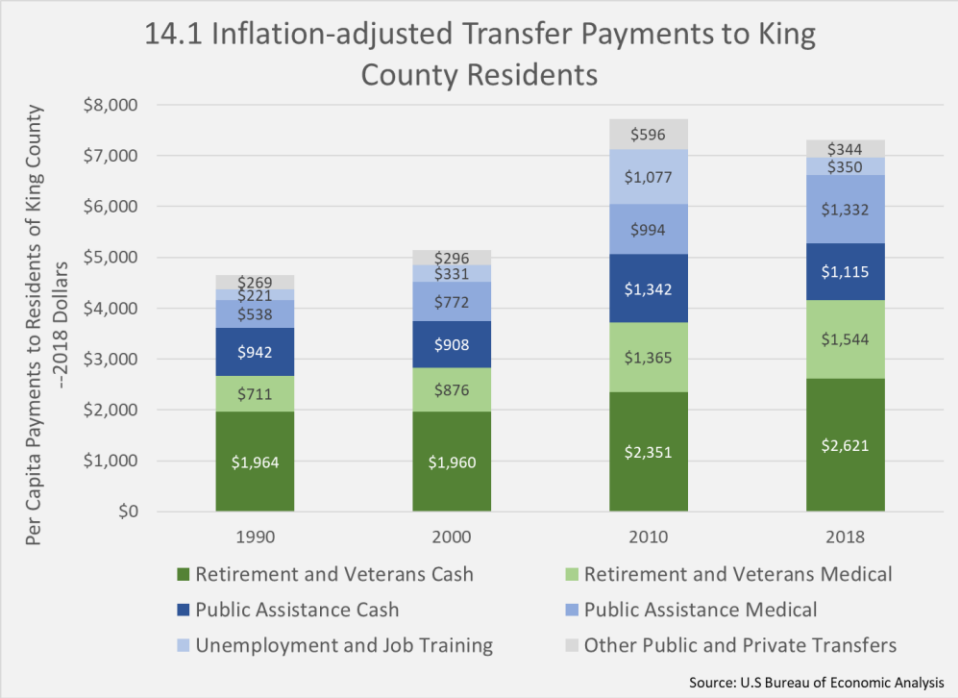
Figure 13.1 shows two areas in which death rates are falling. As seen in No. 11, homicides have fallen in the county.

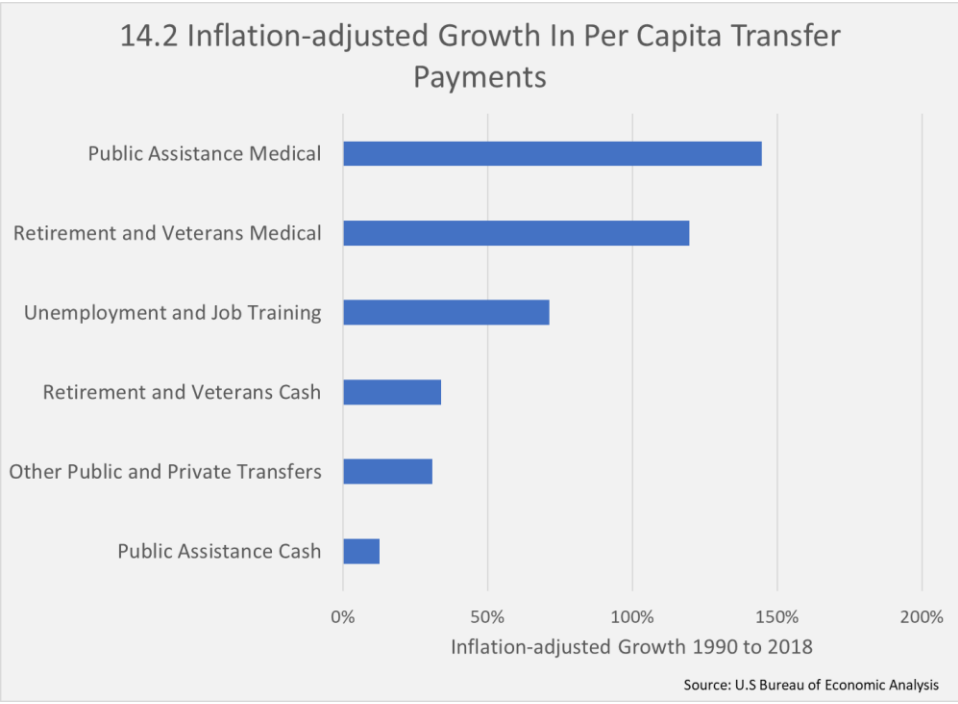
Motor vehicle fatalities have fallen considerably. In 1990 the total vehicle fleet in the county still had large numbers of cars with few of the safety features we take for granted. By 2018, nearly all cars on the road were equipped with advanced safety features that minimize injury in accidents.

Figure 13.2 shows four areas where death rates have increased. We see the data from No. 12, showing the increase in drug and alcohol related deaths. The most alarming trend is in the increase in accidents other than motor vehicle accidents. Death by falling has more than doubled, while deaths by fire and drowning have tripled.

Suicides are a more complex picture. The suicide rate in King County was relatively high in the late 1980s, averaging 13 per 100,000. This rate fell in the 1990s to to around 10 per 100,000. In the past several years the rate has increased and is stands at 13.8 per 100,000.

No. 14: Transfer Payments





Government agencies, and to a much lesser extent, non-profits and businesses, provide "transfer payments" to individuals for a variety of reasons. Most of these payments count as "entitlements," meaning that the recipients need only meet a set of criteria in order to receive them. Changes in the level of transfer payments over time indicate changes in demographics and public policy as well as changes in costs.

Figure 14.1 shows the growth in inflation-adjusted per capita transfer payments to residents of King County by decade, and figure 14.2 shows the inflation-adjusted growth in payments under these programs from 1990 to 2018.

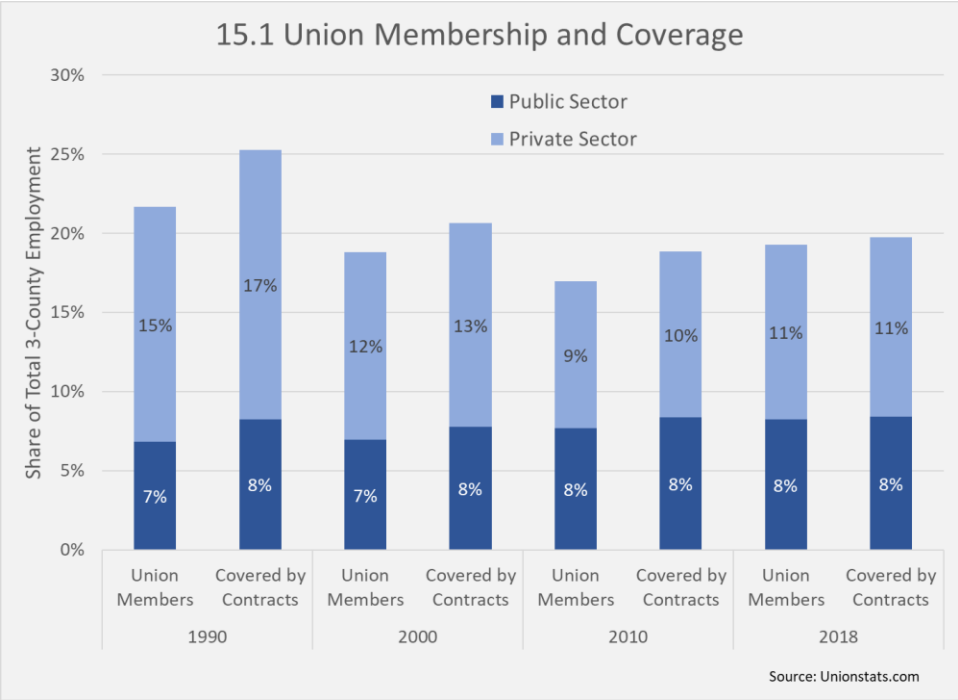
Increases in retirement (Social Security) and veterans' cash payments reflect the aging of the population, as seen in No. 7. Since Social Security payments are tied to lifetime earnings, the higher earnings of the Baby Boom generation will be reflected in higher Social Security payments as they have retired. Retiree (Medicare) and vetarans medical benefits have grown as healthcare costs have grown overall.

Public assistance cash payments (traditional welfare, AFDC and TANF), have grown much more slowly. Welfare payments fell in the county between 1990 and 2000, reflecting the impact of federal welfare reform, which put time limits on benefits and lowered caseloads. Payments increased in 2010, with the Great Recession, and dropped by 2018, when unemployment was low.

Public assistance medical (Medicaid) has grown substantially, reflecting both growing medical costs and expansion of the program under national healthcare reform.

Unemployment and job training benefits reflect economic conditions. In the years shown in Figure 14.1, unemployment was low in 1990, 2000 and 2018, but quite high in 2010.

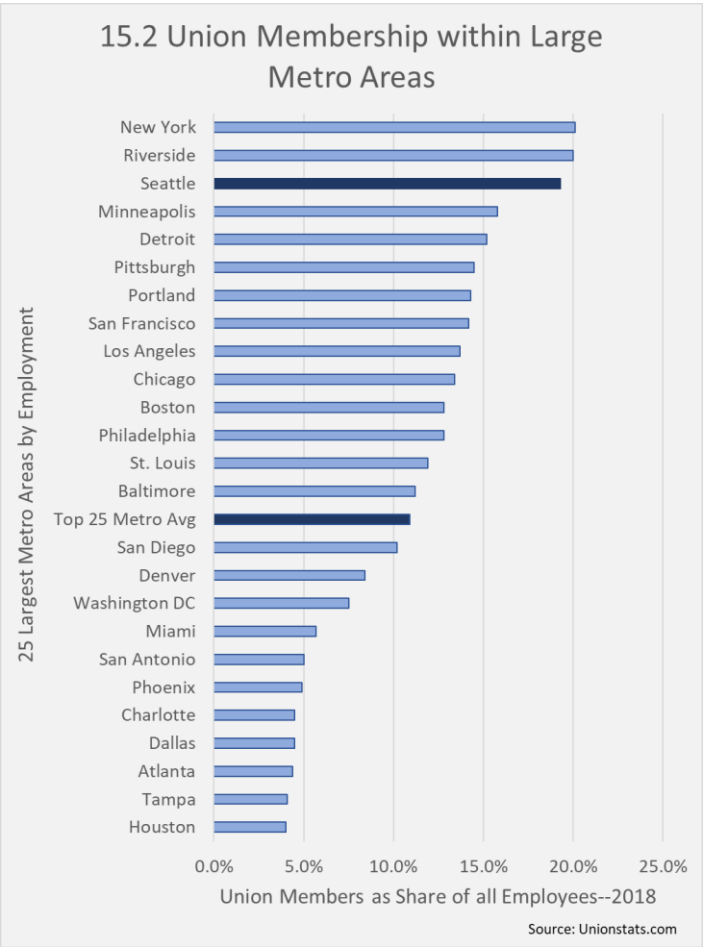
No. 15: Unionization



Washington state and the Puget Sound region have always had relatively high unionization rates. The state's history and political climate have been friendly to labor, and regional industries such as wood products, shipbuilding, stevedoring and aerospace have traditionally been heavily unionized.

Figure 15.1 shows the trend in union membership and coverage (workers covered by contracts whether dues-paying members of the bargaining unit or not) from 1990 by public and private sectors. Public sector unionization has held steady throughout this period.

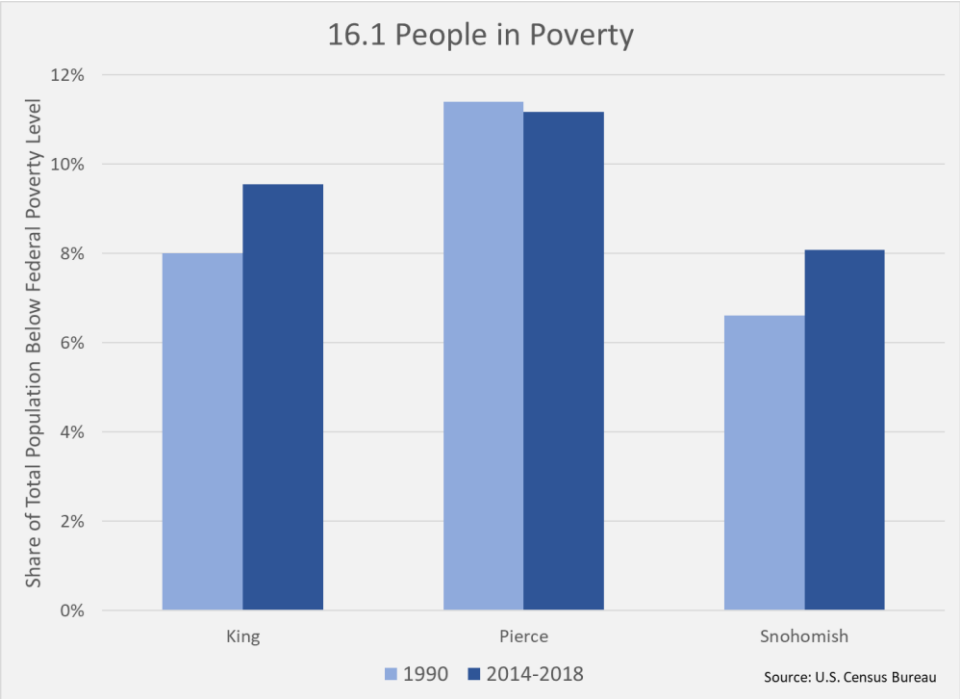
Private sector unionization fell from 1990 to 2000, but has fallen only slightly since 2000. Boeing has been a major factor in these changes. In the late 1990s Boeing's unionized employment was at its peak, as it worked to deliver two new airplane models. As these programs matured, unionized employment fell.

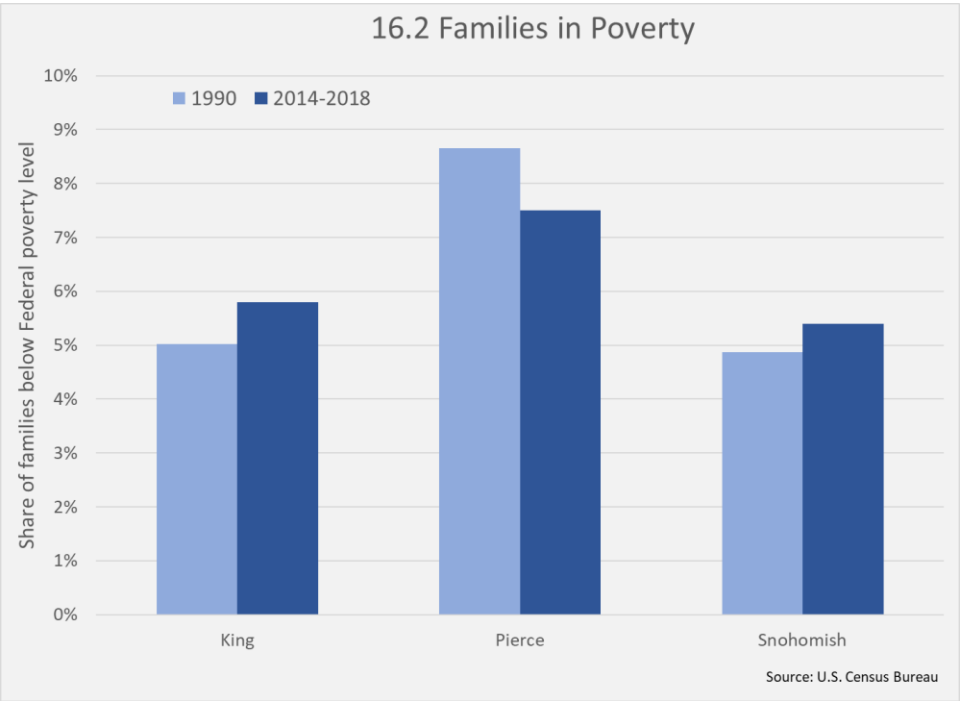


As seen in No. 18, the goods producing sector of the economy (manufacturing and construction) which tends to be more heavily unionized, has fallen as a share of total employment, so a drop in private sector unionization should not come as a surprise.

The Seattle metro area remains a union stronghold by national standards. Figure 15.2 shows that only two large metro areas have higher levels of unionization than Seattle, and that the drop-off from Seattle's level is steep.

