

SOUND TRANSIT TAX BASE FORECAST

Prepared for

Sound Transit

by

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1. INTRODUCTION

This report presents the 14-year forecast of the Sound Transit tax base produced in May 2017. It updates the projections made in April 2016 (Conway, July 2016).

The outlook still calls for a significant slowdown in the regional economy sometime in the next few years. As a consequence, between 2016 and 2030, taxable retail sales in the Puget Sound region (King, Snohomish, and Pierce counties) are forecast to expand at a 3.8 percent average annual rate, while the motor vehicle excise tax base is predicted to grow at a 3.6 percent rate. Since the April 2016 forecast the expected fourteen-year annual average growth rate for taxable retail sales has been lowered by 0.1 percentage point, while the growth rate for the motor vehicle excise tax base has been raised by 0.4 percentage points.

At the outset, we should again caution about the unusual degree of uncertainty associated with this forecast. With aerospace employment on the decline, signs of high-rise construction leveling off, and an uncertain national fiscal policy under President Trump, can hiring at Amazon.com keep the regional economy out of a recession?

The first two sections of the report discuss the economic and tax base forecasts, compares them to the previous predictions, and assesses forecast uncertainty. The last section describes the forecasting methodology. Note that the discussion in this report pertains to the economic and tax base projections to 2030.

Appendix A contains a print-out of the revised annual economic and tax base forecasts to 2040. Quarterly and annual forecasts to 2040 can also be found in a worksheet named Forecast Tables 2017.xlsx, which has been submitted to Sound Transit staff. The equations in the econometric model used to prepare the regional tax base forecasts are shown in Appendix B.

2. ECONOMIC AND TAX BASE FORECASTS

This has been a good economic recovery. The Puget Sound region has a habit of stumbling into deep recessions. Relatively speaking, in every downturn since 1969, it has suffered a greater employment loss than the nation. Fortunately, since robust recoveries have more than compensated for the backsliding, the region has outpaced the nation in the long run. Over the last five decades, regional jobs have tripled, while national jobs have doubled.

The region has embarked on another strong recovery. In the seven years since the first quarter of 2010, the employment trough of the Great Recession, the Puget Sound economy has added 329,000 jobs. With employment totaling 1,986,800 in the first quarter of 2017, this means that one out of every six jobs today has been created since the recession. Recall that the Dismal Decade (2000-10) racked up a measly 1,600 jobs.

Between the first quarter of 2010 and the first quarter of 2017, Puget Sound employment grew at a 2.6 percent annual rate, outpacing the 1.7 percent national rate. The employment surge in turn cut the unemployment rate from 9.8 percent to 3.9 percent, *the lowest in fifty years*.

Also remarkable has been the growth of personal income. While Puget Sound current-dollar personal income rose at a 6.3 percent annual rate, U.S. income increased at only a 4.3 percent rate. Thus, regional per capita income vaulted from \$47,220 (19.2 percent above U.S. per capita income) to \$65,570 (29.9 percent above).

In the monthly “Current Economic Indicators” report, a supplement to *The Puget Sound Economic Forecaster*, we monitor five industries: construction, aerospace, wholesale and retail trade (including Amazon), information (including software), and professional and business services. We dub them the “leaders of the pack,” since wherever they head, the others tend to follow.

With the exception of aerospace, these key industries have performed well during the current economic expansion. Most notable is construction, which was dealt a near knock-out blow during the Great Recession. In the last seven years, the building industry has not only picked itself off the mat but has added 33,400 jobs. The total swing in construction employment over the course of the recession and recovery now stands at 77,500 jobs (44,100 down and 33,400 up). Taking into account the indirect impact on the economy, it is clear that the upturn in construction has been a major force in the regional recovery.

But this is far from the longest expansion. In 1983, the region took off on an eighteen-year string of annual employment gains. Admittedly, a hiccup caused the loss of 9,500 jobs (0.7 percent of total employment) between the third quarter of 1990 and the first quarter of 1991. But that did not keep the workforce from growing by 60,100 in 1990 and 7,300 in 1991.

The eighteen-year expansion was a complicated affair. It was preceded by the Fed Slam recession (1981-82), which was triggered by tight monetary policy to rein in double-digit inflation. The resulting downturn, featuring a collapse of the housing market, was relatively short-lived. The Federal Reserve managed to lower the inflation rate to 4 percent but left the economy with a 10 percent unemployment rate.

Unemployment and concerns about the Soviet Union prompted President Reagan and Congress to cut taxes and increase federal spending. Energized by the fiscal stimulus—as well as a surge in foreign exports caused by a weakening dollar due to a mounting federal debt—the national economy expanded rapidly for the rest of the 1980s. The nation created 19,820,000 jobs, cutting the unemployment rate in half, while the trade-dependent Puget Sound region scored 395,800 new jobs.