No. 16: Poverty



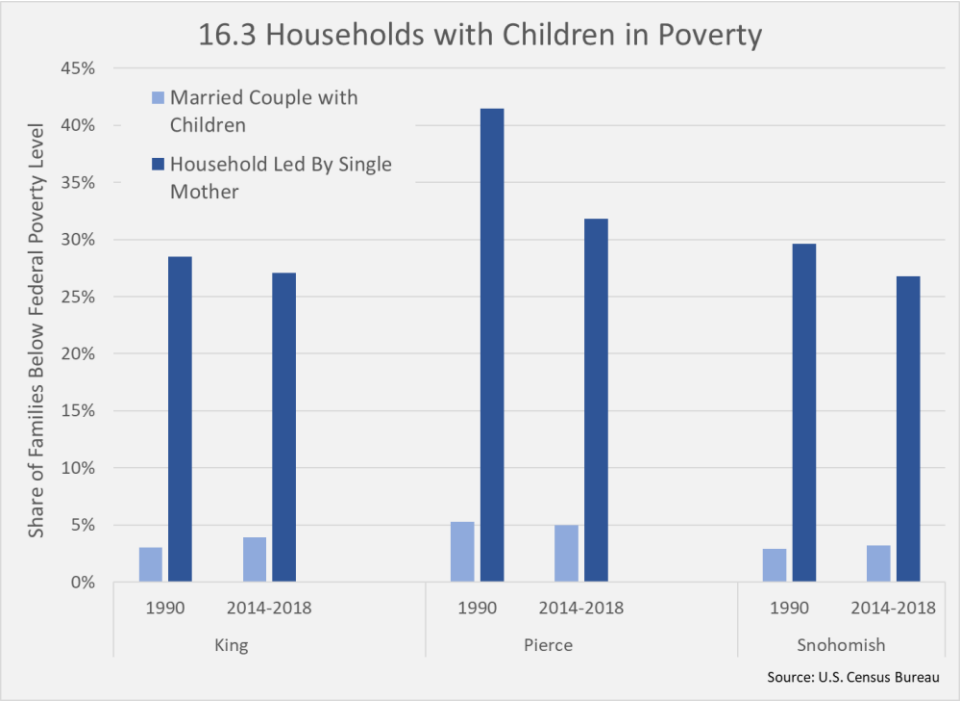


As the region has grown and become more expensive, the share of individuals and families living in poverty has also grown. Figure 16.1 shows that, for the total population, poverty has expanded in King and Snohomish counties and fallen slightly in Pierce County. Figures 16.1, 16.2 and 16.3 are all based on federal poverty thresholds, which are income levels by household size that apply uniformly to all of the lower-48 states. Thus, in the Puget Sound region, where living costs are higher than the national average (see No. 26), the federal thresholds understate the challenge of living below those income levels in the Seattle area.

The poverty picture is more complex for families (defined as at least two related people living together). Figure 16.2 shows poverty growth similar to that seen in figure 16.1, but at lower levels. In other words, people living in family households are less likely to be poor than people living alone or in unrelated groups.

But the type of family group makes a large difference. Among King County married couples, only 2.5 percent of those without children fall below the poverty threshold, and 4.1 percent of those with children fall below the threshold. In contrast, 29 percent of King County single mothers with children under 18 fall below the poverty threshold.

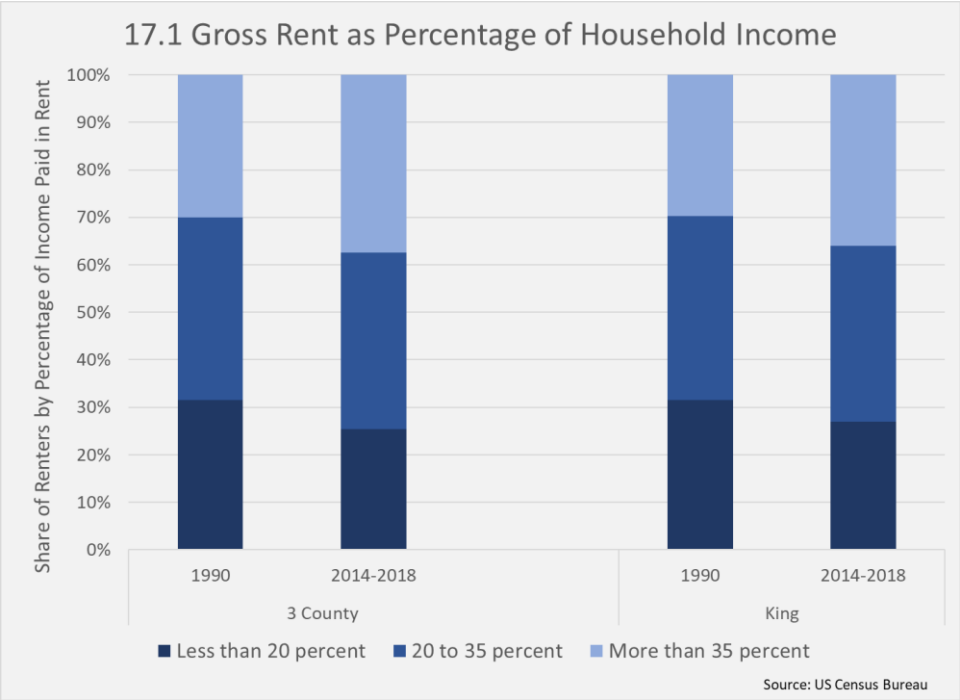
Figure 16.3 shows the dramatic difference between the poverty status of families with children headed by a married couple and the poverty status of families headed by a single mother. In King and Snohomish counties, the poverty rate for married

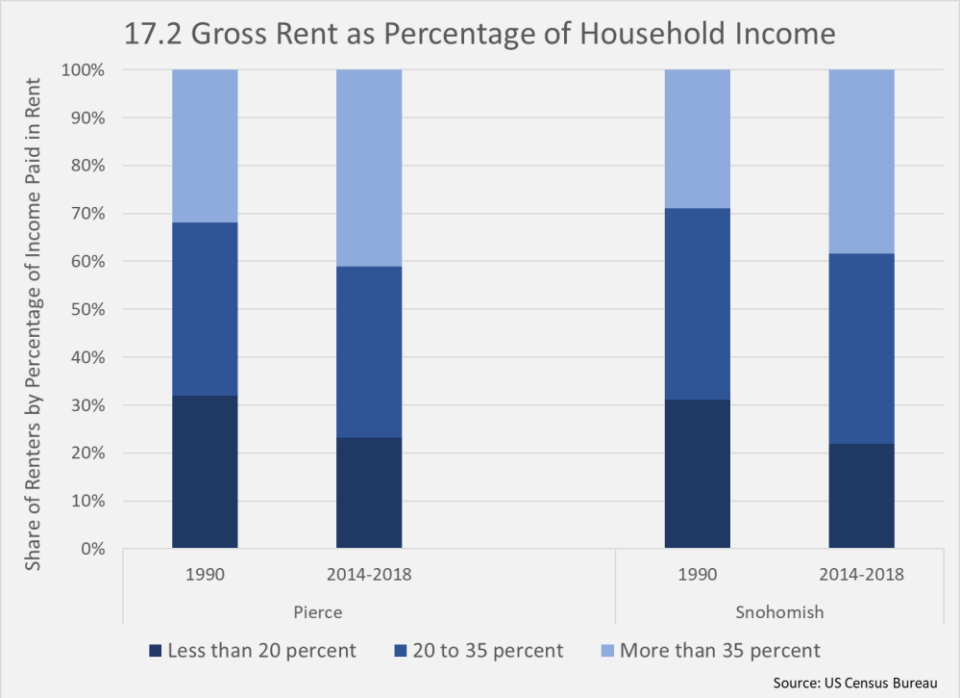


couple families with children has worsened slightly, but remains low. The situation for single mothers and their children has improved slightly in King County, while it has improved significantly in Pierce County and slightly in Snohomish County.

Pierce County presents a challenge. The poverty rate for all families, especially those headed by single mothers, has improved, while the poverty rate for non-families has worsened. Most federal and state anti-poverty programs are aimed at families, and it appears that the need in Pierce County is for more assistance for individuals.

No. 17: Housing Cost Burden



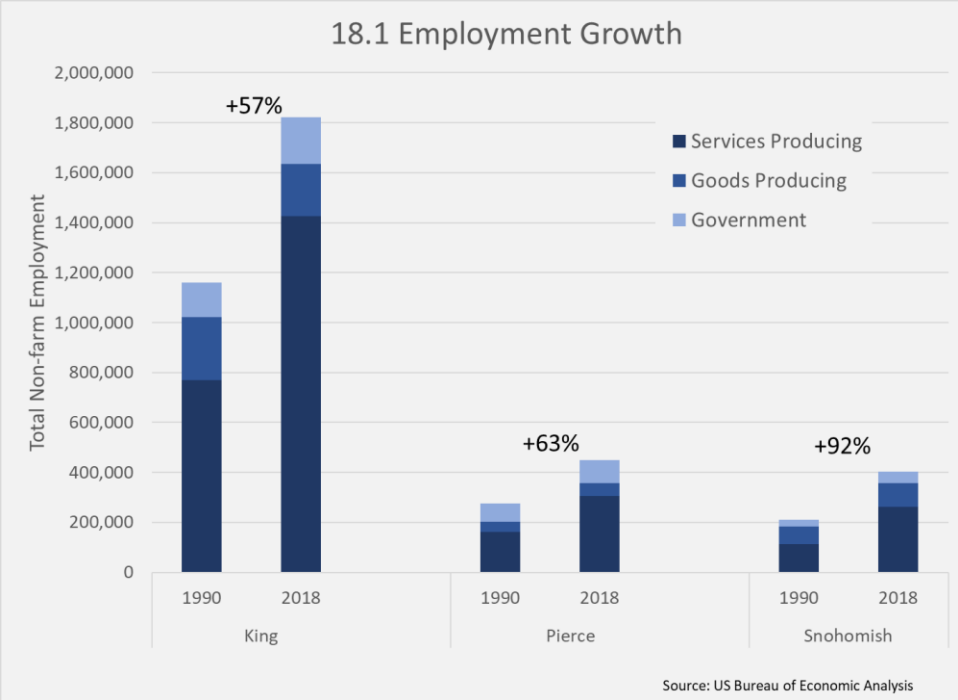


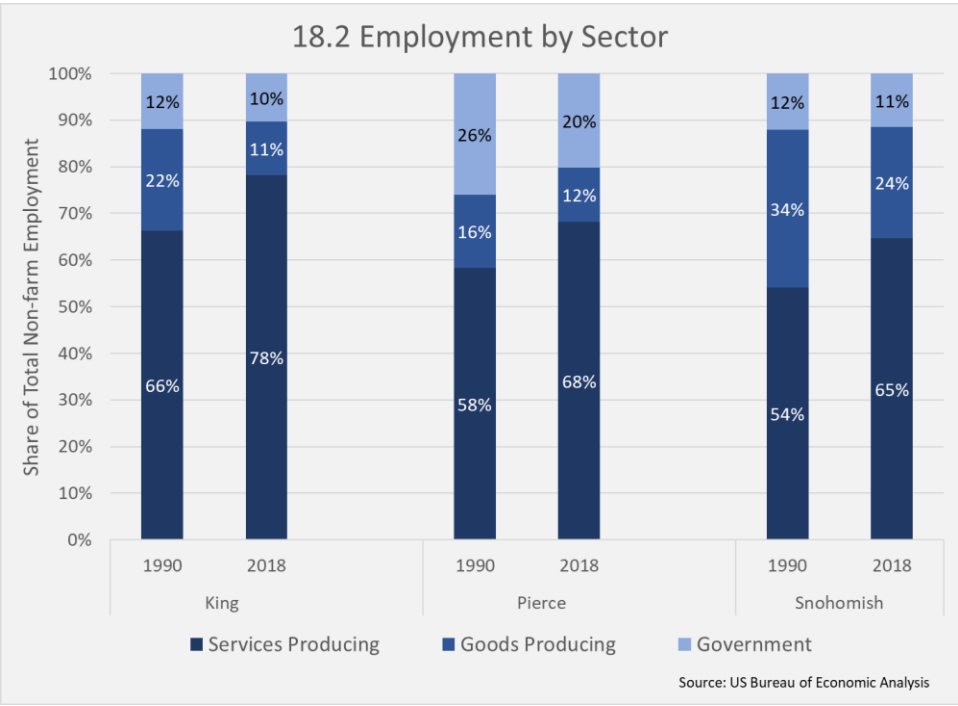
Housing costs are nearly always the largest financial obligation for individuals and families. Housing costs have risen over time in the Seattle area, placing an increasing burden on individuals and families.

A standard way to measure the burden of housing costs is the percentage of monthly income spent on rent. As a general rule, total housing costs should not exceed one third of gross income, so backing out utility costs means that rent should ideally be between 25 and 30 percent of gross income.

Figures 17.1 and 17.2 show the share of households that are outside of a reasonable range of housing cost burden (more than 35 percent). This share has grown throughout the region since 1990. At the same time, the share of those with a low cost burden has shrunk.

No. 18: Regional Employment Growth





The population growth seen in No. 1 is mirrored in employment growth. Figures 18.1 and 18.2 show employment growth in the three counties by three major sectors.

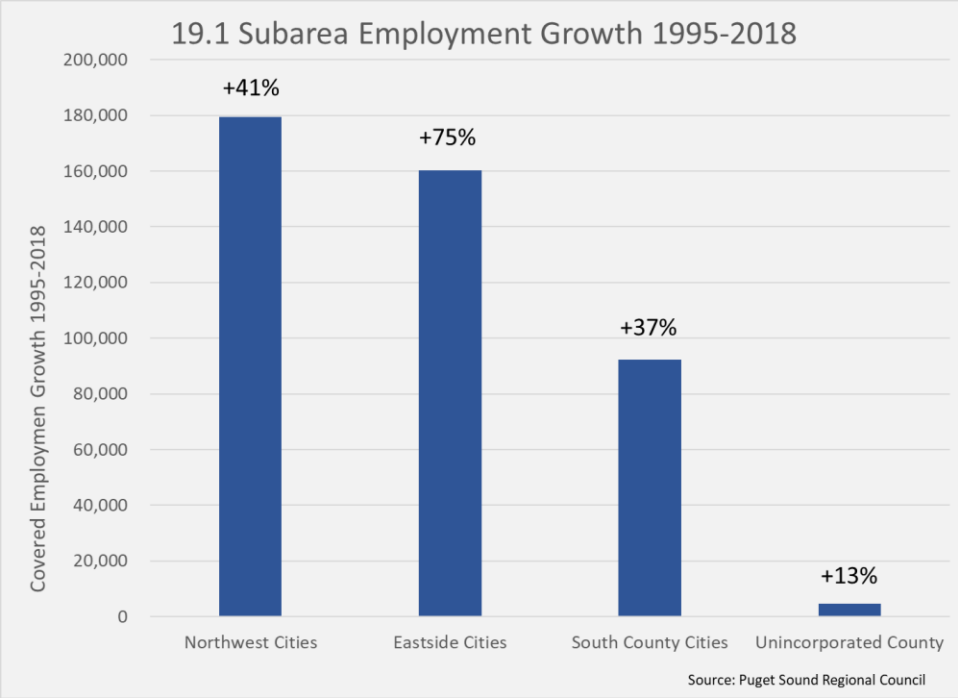
King County, with the largest employment base of the three counties, saw an increase of over660,000 jobs between 1990 and 2018. Pierce and Snohomish counties, while starting from a much smaller base in 1990, saw substantially higher rates of employment increase over the period. (The Bureau of Economic Analysis data used in these charts includes self-employed workers and uniformed military personnel)

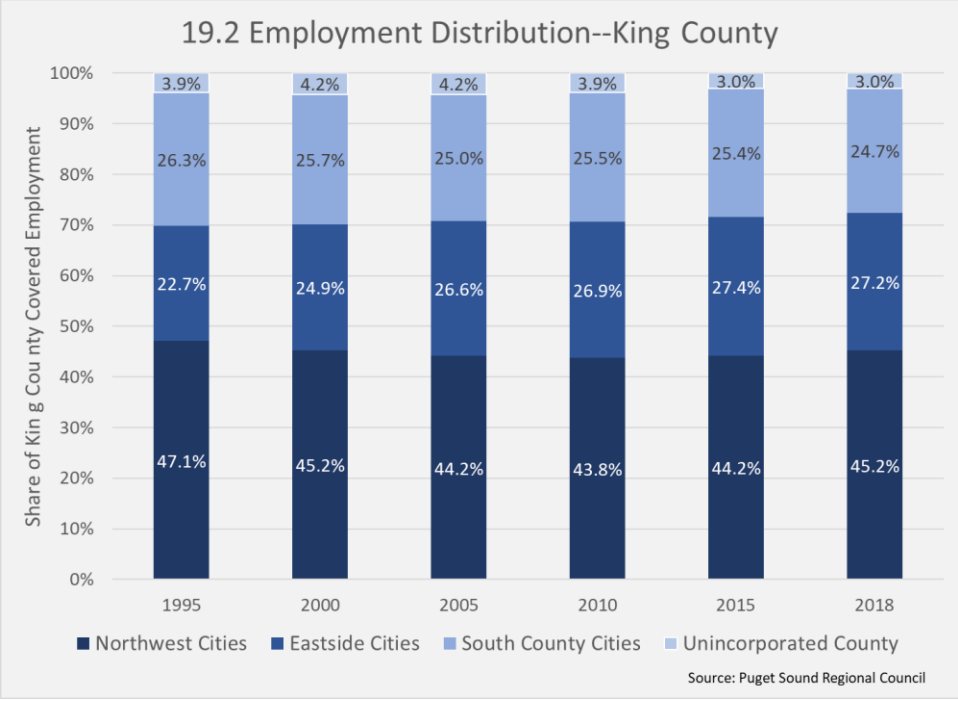
The composition of employment has shifted during this time period. Employment in the goods-producing sector—primarily manufacturing and construction, but also including resource extraction—fell in King County and rose only slightly in Pierce and Snohomish counties. Goods-producing is now a smaller share of employment in all three counties.

Government employment has been steady in King and Snohomish counties, and has fallen in Pierce County, where large military installations have fluctuating personnel levels.

The major growth has been in service sector employment in all three counties. Nationally and globally, the greater productivity increases in the goods producing sector, and the natural limits of consumption of physical goods, has resulted in a shift of employment toward service industries. Consumers are taking advantage of lower costs goods to shift their spending to services, with healthcare leading the service sector expansion.

No. 19: Employment Growth within King County



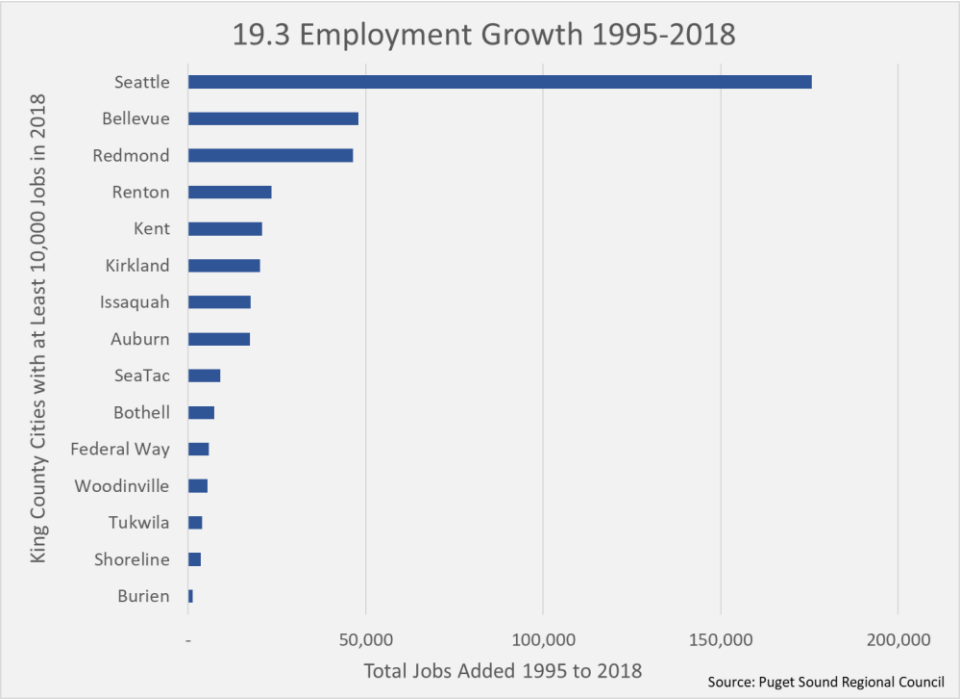


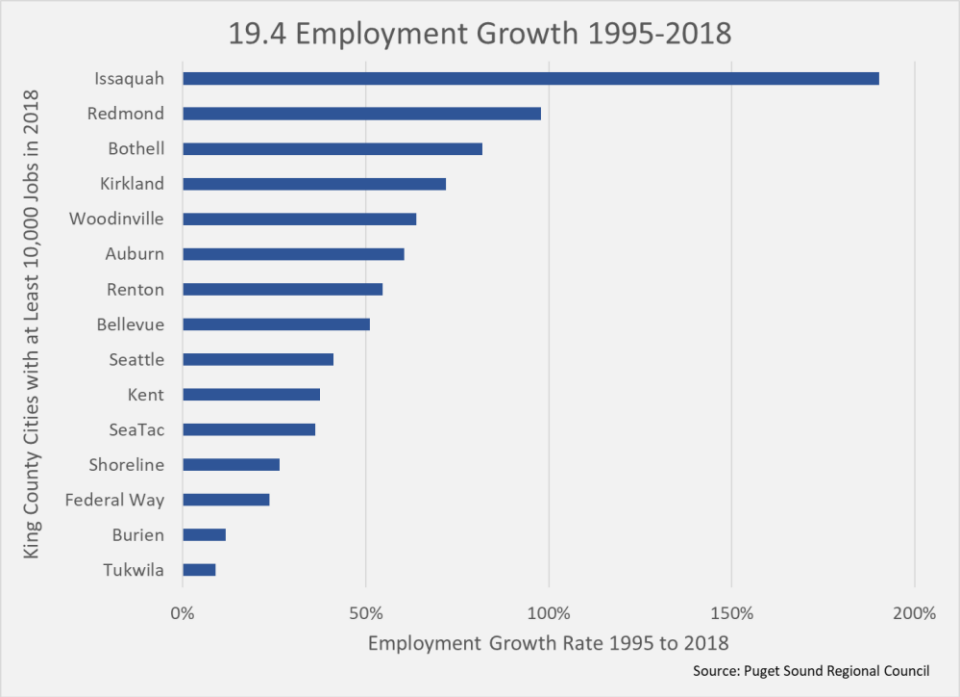
Employment growth within King County has reshaped the economic geography of the county since the 1990s. Figure 19.1 shows growth in covered employment (which excludes self-employed and uniformed military personnel) for four divisions of King County since 1995, the year the Puget Sound Regional Council began tracking local employment. The Northwest cities (Seattle, Shoreline, Lake Forest Park) saw the largest increase in new jobs, followed by the Eastside cities (Kenmore through Newcastle) and the South County cities (south from Renton).

Unincorporated areas of the county saw little job growth, due to the more residential character of these areas and due to incorporations and annexation of existing commercial areas into cities.

Figure 19.2 shows the distribution of covered employment among these subareas. Seattle (which accounts for 97 percent of Northwest cities employment) and South County cities saw their share slip slightly over 23 years, while Eastside cities saw their share grow by a commensurate amount. This shift took place mostly between 1995 and 2005 as Microsoft and other tech companies expanded rapidly on the Eastside, and the strong multiplier effect of that growth added large numbers of service sector jobs to the Eastside. Rapid growth of Amazon in Seattle has caused Seattle's share to tick up slightly since 2015.

Overall, considering the large employment growth that the county has seen—over 50 percent since 1990—and the shifts in the types of industries that dominate the economy, the sub-regional picture is remarkably stable.





Figures 19.3 and 19.4 show employment growth for cities in King County that had at least 10,000 jobs in 2018.

In terms of the increase in the number of jobs, Seattle is clearly way in front, but from a base far larger than any other city.

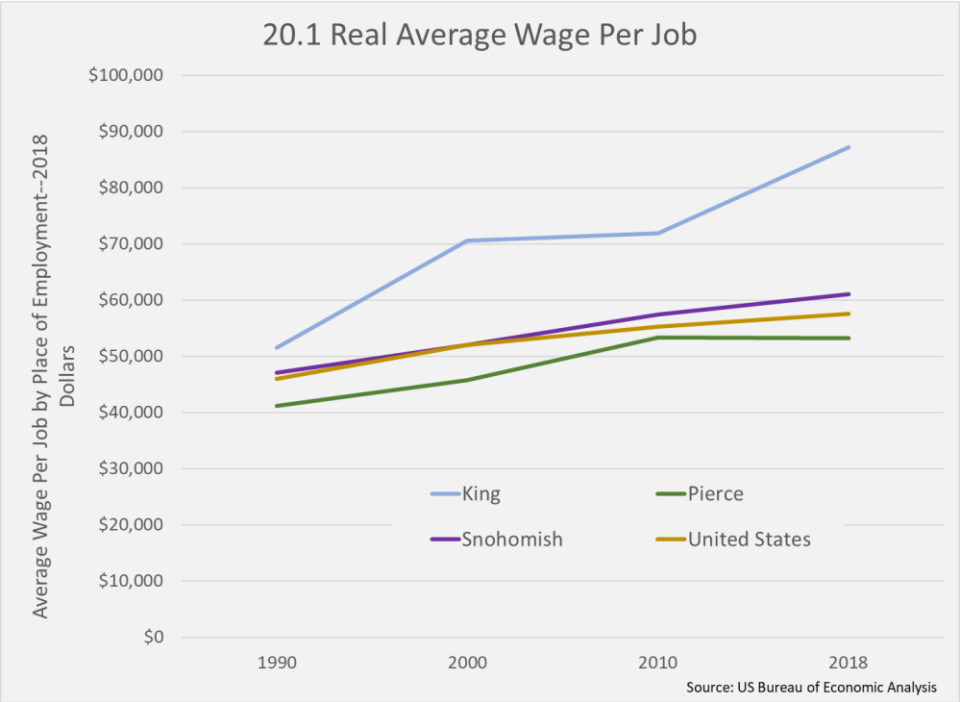
In terms of employment growth rate, the Eastside cities have shown the strongest growth. Issaquah, in developing its lowlands (including corporate headquarters of Costco) and especially the new commercial areas of the Issaquah Highlands, has transformed from a residential community into a major employment center.

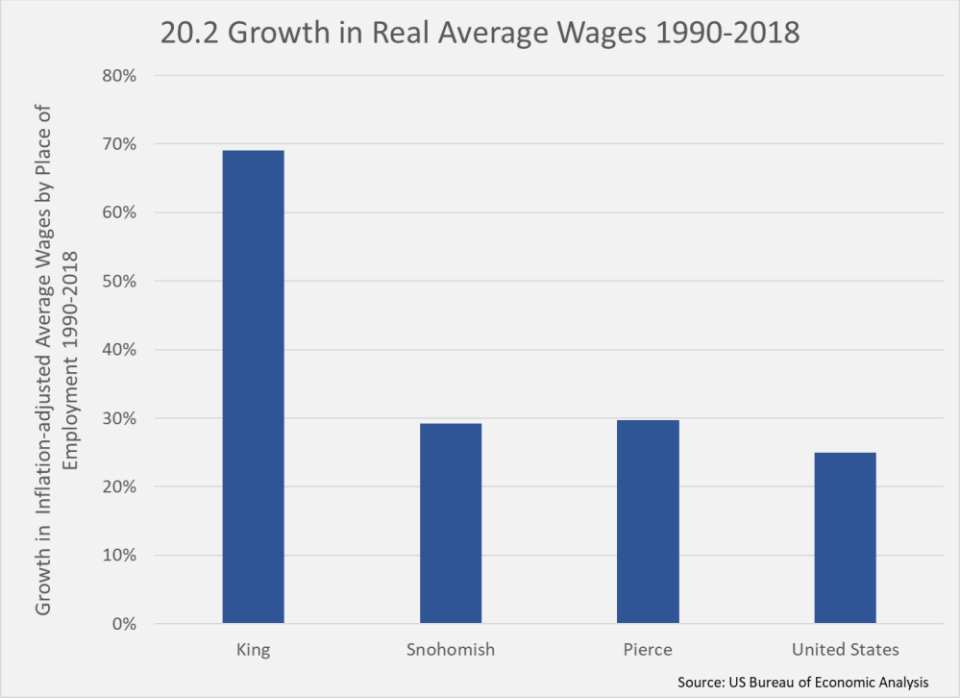
In 1995, when this data began to be collected, Microsoft was in an expansion mode in Redmond that continued for another ten years. Other technology firms followed. Bellevue has seen large numbers of new jobs, but it started from a larger base, so its growth rate has not been as high.

In the south end, Auburn has seen strong growth as the Green River Valley has filled in form north to south. Kent has had less opportunity for employment growth as its part of the Valley was more built out in 1995. Aggressive annexations have brought more residential commercial areas into Kent.

As with population growth, the cities along the Interstate 5 corridor continue to lag in employment growth.

No. 20: Wage Growth





As the composition of employment in the region has changed, average wages have changed as well. (The term "wages" includes salary, hourly pay and other cash compensation).

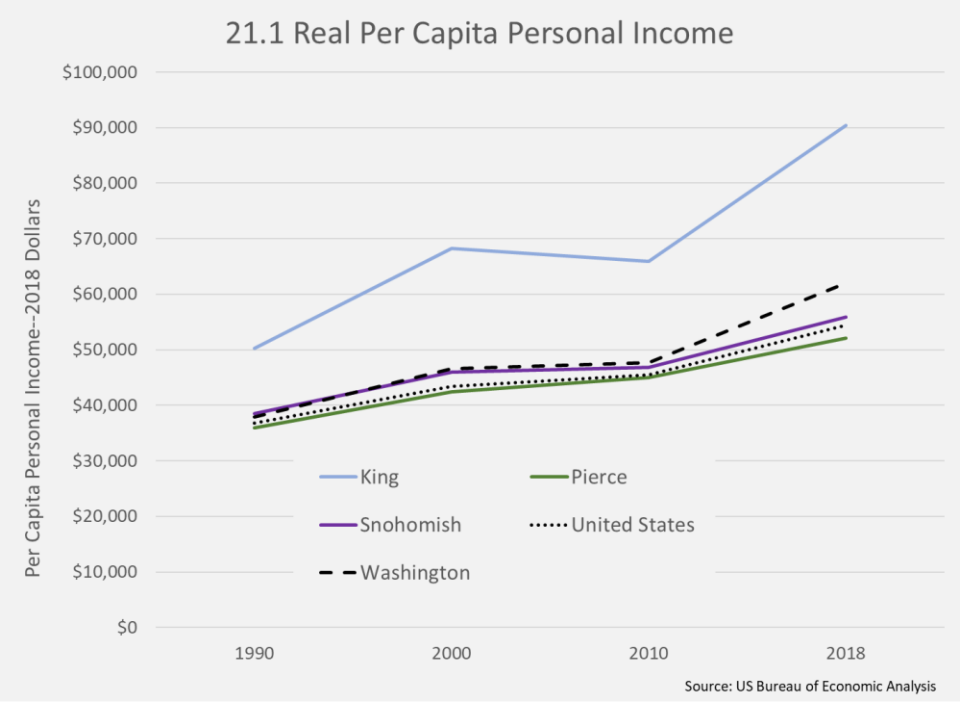
Figures 20.1 and 20.2 show the increase in inflation-adjusted average wages for the three counties, as well as the nation as a whole. This data is based on place of employment.

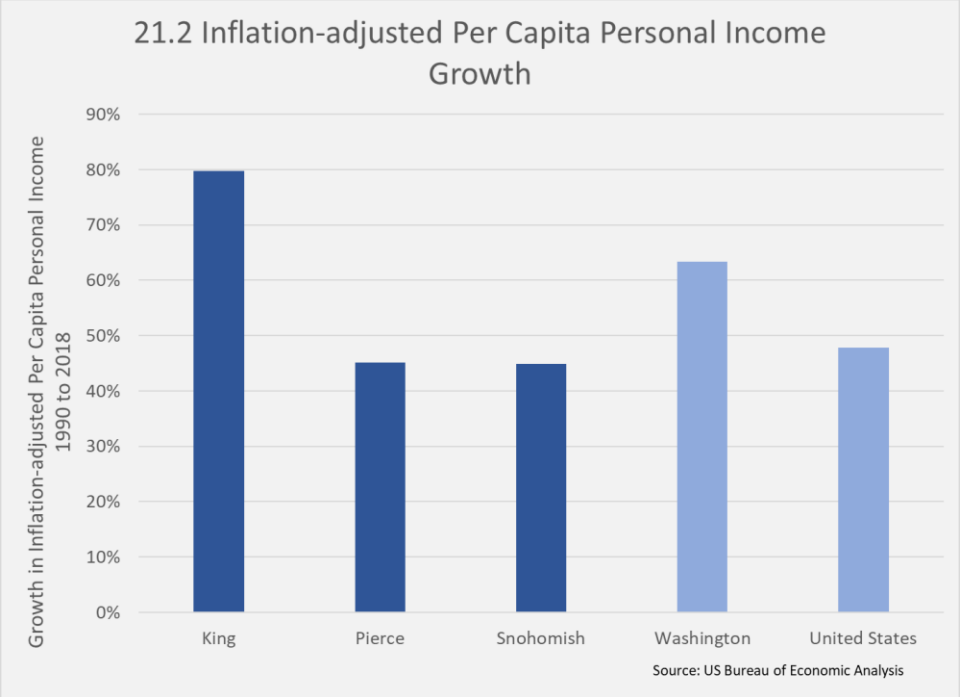
The average wage paid in King County grew from about $50,000 to over $87,000 in 2018 dollars, an increase of 69 percent. In 1990, King County wages were 12 percent above the national average, growing to 52 percent above the national average by 2018. 2000 was an anomalous year for King County, as it experienced the dot-com bubble. The bursting of that bubble had a severe impact on the county, which did not recover for many years.

Pierce and Snohomish counties have seen steady average wage growth. Both counties grew at slightly more than the national average between 1990 and 2018, and Snohomish remains above the national average wage and Pierce remains below.

The difference in average wages between King County and its adjacent counties is striking. In 1990, the average wage in King County was 10 percent higher than in Snohomish County and 25 percent higher than in Pierce County. By 2018 those gaps had grown to 43 percent and 64 percent, respectively. With constrained housing supplies in King County, this big wage difference can have a large negative impact on the ability of those living on Pierce and Snohomish County wages to afford homes that are being sought after by those earning King County wages.

No. 21: Per Capita Personal Income





Wage growth, as shown in No. 20, only tells part of the story of the earnings and spending power of the region. Per capita personal income (PCPI) presents a broader measure of income, which includes earnings from work, earnings from investments and transfer payments.

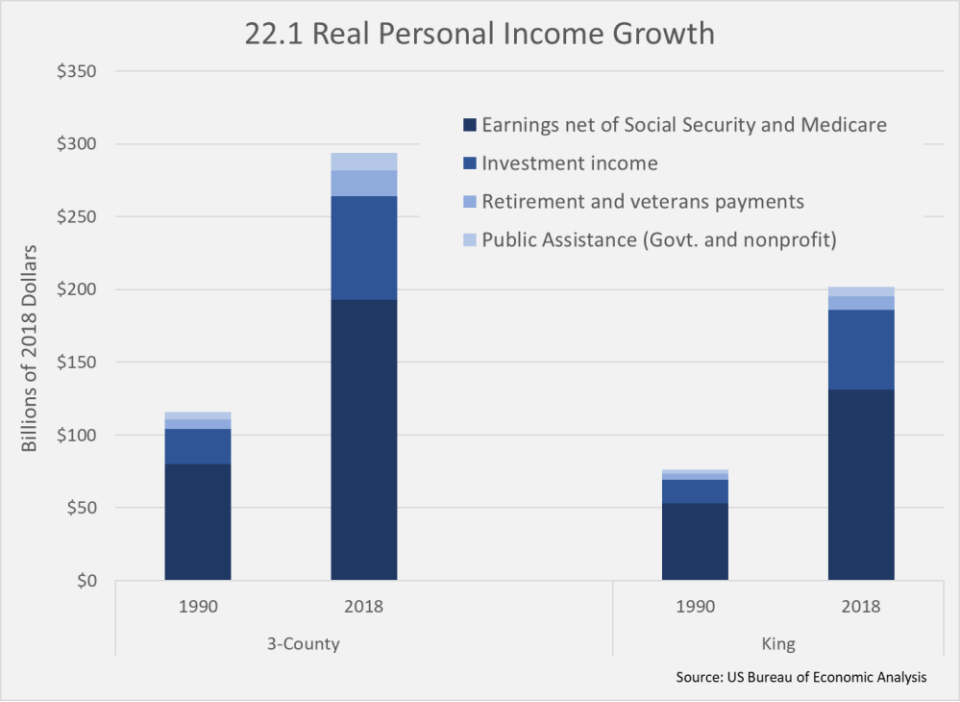
Figure 21.1 shows growth in inflation-adjusted PCPI for the three counties as well as the state and nation.

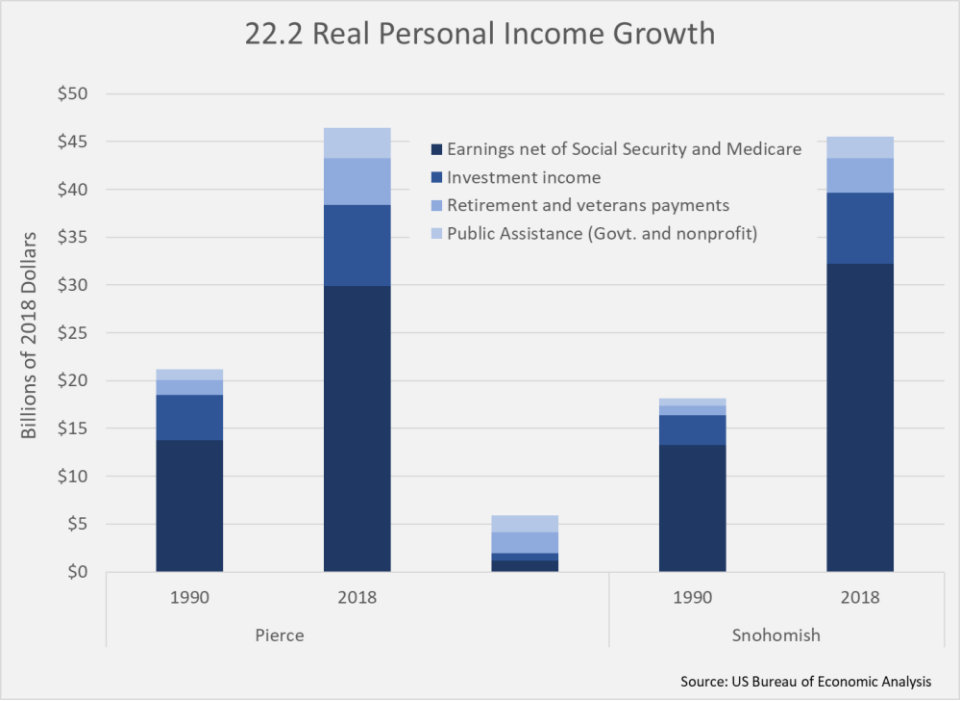
Like figure 20.1, figure 21.1 shows that King County has pulled away from the two adjacent counties, which are largely tracking the national trend. King County has a powerful pull on statewide PCPI, which is higher than the other measures.

All three counties show PCPI growth rates, seen in figure 21.2, that are higher than the wage growth rates seen in figure 20.2. This is due to growth in non-wage income, such as investment income and transfer payments.

The gap in PCPI between King County and the two adjacent counties is larger than the wage gap, but the PCPI gap has not grown as much. In 1990 King County PCPI was 40 percent higher than Pierce County and 30 percent higher than Snohomish. By 2018 that gap had grown to 74 percent and 62 percent, respectively.

No. 22: Components of Personal Income





Growth in average wages and per capita personal income (PCPI), as seen in No. 20 and No. 21, indicates the expansion of purchasing power among regional residents. Growth in total personal income shows expansion of the overall money circulating within the regional economy.

Figures 22.1 and 22.2 shows the growth in total, inflation-adjusted personal income in the three-county region and in each county and the major components of that growth. In 2018 dollars, total personal income in the Seattle metro area grew 154 percent, from $116 billion to $294 billion. Of the four components shown, earnings grew the slowest, at 141 percent, while investment income grew fastest, at 195 percent.

In King County, where total personal income grew by 164 percent, earnings grew by 147 percent while investment income grew 238 percent, more than tripling.

In Pierce County, total personal income grew 119 percent to $46 billion. A larger driver of growth in Pierce County was retirement income, which grew by 219 percent in real terms between 1990 and 2018.

Total personal income in Snohomish County by 151 percent from 1990 to 2018. Earnings grew slightly faster than the regional rate, and like Pierce County, retirement income grew the fastest, at 250 percent.

The Puget Sound region is a large economic entity. Its total personal income of $294 billion is comparable to the GDP of Chile.

No. 23: Per Capita Personal Income by Metro Area

23.1 Per Capita Personal Income of Largest Metro Areas

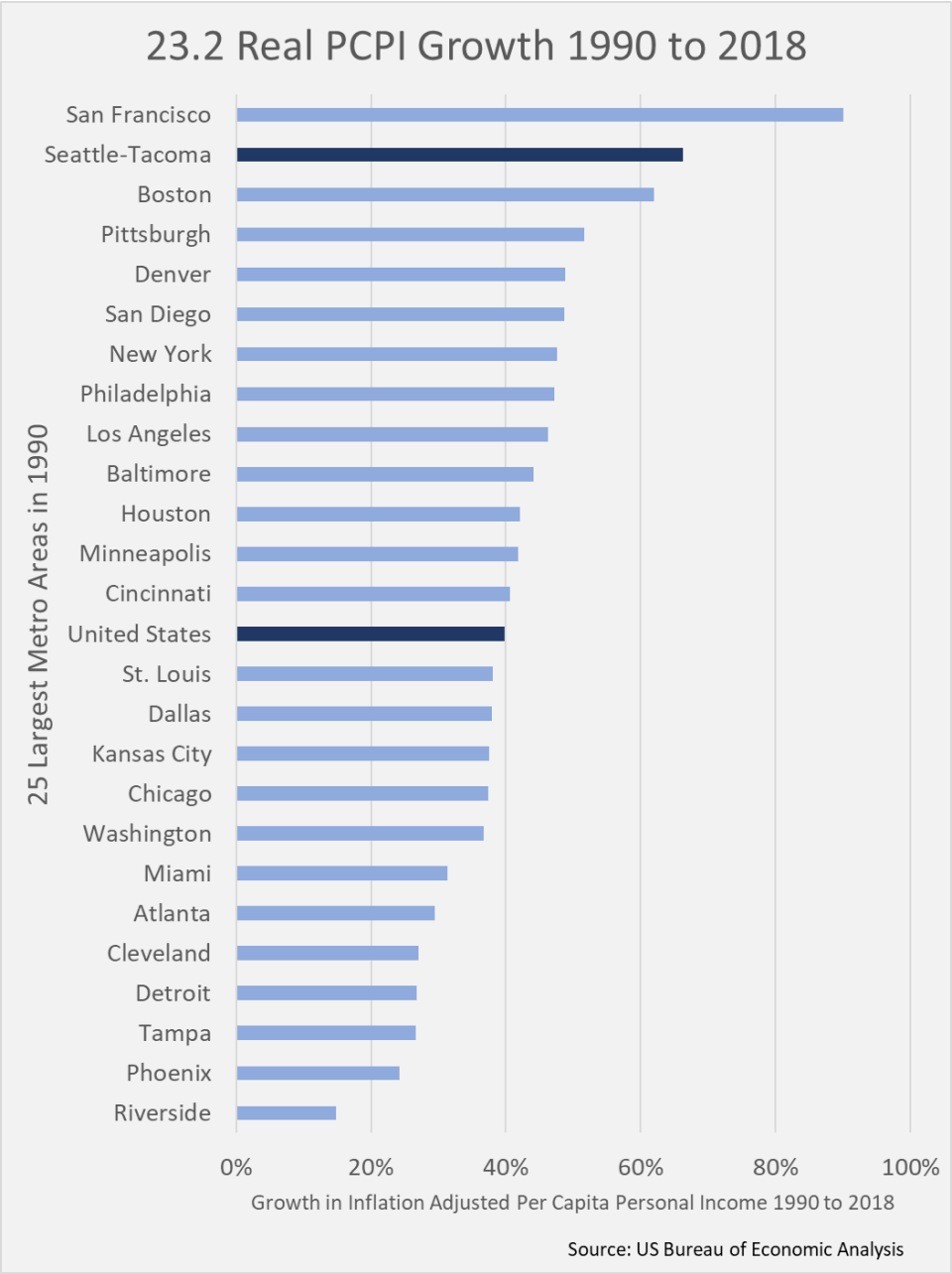
1990			2018		
Rank		PCPI in 2018 dollars	Rank		PCPI in 2018 dollars
1	Washington	53,032	1	San Francisco	99,424
2	San Francisco	52,327	2	Boston	78,694
3	New York	51,975	3	New York	76,681
4	Boston	48,579	**4**	**Seattle-Tacoma**	**74,620**
5	**Seattle-Tacoma**	**44,866**	5	Washington	72,483
6	Chicago	44,471	6	Philadelphia	64,440
7	Minneapolis	44,333	7	Denver	64,287
8	Philadelphia	43,762	8	Los Angeles	63,913
9	Los Angeles	43,706	9	Minneapolis	62,889
10	Miami	43,577	10	Baltimore	62,402
11	Baltimore	43,286	11	San Diego	61,386
12	Denver	43,205	12	Chicago	61,089
13	Cleveland	42,305	13	Pittsburgh	58,072
14	Detroit	41,863	14	Miami	57,228
15	San Diego	41,277		**United States**	**56,527**
16	Atlanta	40,542	15	Houston	56,077
17	Dallas	40,528	16	Dallas	55,886
18	St. Louis	40,464	17	St. Louis	55,883
	United States	**40,418**	18	Cincinnati	54,176
19	Houston	39,463	19	Kansas City	53,788
20	Kansas City	39,104	20	Cleveland	53,738
21	Cincinnati	38,543	21	Detroit	53,086
22	Pittsburgh	38,288	22	Atlanta	52,473
23	Tampa	37,309	23	Tampa	47,240
24	Phoenix	37,117	24	Phoenix	46,125
25	Riverside	35,243	25	Riverside	40,486

Source: US Bureau of Economic Analysis

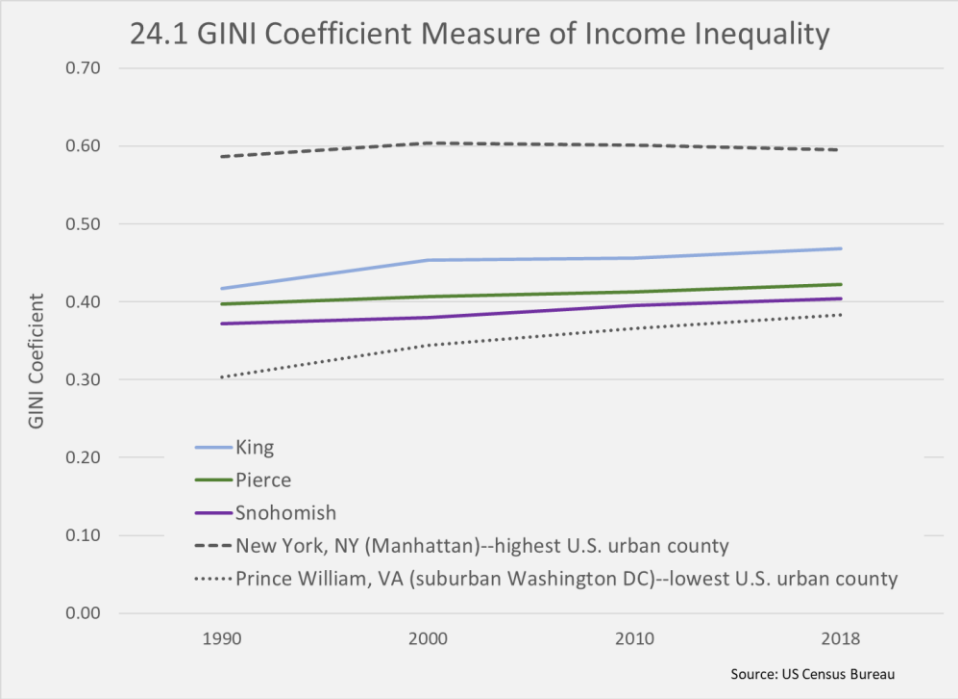
The Seattle metro area is one of the most prosperous large metro areas in the country. Figure 23.1 shows the per capita personal income (PCPI) for the 25 metro areas with the largest populations in 1990. PCPI is shown for 1990 in inflation-adjusted 2018 dollars. Seattle is near the top, in illustrious company, having moved past the Washington D.C. metro area in 2018. The top five metro areas in 1990 remained the top five in 2018, but with some shifting.

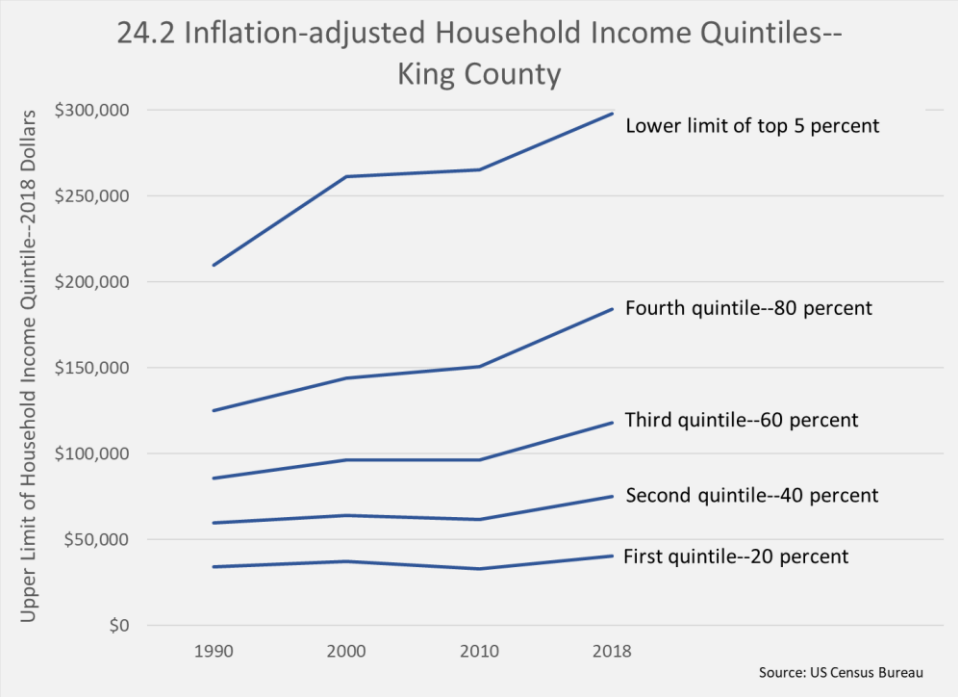
Figure 23.2 shows the PCPI growth rate for these metro areas between 1990 and 2018. The Seattle area grew second-fastest, which allowed it to pass Washington D.C. and close the gap with New York and Boston.

At current growth rates, Seattle will jump ahead of New York by 2020 and Boston by 2021, to become the second highest earning among the 25 largest metro area in the country.


23.2 Real PCPI Growth 1990 to 2018
San Francisco
Seattle-Tacoma
Boston
Pittsburgh
Denver
San Diego
New York
Philadelphia
Los Angeles
Baltimore
Houston
Minneapolis
Cincinnati
United States
St. Louis
Dallas
Kansas City
Chicago
Washington
Miami
Atlanta
Cleveland
Detroit
Tampa
Phoenix
Riverside
25 Largest Metro Areas in 1990
0%
20%
40%
60%
80%
100%
Growth in Inflation Adjusted Per Capita Personal Income 1990 to 2018
Source: US Bureau of Economic Analysis

No. 24: Income Inequality



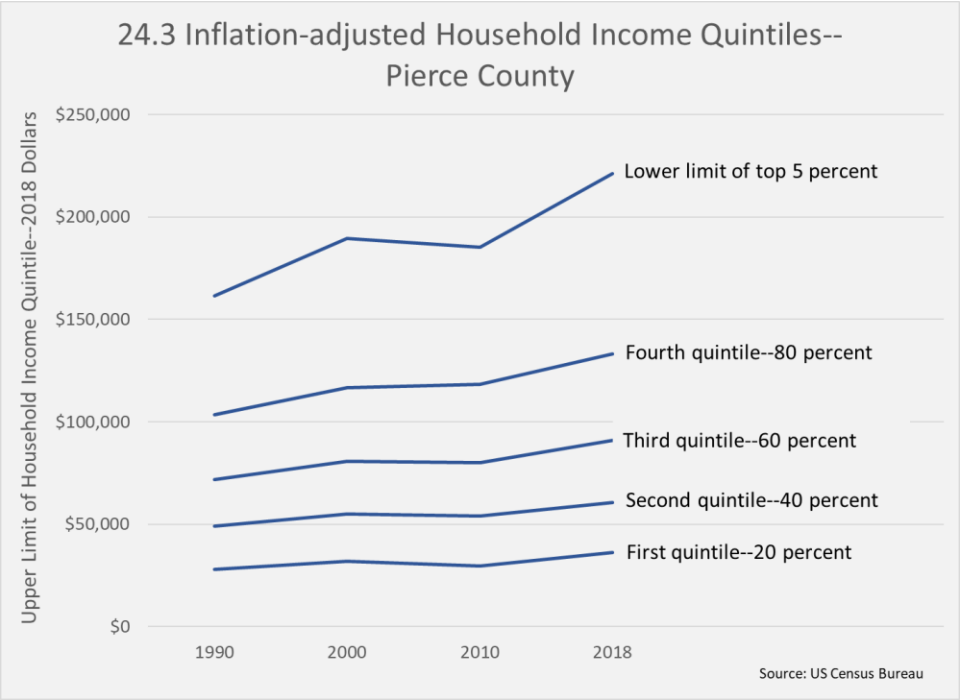


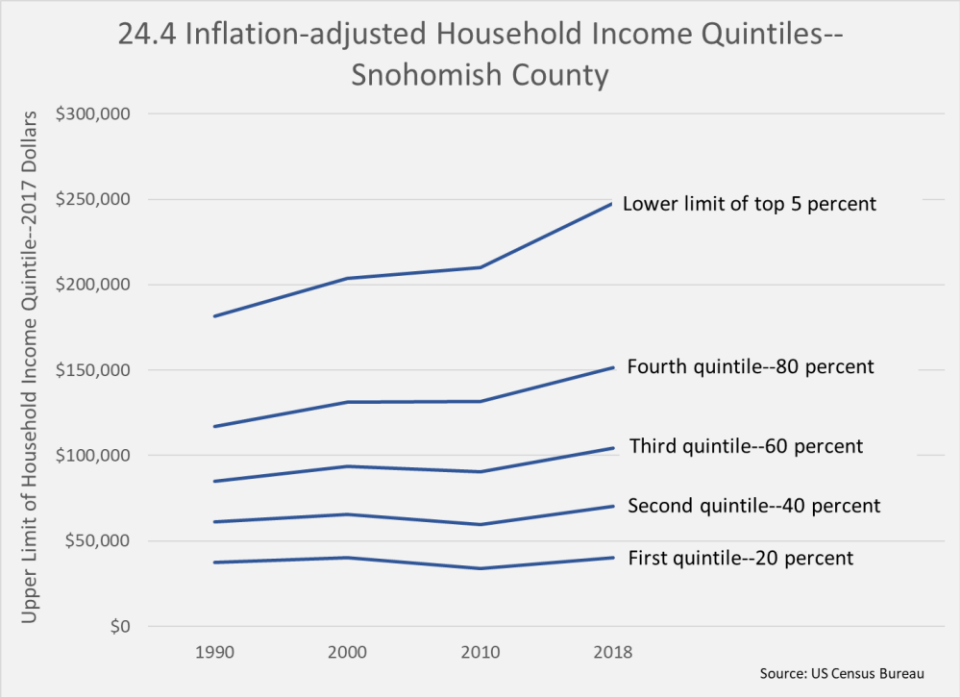
As seen in Nos. 20 through 23, average wages and per capita incomes have grown substantially in the Seattle area. But growth in per capita or average measures masks the unevenness of growth and the rise in income inequality that is recognized nationally.

Figure 24.1 shows the Gini index, a widely used measure of income inequality. Gini indices can be used to measure either income or wealth, and are based on a measure of the share of income or wealth held by populations at different levels from zero to the highest income or wealth. A Gini Index of zero would indicate perfect income or wealth equality, and a Gini Index of 1 would indicate that one person has all the income or wealth.

In figure 24.1 we see the Gini indices for the three counties. Included are Gini indices for two counties that bracket the range of income inequality in the U.S. Prince William County, Virginia, has the lowest Gini index , and therefore the most equal income distribution (excluding a few very small, outlier counties). Manhattan has the highest Gini index and the most unequal distribution.

Among the three Puget Sound counties, King County shows a sharp rise in its Gini index from 1990 to 2000, and then, along with the other two counties, shows a gradual rise from 2000 to 2018. Snohomish County shows the lowest level of inequality, and is not far from the level of Prince William County.



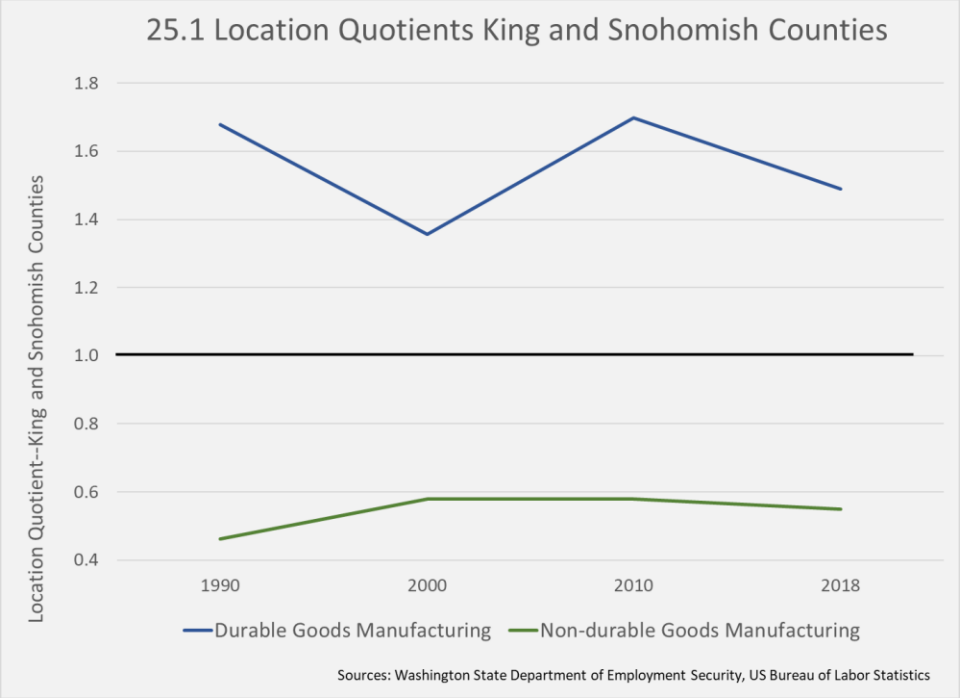


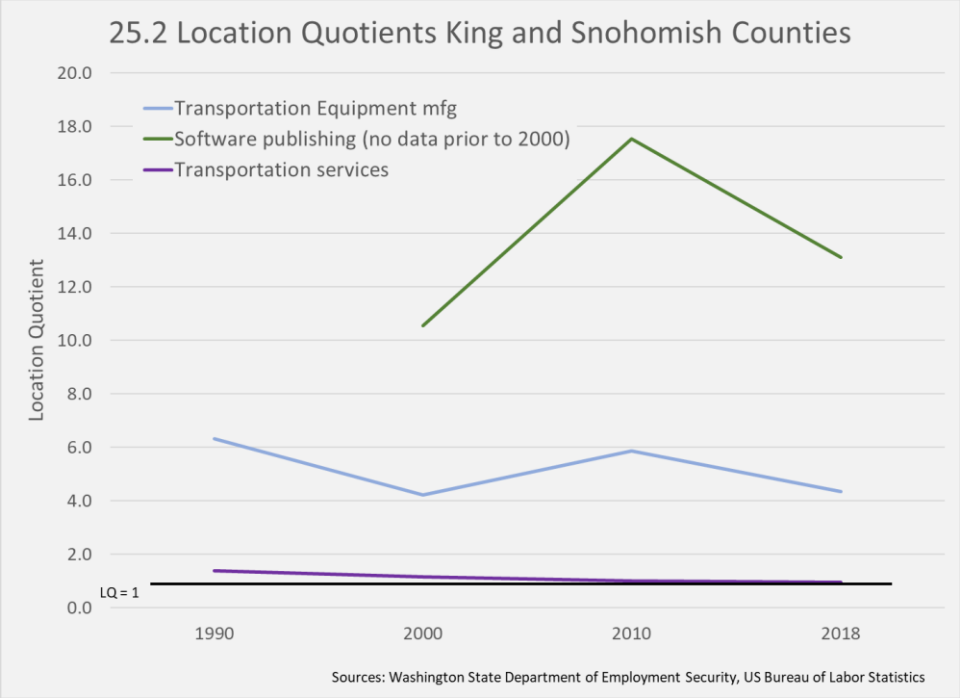
Another way to look at income inequality is to break out household earnings by brackets and determine how the incomes in each bracket are growing. Figures 24.2, 24.3 and 24.4 show income quintiles (one fifth of households in each) for each of the counties. The first four income quintiles are defined by the upper bound, and the highest quintile is defined as the lower limit of the top 5 percent (that is, income at the 95th percentile level. The upper bound of the top quintile would, unhelpfully, just indicate the wealthiest household). The income levels are inflation-adjusted, using 2018 dollars.

As has been reported at the national level, the upper quintiles are seeing much more income growth than the lower levels. In King and Pierce counties the lowest quintile (that is, income at the 20th percentile level) shows some growth, but that quintile is flat in Snohomish County. That is, the lowest income group has seen little or no real income growth since 1990.

Growth improves gradually through the second, third and fourth quintiles. In all three counties the fifth quintile, as measured at the 95th percentile level, is well above the fourth quintile and has been growing most sharply.

No. 25: Industry Concentration



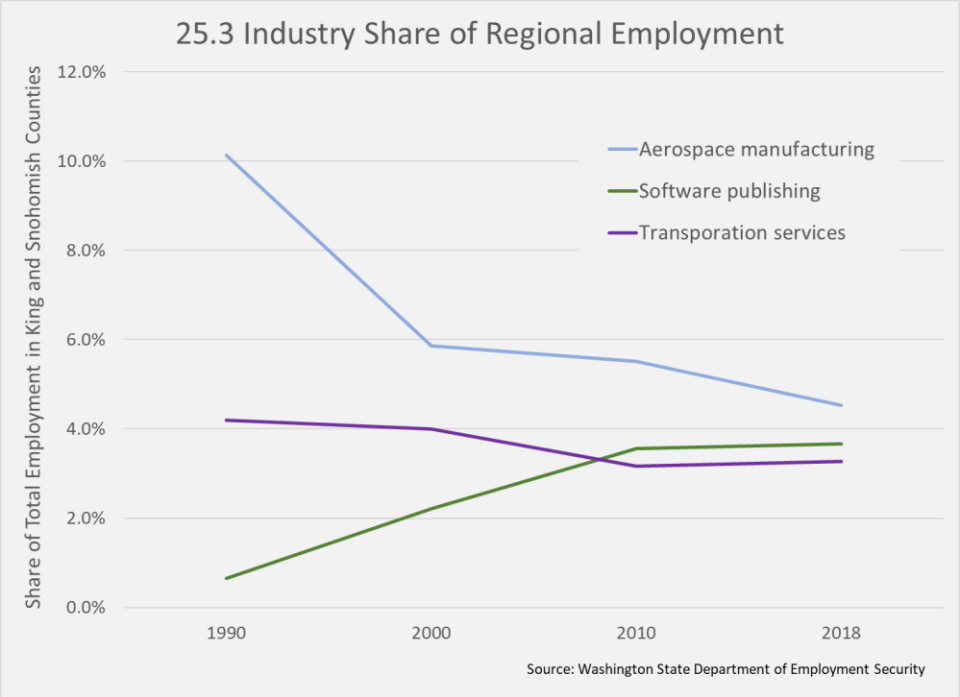


Given its geographic position in the far northwest part of the country, the Seattle region has evolved a unique industrial structure. Conventional location theory says that industries should be in the center of markets, so Seattle's position in the corner of the national market has made it a disadvantageous location for industries that have high relative transportation costs.

Figure 25.1 illustrates this, showing the location quotients (LQs) for the two broad categories of manufacturing. LQs are calculated by dividing the regional share of employment in an industry or sector, by the national share. An LQ of 1 means that the region has the same share of an industry as the national average. Greater than 1 means a higher concentration and less than one indicates a lower concentration.

Figure 25.1 shows that the Seattle area has a high concentration in durable goods manufacturing and a low concentration in non-durable goods. This is driven by transportation costs, which tend to be relatively high for non-durable goods (for example, trucking a three dollar bottle of dish soap) and relatively lower for durable goods (for example, shipping a $100,000 medical device). Boeing dominates the durable goods sector in the Seattle area, but the region is also known for manufacturing other products with a high value-to-weight ratio.

Figure 25.2 shows the LQs for some more specific industries that the region is known for. The LQ for software publishing (the industrial category for Microsoft,



which was included in national data after 1990) is extremely high. It fell somewhat as total employment recovered after the Great Recession and Microsoft employment leveled off.

Transportation equipment manufacturing, which includes not only Boeing, but also Paccar and the shipbuilding industry, has fluctuated. Gradual reductions in Boeing employment have been offset to some degree by growth in the maritime sector.

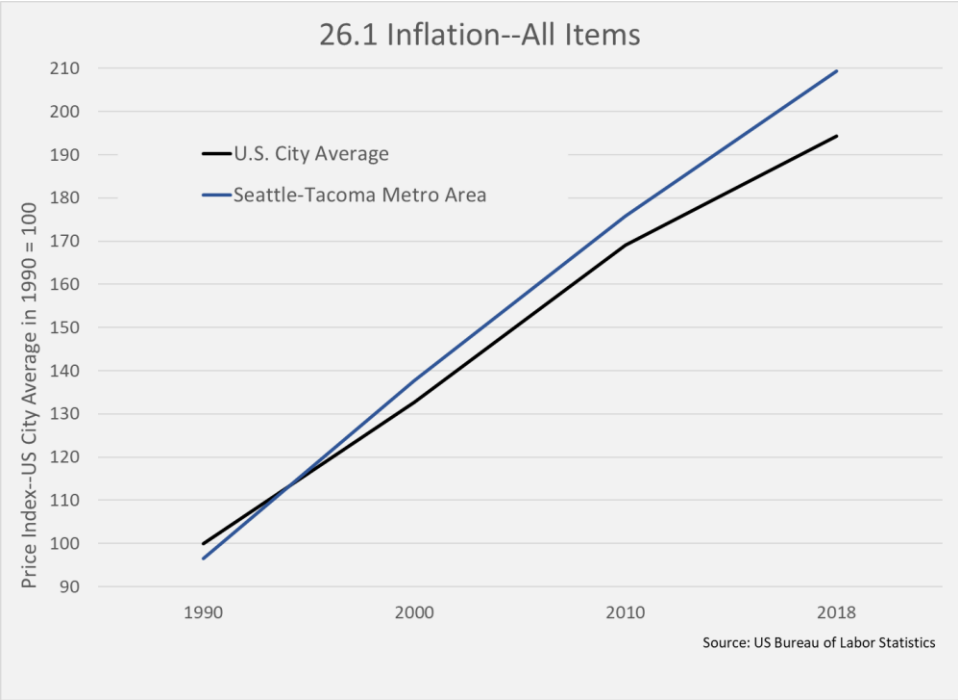
The category of transportation services, which includes port activity, has gradually fallen and is now near the national average.

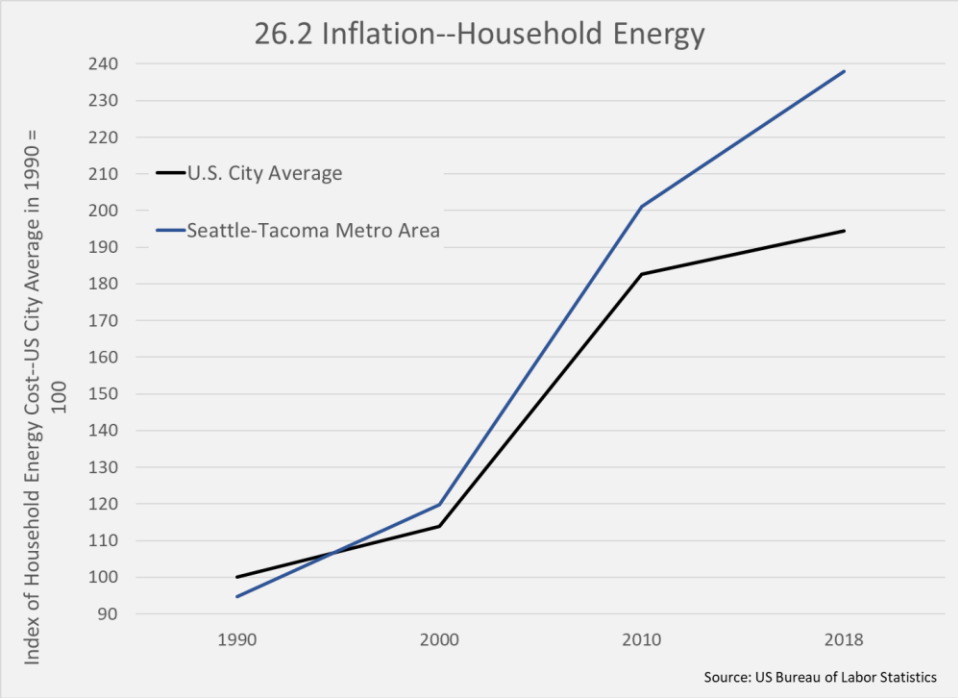
Figure 25.3 shows the share of total regional employment taken up by software publishing, transportation services and the more specific category of aerospace manufacturing. In 1990, over 10 percent of the regional workforce worked at the Boeing Company or at its local suppliers. This share has been cut in half, as Boeing employment has plateaued and overall employment has grown.

During this same time period, software grew from less than 1 percent of regional employment to nearly 4 percent. In 1990, Microsoft was still a relatively small company, and it grew rapidly into the 2010s. As Microsoft employment leveled off, other software firms from Silicon Valley began to establish engineering offices in the Seattle area, and software kept pace with overall regional employment.

Transportation services employment has fluctuated around a steady figure since 1990, driven by general economic conditions (less shipping and travel during recessions) and has seen a slight uptick in recent years. But this steady state has not kept pace with overall regional growth, and the transportation services share of total employment has fallen gradually over time.

No. 26: Cost of Living





The cost of living varies to some degree across the country. Most consumer goods are available nationally at close to the same price. Service costs tend to be similar, as national service firms compete against local firms and influence prices.

Some important categories of spending, however, are not traded and can be quite different, leading to overall differences in the cost of living.

Figure 26.1 shows price indices for all items in the Seattle metro area and the nation (using the Bureau of Labor Statistics city average for prices). In 1990 the cost of living in the Seattle area was slightly lower than the national average, and by 2018 it was 8 percent higher.

One area of national variation is household energy costs. These costs reflect different electric generating methods and fuel delivery systems. As seen in figure 26.2, household energy costs in Seattle were below the national average in 1990, reflecting the price advantages of hydroelectric power that the Northwest had long enjoyed. After a steady increase above the national level, household energy prices spiked after 2010 and are now 22 percent above the national average.

Another area of concern is housing costs. Housing is not a tradable good, since buildings and land cannot be moved from areas of surplus to areas with shortages. It is possible to trade housing in the sense of industries relocating to areas with a high housing supply, but this does not happen often.

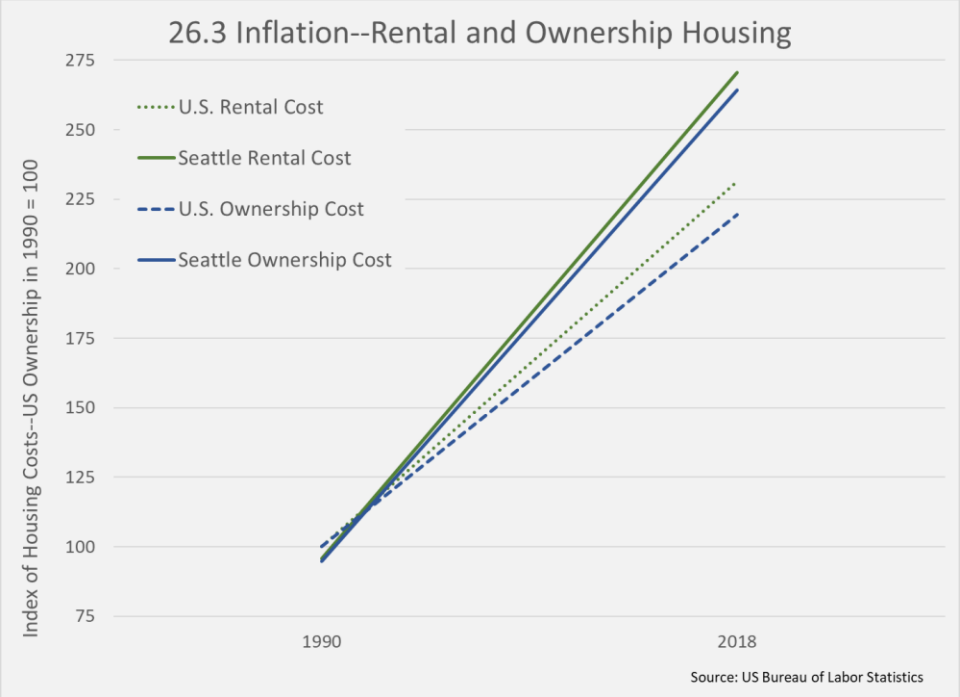
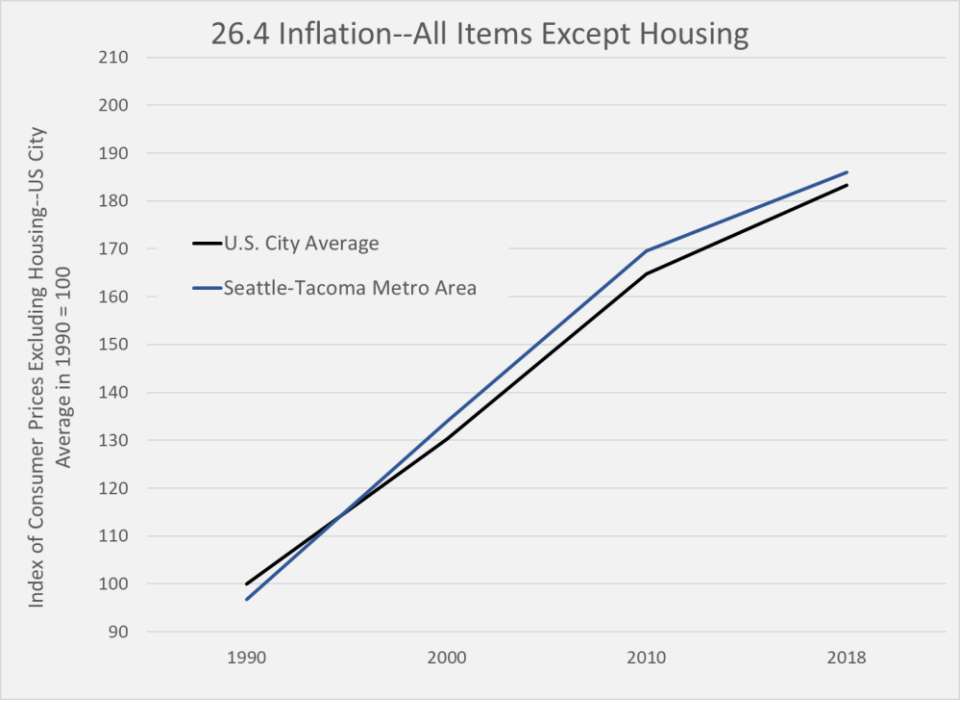
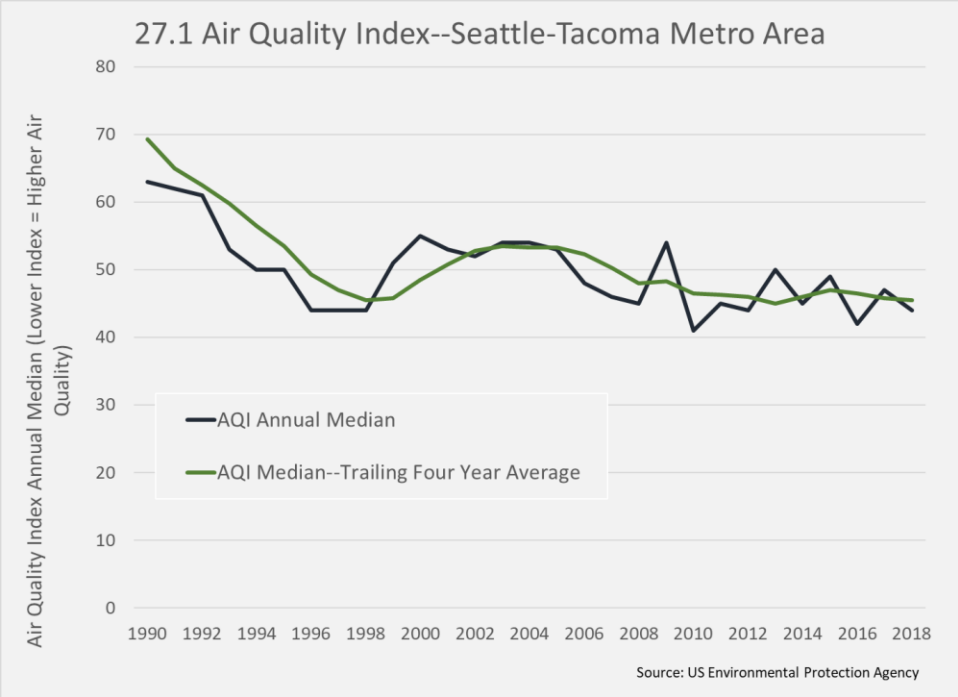


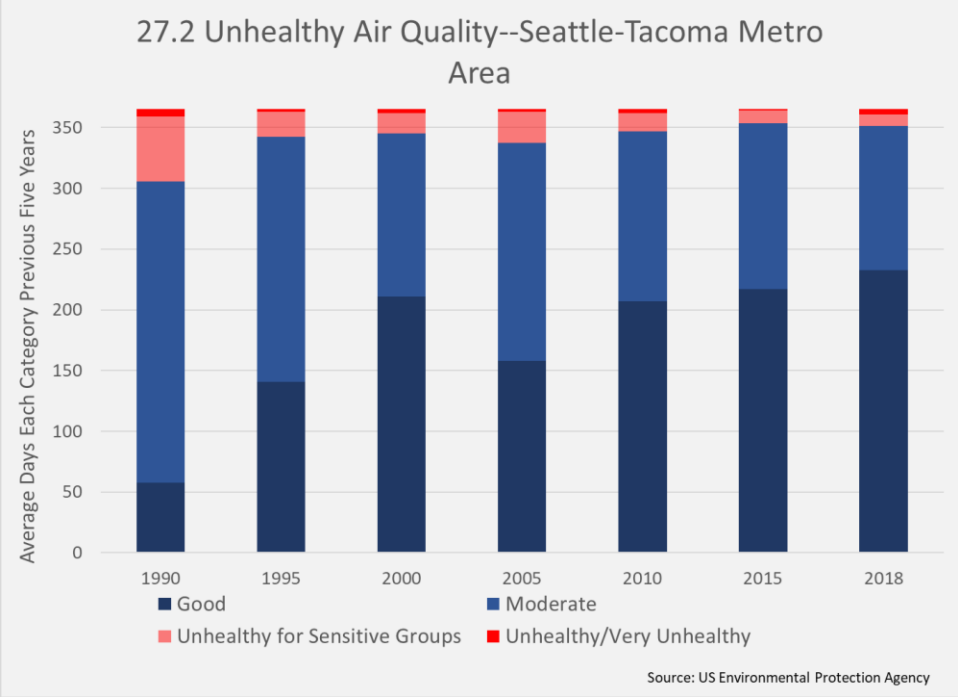
Figure 26.3 shows price indices for rental and ownership housing at the national and regional level. In 1990 the Seattle metro was slightly below the national average for both rental and ownership costs. By 2018 rental and ownership costs exceeded national averages by 17 percent and 21 percent respectively.

To see the impact of housing on inflation, figure 26.4 shows the same inflation rate as seen in figure 26.1 but with housing costs removed. In this illustration, the price level of the Seattle area is only slightly above the national level.



No. 27: Air Quality





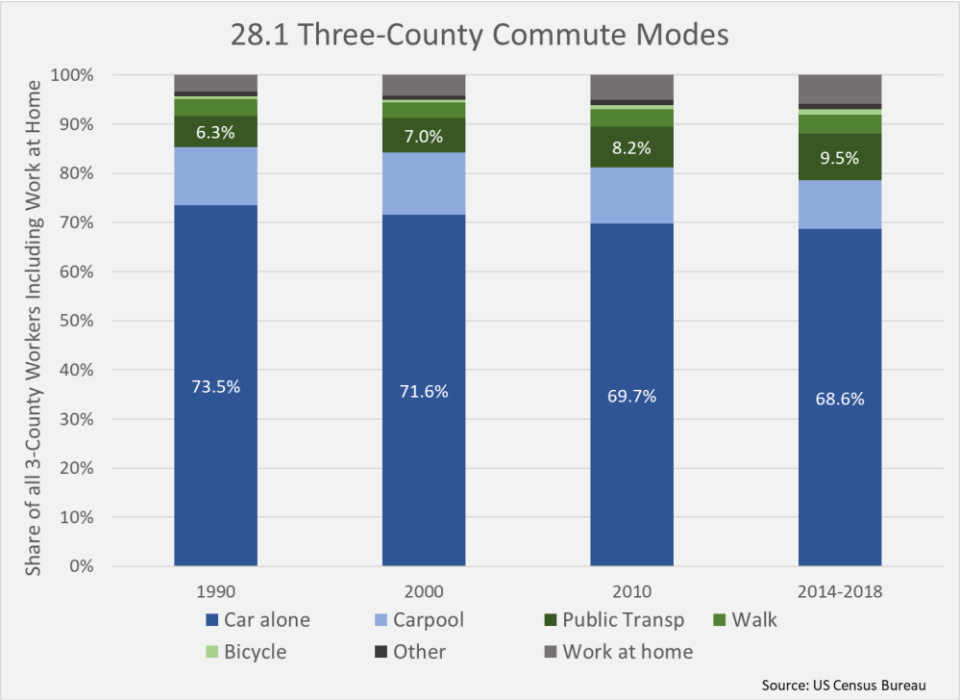
Passage of the Clean Air Act in 1963 ushered in a multi-decade effort to reduce alarming levels of air pollution. The U.S. Environmental Protection Agency began monitoring efforts across the country. Figure 27.1 shows the average Air Quality Index for the Seattle metro area from 1990 to 2018. The index combines several readings of toxic pollution, and lower readings of the index indicate higher air quality.

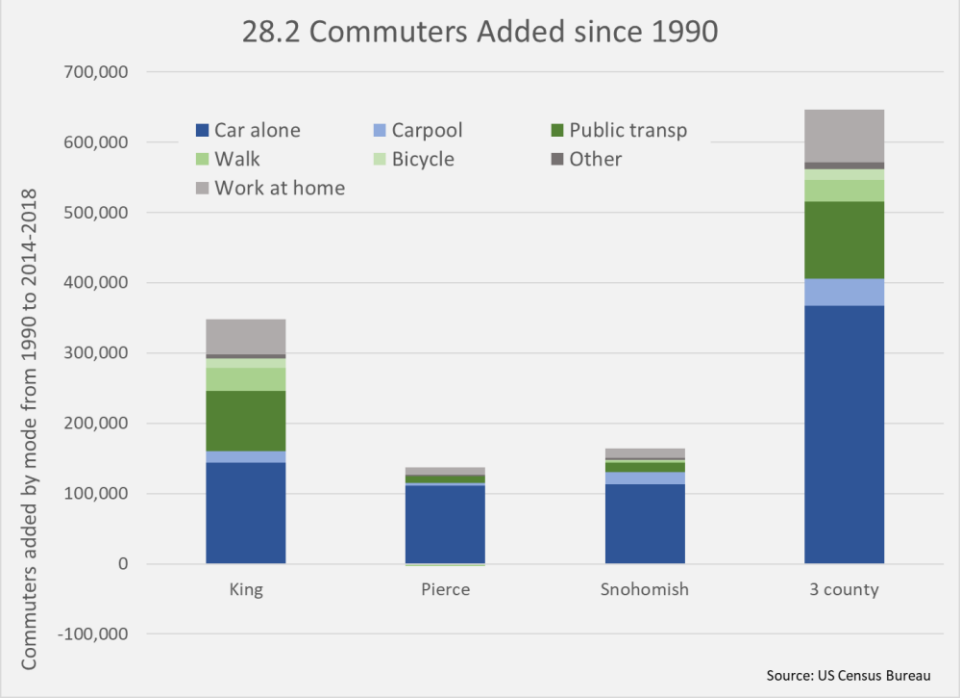
Figure 27.1 shows both annual readings and a trailing four-year average reading. Air quality is influenced by year-to-year variation in weather, and, as seen, can be quite different one year to the next.

The average, which smooths out the line, shows that air quality improved quite dramatically in the 1990s, as industries retooled and the high-polluting cars of the 1960s and 1970s got off the road. Air Quality deteriorated somewhat in the early 2000s and began a steady improvement in the 2010s. The index is not adjusted for growth, so the steady improvement in the face of growth and higher population concentrations (see No. 29) is good news.

Figure 27.2 breaks out the annual index into the number of days with various levels of healthy or unhealthy air. Each column represents the average of the previous five years. With the exception of the 2000 to 2005 period, the number of "good" days has been steadily improving and the number of "unhealthy" and "very unhealthy" days has fallen. The increase in the number of unhealthy and very unhealthy days in the 2018 period was due to smoke from wildfires, and not from pollutions sources subject to regulation.

No. 28: Commuting





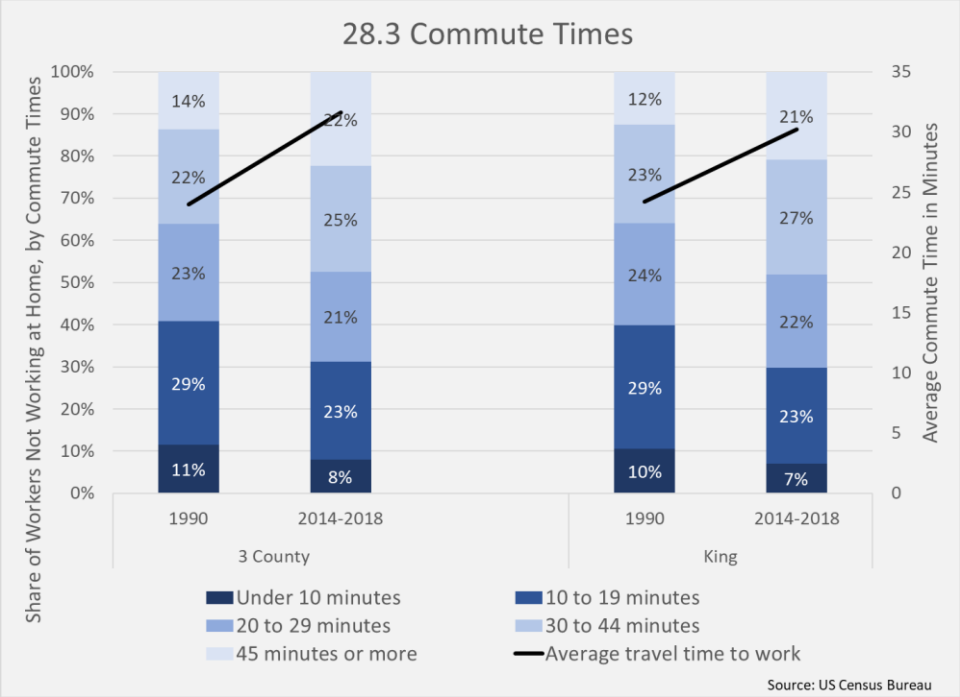
A key environmental and planning goal in the region over the past several decades has been to reduce the number of people driving to work alone. Single-occupancy vehicle (SOV) commuting increases traffic congestion and air pollution, encourages sprawl and creates pressure for more land to be used for parking.

To reduce SOV commuting the region has made major investments in public transit and HOV lanes, limited its investment in new general purpose freeway lanes and engaged in employer-based transportation management programs.

The results of these efforts since 1990 are seen in figures 28.1 and 28.2. Between 1990 and 2014-2018, SOV commuting fell from 73.5 percent of commuters to 68 percent. The share of commuters in carpools actually fell during this period. Walking to work increased slightly, and while bicycle commuting doubled, it started from a base of just one-half percent of commuters.

The bigger change came in the share of commuters using public transit, which grew from 6.3 percent to 9.8 percent, and the share of workers not commuting at all, but working from home, which grew from 3.4 percent to 6.1 percent.

(Care should be taken when considering the modes with small numbers, such as bicyclists. The American Community Survey, from which this data is taken, has error margins that make these small figures uncertain.)



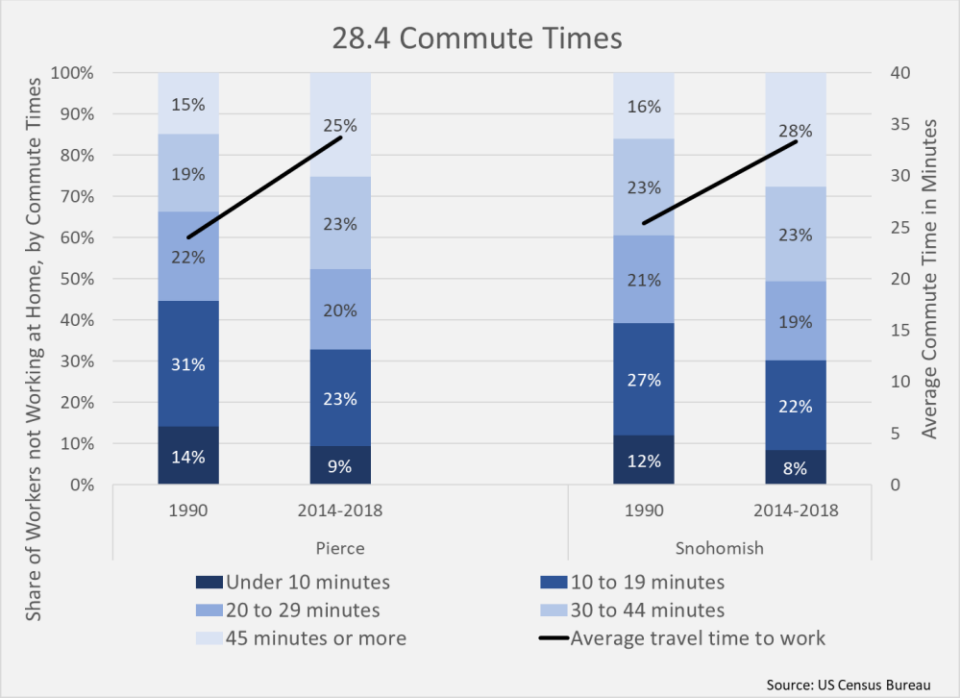
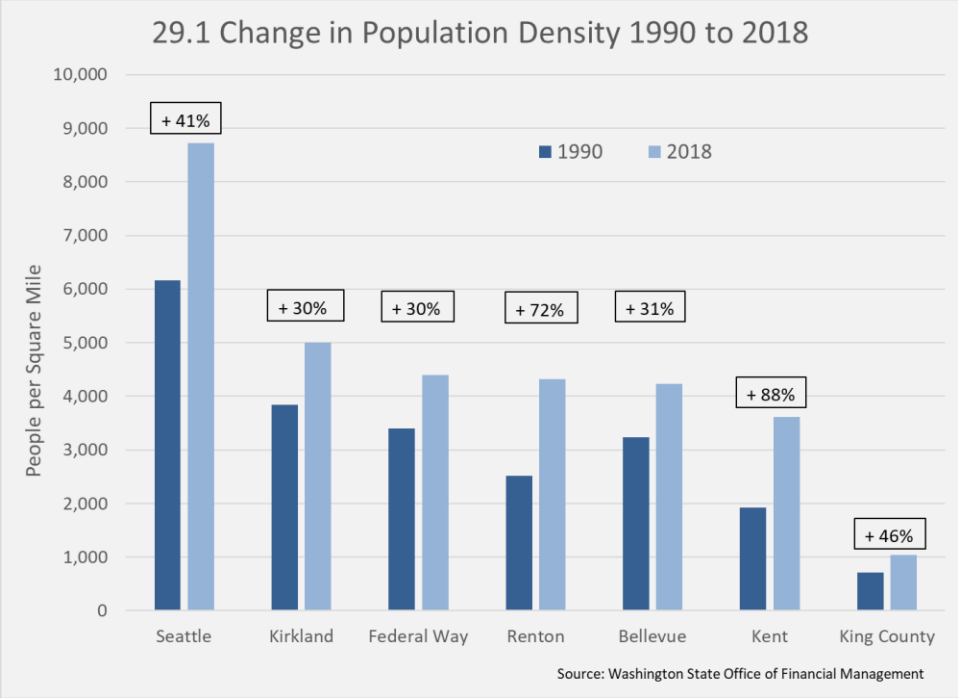


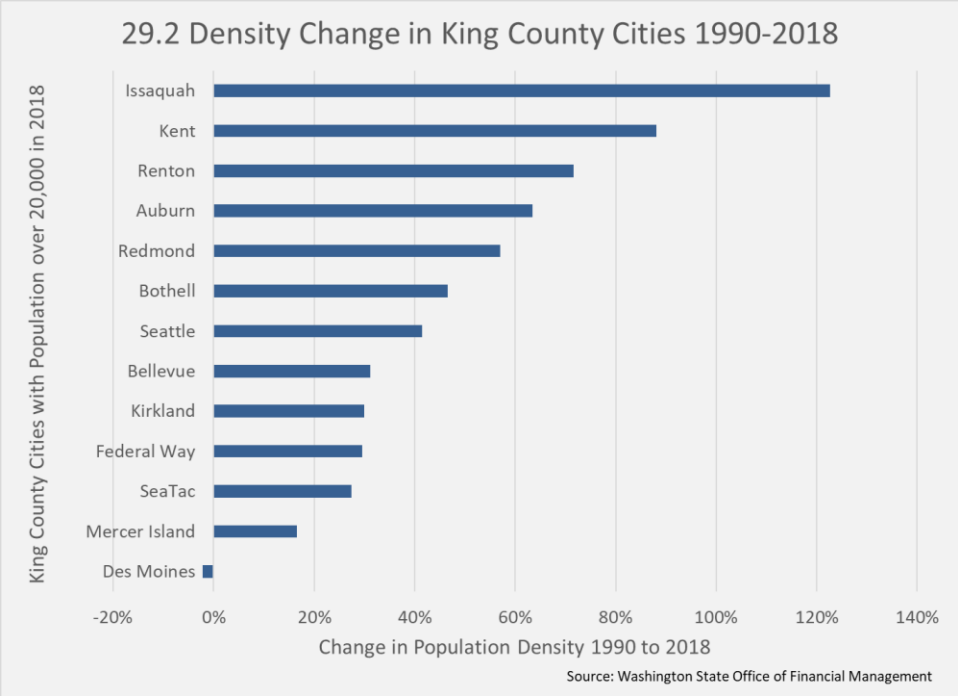
Figure 28.2 shows the number of workers added to the workforce between 1990 and 2014-2018 by their commuting mode. It shows that most of the shift to non-car commuting took place in King County, where only 41 percent of added commuters drove alone. In contrast, 83 percent of new Pierce County workers and 69 percent of new Snohomish County workers drove alone. 13 percent of new King County commuters walked or biked, while these modes barely grew in the other two counties.

Figures 28.3 and 28.4 shows the breakout of commute times for workers who do not work at home, as well as average commute times (line graph with right-hand scale). In all counties, the number of short commutes has fallen as a share and the number of long commutes has grown.

Of particular note is the significant growth in the number of commutes over 45 minutes among all commuters and especially for residents of Pierce and Snohomish counties. And as would be expected, average commute times increased in all counties, most sharply in Snohomish County.

No. 29: Residential Density





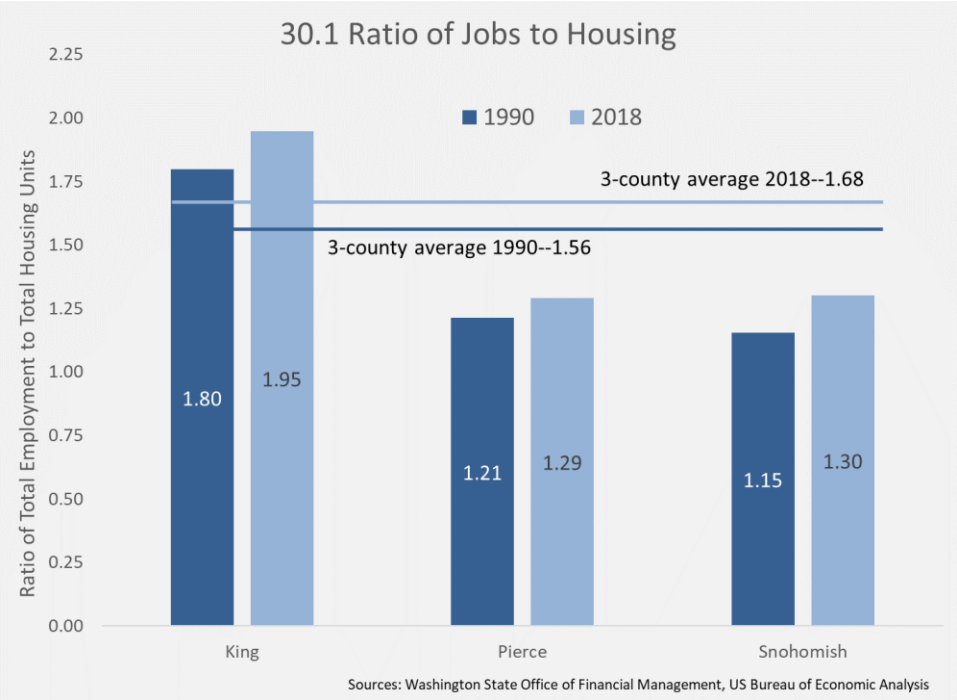
The Washington State Growth Management Act, which was put in place in 1990, has, as a central goal, general increases in residential densities within urbanized areas. Higher densities make more efficient use of land and infrastructure and encourage alternative commute modes.

Figure 29.1 shows the changes in residential densities for the larger cities of King County and for the county as a whole.

Seattle, which was already relatively dense in 1990 increased its density by 41 percent, largely by replacing existing single family homes and commercial properties with mid-rise and high-rise multi-family structures. Of note, Renton, Kent and Kirkland increased their densities during this period while, at the same time, adding significant low density residential areas through annexation.

Figure 29.2 shows rates of density increase for a larger group of King County cities. Issaquah, which began this period as a mostly single family area added large areas of high density housing in its core as well as in masterplanned communities.

No. 30: Jobs-Housing Ratio



A key part of improving the commute situation is to maximize the opportunity for commuters to live close to their work. The choices individual residents make with respect to homes, neighborhoods and jobs are highly complex—especially when they involve multiple-earners and children—but it makes sense to provide housing in some proportion to jobs in an area.

Figure 30.1 shows the ratio of jobs to housing for the three counties and for the region. About 93 percent of workers living in the three county area also work within the three county area, so the three-county ratio of jobs to housing is a good estimate of the "correct" balance.

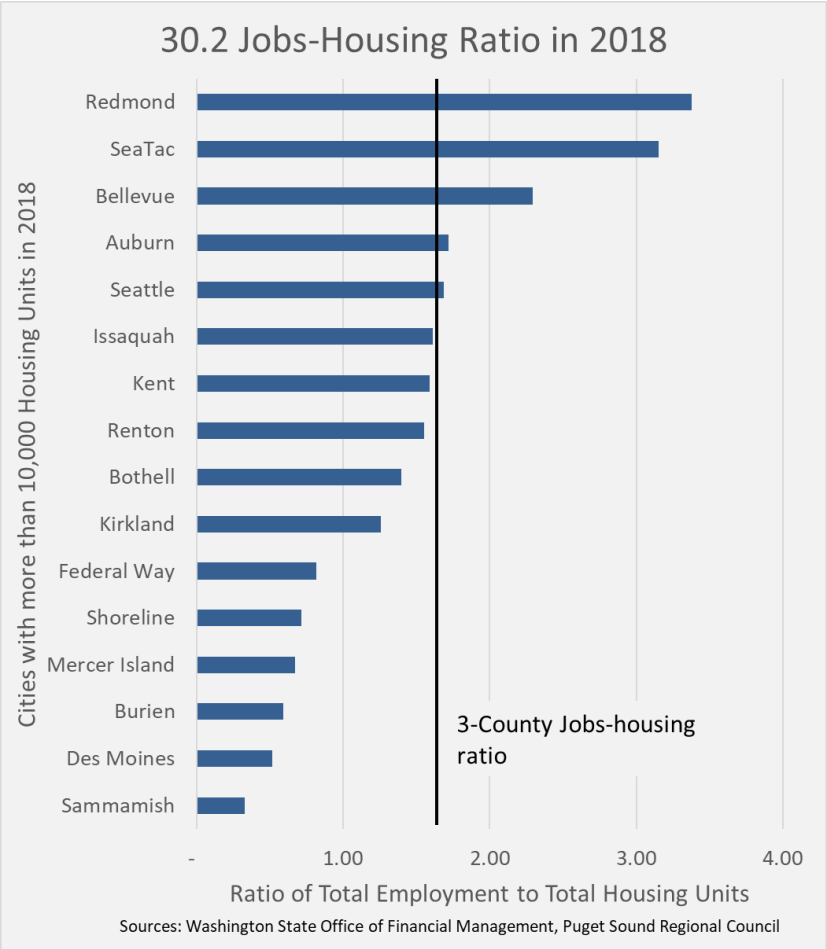


Figure 30.1 shows that King County has a higher ratio than the three county ratio, and Pierce and Snohomish have a lower ratio. This indicates that King County has a shortage of housing to meet the needs of its employers, and that the other two counties have a surplus. Indeed, between one quarter and one third of jobs in King County are held by people who live outside the county.

Figure 30.2 shows the ratio of jobs to housing in various cities within King County, along with the three-county ratio. It is not realistic to expect each city to house all of the employees working within its city limits. But there are fiscal implications to an imbalance between housing and commercial development and cities are encouraged to provide an ample supply of a range of housing types.

About the Puget Sound Indexer

The Indexer provides objective data and analysis that describes growth and change in the Puget Sound region in order to foster good decision-making.

Seattle and its surrounding areas are in the midst of transformational change. Not since the Gold Rush days of the early 20th century has the region experienced concurrent economic, demographic and social and environmental change at such a rapid pace. Political and civic leaders, as well as citizens of the region, need solid, reliable data to understand this change and to respond to it. The Indexer provides that information.

Principles

The work of The Indexer is grounded in the following key principles:

Non-partisanship. The Indexer does not adhere to any party or movement. While the outcome of its research may appear to support the views of a party or movement, The Indexer remains fully independent.

Policy neutrality. The goal of The Indexer is more informed public policy-making at the local and regional level, and findings will at times point in the direction of specific policy approaches. The Indexer, however, will not explicitly support any public policies.

Evidence-based analysis. All analysis that accompanies data will be based strictly on evidence established through solid research. Where evidence is contested, that will be noted.

Transparency. The Indexer will always list sources of data and will describe the limitations of that data in terms of coverage, error margins and potential biases.

Timeliness. Availability of data always lags the time period being covered. Lags can be as short as a few days or as long as several years. The Indexer endeavors to keep its data as up-to-date as possible and will inform its users when data updates are available.

Data sources. The data presented by The Indexer comes from public sources, unless otherwise noted. Most of the public data is published, but some may be accessed through public information requests. The Indexer will be very clear when it presents data obtained from private research.

Geography

By attaching "Puget Sound" to its name, The Indexer acknowledges that the most of Western Washington is tied together economically and culturally and that commuters

travel throughout the Puget Sound area. Resources and practical considerations will, however, generally limit the work of the Indexer to smaller geographies.

A good deal of the data will be presented at the level of the Seattle-Tacoma-Bellevue Metropolitan Statistical Area, as defined by the Census Bureau. This includes King, Pierce and Snohomish counties. Data for the metro area will often be presented for each of the three counties independently. Some data sources use a King-Snohomish definition, with Pierce County listed separately. Kitsap County is its own metro area. National comparisons will generally be made at the metro area level.

The Indexer is based in King County, and will often present more detail for King County and its component cities and school districts. The Indexer will make use of the Census-defined Public Use Microdata Areas (PUMAs) which are subareas of counties that provide a higher level of detail with adequate statistical validity.

Some useful data is available only at the state level.

As The Indexer expands its capacity it will expand both the reach and depth of its geographic scope.

Who is the Indexer?

The Editor in Chief of The Indexer is Michael Luis. He has conducted research on a wide range of topics in the Puget Sound region since the 1980s and is the author of *Century 21 City*, an economic history of the Seattle area.

www.psindexer.com

info@psindexer.com

Notes on Data Sources

The Puget Sound Indexer uses a wide range of data sources, most from public agencies. To make the best use of the data in the Indexer, it is critical to understand the origins, structure and limitations of these data sources. No data set is perfect, and it is incumbent on users of data to understand the imperfections and to make accommodations for them in interpretation, analysis and presentation.

Nearly all data comes from one of two sources:

Survey data. As the name suggests, survey data is gathered intentionally through formal surveys that ask consistent questions to a defined group of respondents. Most surveys—the decennial census being a notable exception—use sampling techniques to survey a subset of the total universe. Surveys have the advantage of being designed to acquire specific data, but have the disadvantage of including sampling errors.

Administrative Data. This is data collected as a by-product of another function, such as tax collections, recording of births and deaths or school enrollments. Administrative data generally covers larger groups than surveys, but since data gathering is not the primary function of the activity, crucial groups can be left out and errors and omissions can go unnoticed or unheeded. Whereas survey data errors are estimated as part of the survey process, errors in administrative data are not generally estimated.

Following are the major data sources used by the Indexer, with notes about important limitations.

Census Population and Housing Unit Estimates. The U.S. Census Bureau combines a number of data sources to provide annual intercensal estimates of population and housing. This data includes population counts, age, gender and ethnicity. Estimates are provided for cities, counties and metropolitan areas. The program also provides data on components of county and metro area population growth (births, deaths, net migration) that also includes estimates of foreign in-migration.

Limitations. It must be emphasized that these are estimates, as distinguished from the survey count of the decennial census. The estimates are derived from a number of data sources. Margins of error are not given. Importantly, the annual estimates of past years are updated each year as new or more accurate data becomes available.

Access: https://www.census.gov/programs-surveys/popest.html

Decennial Census—short form.
Indexer uses data from the decennial censuses of 1990, 2000 and 2010. The basic census questionnaire, that is supposed to be collected from every household and individual in the county, known as the "short form" has a limited number of questions. It covers age, ethnicity, family and household relationships, tenure (rent vs own).

Limitations: Since the short form census covers nearly all households and individuals, it is generally considered quite accurate. As with any survey there will be some level of non-response, and that is likely to be concentrated in certain groups.

Access: 1990 census (PDFs of hard copy) www.census.gov/main/www/cen1990.html
2000 and 2010 census: https://factfinder.census.gov/

Decennial Census—long form. The Census Bureau used a "long form" questionnaire, but discontinued this practice after the 2000 census. The long form contained detailed questions about homes, incomes, commutes, education and other factors in people's lives. The long form was given to one out of every six households in the country in 2000, but sampling varied by area. The Indexer uses long form data for 1990 and 2000.

Limitations. The long-form sampling was large enough that no error margins are given. As with the short form, some groups will likely be underrepresented due to non-response.

Access: 1990 census (PDFs of hard copy) www.census.gov/main/www/cen1990.html
2000 and 2010 census: https://factfinder.census.gov/

American Community Survey. After the 2000 census, the Census Bureau replaced the decennial census long form with the annual American Community Survey (ACS). The first ACS data is available for 2005. The ACS samples about one percent of the households in the country each year, using a questionnaire that covers topics similar to those on the old long form. ACS data can be retrieved for a wide range of geographies, including cities, school districts and legislative districts. There is good overlap between the old long form and the ACS, making comparisons possible over time. The annual schedule of the ACS makes it invaluable in tracking rapidly changing areas like Puget Sound. The Indexer makes extensive use of ACS data.

Limitations. The use of a 1 percent sampling by the ACS introduces the problem of sampling error. All but the very highest level ACS data points are accompanied by a "margin of error" (MOE). The MOE is stated as a "plus or minus" figure that is added and subtracted from the reported figure to create a range. The MOE is set such that there is a 90 percent chance that the "correct" answer lies within that range. For example, ACS may report a population figure of 9,500 with an error margin of 300, indicating that there is a 90 percent chance that the actual population of that place is between 9,200 and 9,800.

MOEs can be set aside where sample sizes are large and the MOEs are, consequently, small. But in some cases, the MOE is so large that the data is meaningless. For a universe like King County, with nearly one million households, a one percent sample yields 10,000 responses, so most general questions within that sample will have a small MOE. But a one percent sample in a city of 5,000 people yields only 50 responses, and no information from this sample this will have reasonable statistical validity. In general, the ACS does not report data for single years for areas with fewer than 65,000 people.

The Census Bureau has two ways to address the problem of statistical validity for small jurisdictions. First is the designation of Public Use Microdata Areas (PUMAs) of around 100,000 people. This can mean a portion of a larger city, an entire medium-sized city, or a group of smaller cities. For example, the Bellevue PUMA covers the entire city of Bellevue, plus the five small cities near Lake Washington. Census will report one-year data for PUMAs, but some PUMA one-year data can still have large MOEs.

The second way that Census has of dealing with high MOEs is to provide data with a trailing five-year average. For example, the 2018 five-year average will include all data for 2014 through 2018, but presented as a one-year equivalent. This significantly reduces MOEs, but for small areas the MOEs can still be quite large for fine-grained data. And use of five-year data can miss rapid change.

For clarity, The Indexer will generally not include MOEs. Where MOEs render a measure or a trend statistically insignificant, The Indexer will not publish that data. The Indexer will note clearly when it uses ACS five-year data and will note the date range for those five years.

Access: ACS data from 2010 to 2018 https://data.census.gov/

ACS data from 2005 to 2009 https://factfinder.census.gov/. Sometime in 2020, Census will transition all data from the old American Factfinder to the new data.census.gov platform and discontinue the American Factfinder.

Washington State Office of Financial Management (OFM) Population and Housing Estimates. OFM is charged by statute to produce intercensal population and housing estimates for counties and cities. These estimates are used for state program funding as well as for planning under the state Growth Management Act (GMA). OFM produces population estimates for cities and counties as of April 1 of each year, and delivers those estimates by July 1 of that year. OFM also produces estimates of the components of population change (births, deaths, net migration) for counties.

To arrive at local population estimates, OFM first estimates the population of the entire state and apportions that population among the 39 counties. Then, it estimates the population of cities and unincorporated areas within those counties. OFM relies on a number of data sources, including housing construction, vacancy reports, school enrollments and program participation.

Limitations: Because of the tight timelines under which OFM must produce data, it cannot always have solid underlying information from which to work. Birth and death records are released with some lags, but they are relatively consistent. Migration data is the real challenge, since there is no direct administrative capture of migration. There are several proxies, but these are all incomplete.

OFM uses a "residual" method to estimate net migration. First it estimates the annual growth of a county. Then it estimates natural growth (births minus deaths)

for that year. Natural growth is then subtracted from the total estimated growth, and the difference (the residual) is assumed to be net migration. Thus, since birth and death rates are fairly accurate, all the error in the original growth estimate shows up as error in net migration.

OFM acknowledges that its migration figures are not very accurate from year to year. It suggests that data users create rolling averages of migration to arrive at more accurate figures, and The Indexer does this. But unlike the Census Population Estimate program, OFM does not update past estimates based on new data, such as that available from the ACS and from the IRS.

Migration is central to understanding population growth in the Puget Sound region, in terms of both people moving to the region from outside, and movements within the region. The Indexer recognizes the challenges OFM faces with its timelines. Nonetheless, the Indexer will mostly rely on the Census estimates for net migration and will use IRS data for local area migration.

Access: https://www.ofm.wa.gov/washington-data-research/population-demographics/population-estimates

Office of the Superintendent of Public Instruction Enrollment Data. In October of each year school districts report a count of all students in each school by grade and a variety of demographics.

Limitations: This data is very complete, but enrollments can change over a year, and some areas have higher turnover than others. The student population in June may be quite different from that in October. There are different race classifications for state reporting and federal reporting. Indexer generally uses the federal ethnicity reporting categories.

Access: This data is available for one school or district through the OSPI Report Card. https://washingtonstatereportcard.ospi.k12.wa.us/. All data can be downloaded in a single spreadsheet for each school year at https://www.k12.wa.us/data-reporting/data-portal

Bureau of Economic Analysis (BEA) employment and income data. BEA provides a wide range of economic data at the state, county and metropolitan area level. BEA gets its basic data from other government agencies and creates unique datasets that illustrate important aspects of local economies. The Indexer uses BEA data for much of its reporting on county-level economics.

Limitations. BEA data is very high quality. By using several data sources it diminishes limitations inherent in each source. Each BEA dataset has notations on methodology which will discuss limitations of that particular data.

Access: https://www.bea.gov/data/by-place-county-metro-local

Bureau of Labor Statistics (BLS) employment data. BLS collects employment data through surveys and through administrative sources such as unemployment insurance filings. Data is provided at the state, county and metro area level. Data is available on a quarterly or monthly basis, and much of the data can be seasonally adjusted.

Limitations. BLS surveys are large, but even so, they will be subject to some sampling error. Unemployment insurance data, while very detailed with respect to industries, does not capture the self-employed and is subject to mis-reporting of job locations.

Access: https://www.bls.gov/data/

Bureau of Labor Statistics (BLS) price data. BLS provides the most commonly used measures of prices and inflation. Inflation indices are calibrated for different geographies and baskets of goods. The Indexer uses the BLS "All urban consumers" index to adjust data for inflation.

Limitations. Price measures are always based on baskets of goods and services across many geographic areas, so can only approximate the actual inflation experienced by consumers in any one place. Traded goods tend to have stable prices across the country, but untraded goods, like housing and utilities, can vary widely and are captured imperfectly in broad inflation measures.

Access: https://www.bls.gov/data/

Washington State Department of Employment Security (DES) employment data. DES is part of the national network of state agencies that coordinate employment data collection with the U.S. Bureau of Labor Statistics (BLS). Data will be similar, using a combination of survey and UI tax return information. DES reconciles their data more often the BLS, and will have more up-to-date data in many cases. DES also issues "covered employment" reports that go into significant industry detail, using six-digit NAICS codes at the state level and three-digit codes at the county level.

Limitations. DES notes that its data "excludes proprietors, self-employed, members of armed forces, and private household employees." Self-employment levels vary across the state, and many people have both employer income (subject to UI) and self-employed income. The BEA, which reports both, shows that about 20 percent of all jobs in Washington State are classified as self-employment, but not all of those jobs will be the sole source of income for an individual.

Access: https://www.esd.wa.gov/labormarketinfo

Unionstats.com, union membership and coverage. This privately produced database is maintained by Barry Hirsch at Georgia State University and David Macpherson at Trinity University. It is based on data from the Current Population Survey (CPS), which is undertaken jointly by the Census Bureau and the Bureau of Labor Statistics (BLS).

Limitations. The CPS is a very large and sophisticated survey, so error rates can be expected to be low. Sampling at the metro area level should be adequate to identify trends in union membership and coverage.

Access: http://unionstats.com/

Washington State Department of Health (DOH) death statistics. DOH publishes detailed data on locations and causes of death in the state. This includes details on death by various natural causes as well as death by accidents. Data is provided at the county level.

Limitations. The quality of the data is determined by the accuracy of the cause of death coding on death certificates. In many cases a decedent will have multiple causes of death (e.g. substance abuse leading to an accident) and only one will typically be reported. The data is accurate in reporting what appears on death certificates.

Access:www.doh.wa.gov/DataandStatisticalReports/HealthDataVisualization/MortalityDashboards

Environmental Protection Agency (EPA) Air Quality Index. The EPA collects data on a wide range of air pollutants and publishes this data by metropolitan area. Several data points are combined into a single Air Quality Index that indicates the overall level of toxic air pollution. Index levels are grouped into five categories, ranging from "Good" to "Very Unhealthy." The number of days each year that meet the criteria for each category are reported.

Limitations. The measurements themselves are quite accurate, but trends may not indicate any issues that can be addressed locally. Weather patterns have a large impact on air quality, as atmospheric conditions will determine the degree to which pollution is dissipated or persists. Recent years have seen an increase in unhealthy

air due to wildfires that are often over 100 miles away. The number and intensity of fires is also weather dependent. It is best to look at air quality data through multi-year averaging to get a clearer picture of trends in locally-generated pollution.

Access: https://www.epa.gov/outdoor-air-quality-data/air-quality-index-report

Washington Association of Sheriffs and Police Chiefs crime statistics. The association collects uniform crime data from all sheriffs and police departments in the state. These data are published in an annual report, Crime in Washington. Data is aggregated for the state and presented for each police department.

Limitations. The data are thorough and complete, but will suffer from the inconsistencies inherent in the collection of crime data. Crimes are often reported differently, and police departments have some discretion about how to define a crime event. Major changes were made in the reporting process in 2012, so data is not comparable across that change.

Access: https://www.waspc.org/crime-statistics-reports

The Puget Sound Indexer

www.psindexer.com
info@psindexer.com