In 1990, just as the expansion showed signs of sputtering, the “information age” took over the driver’s seat. Although Microsoft had moved to Seattle eleven years earlier, it had only 4,000 employees in the Puget Sound region. In the ensuing ten years, however, not only did the software company workforce swell to 21,000 locally, but it took home a mindboggling \$26 billion in stock option income.

Amazon.com opened shop in 1994 and just five years later Jeff Bezos was named *Time Magazine's* "Person of the Year." But the tech sector got tripped up by the Dot-Com Bust (2001), which ended the regional economy's long winning streak. Nonetheless, the region added 362,900 jobs between 1990 and 2000 and 758,700 overall during the eighteen-year expansion.

Attention should turn from recovery to possible recession, since one may be in the works. There are three points to keep in mind about recessions. The first is that they are inevitable. Economists have a poor track record of predicting downturns, but they do agree on one prognosis: the last recession was not the last.

If one counts the two-quarter dip in employment in the latter half of 1990, which technically qualifies as a recession, we have had five recessions in the last fifty years. Not one of the subsequent recoveries lasted more than ten years. The thirty-nine quarter expansion following the Boeing Bust (1969-71) was the longest. At the other extreme, the nineteen-quarter recovery from the Dot-Com/911 Recession (2001-03) was cut short by the Great Recession.

The second point is that recessions tend to involve capital-producing industries, such as aerospace and construction. These industries do best when the economy is growing and in need of new airplanes, office buildings, and residential dwellings. However, if the economy simply flattens out, the demand for capital goods can evaporate, throwing capital producers into reverse and pulling the broader economy with them. The demand for high-priced capital goods is also sensitive to borrowing rates.

Not surprisingly, aerospace and construction have been at the center of Puget Sound's recessions. During the Boeing Bust, airplane orders dried up in response to a shallow national recession in 1969, forcing Boeing to lay off 64,000 employees. In the worst recession since the Great Depression, the region lost one-eighth of its employment, elevating the jobless rate to 11.6 percent. During the Fed Slam, the effort to stomp out inflation raised the mortgage rate to 18 percent and severely damaged the housing market. The Puget Sound region lost 31,700 jobs, including 5,600 in construction, 7,200 in forest products and other durable manufacturing, and 7,800 in aerospace due to a slowdown in air travel.

The third point is that every regional recession in the past fifty years has been accompanied by a national recession. Except for the 911 part of the Dot-Com/911 Recession (2001-03), which was caused by a terrorist strike, every regional recession have been triggered by national downturns. As evident by the Boeing Bust, even a mild setback of the U.S. economy can pull the regional economy under.

What ails the U.S. economy? Take a walk back to 2006. What did the Blue Chip economists forecast for the U.S. economy in 2016? They predicted one-third more real Gross Domestic Product (GDP), 16 million additional jobs, a 4.9 percent unemployment rate, and 1.7 million housing starts.

For professionals who take pride in their craft, the subsequent performance of the economy had to be a disappointment. The Blue Chip panel did nail the forecast of the jobless rate, which came in at 4.9 percent in 2016. As for the other predictions, they were wrong by one-half. Real GDP

Table 1
U.S. Forecast, 2015-2019

	2015	2016	2017	2018	2019
MAY 2017 BLUE CHIP FORECAST					
Gross Domestic Product (bils. \$09)	16,397.2	16,662.1	17,013.7	17,424.0	17,789.9
Employment (mils.)	141.8	144.3	146.6	148.5	150.2
Personal income (bils. \$)	15,458.5	16,011.6	16,706.7	17,417.3	18,327.4
Consumer price index (1982-84=1.000)	2.370	2.400	2.458	2.512	2.570
Housing starts (mils.)	1.108	1.176	1.281	1.360	1.400
Population, July 1 (mils.)	321.3	323.8	326.3	328.8	331.4

Table 2
U.S. Forecast, 2015-2019

Annual Percent Change

	2015	2016	2017	2018	2019
MAY 2017 BLUE CHIP FORECAST					
Gross Domestic Product (bils. \$09)	2.6	1.6	2.1	2.4	2.1
Employment (mils.)	2.1	1.8	1.6	1.3	1.1
Personal income (bils. \$)	4.4	3.6	4.3	4.6	4.9
Consumer price index (1982-84=1.000)	0.1	1.3	2.4	2.2	2.3
Housing starts (mils.)	10.7	6.1	8.9	6.2	2.9
Population, July 1 (mils.)	0.7	0.8	0.8	0.8	0.8
MARCH 2016 BLUE CHIP FORECAST					
Gross Domestic Product (bils. \$09)	2.4	2.1	2.4	2.2	2.1
Employment (mils.)	2.1	1.9	1.4	1.1	1.0
Personal income (bils. \$)	4.4	4.4	4.7	4.6	4.5
Consumer price index (1982-84=1.000)	0.0	1.3	2.2	2.3	2.3
Housing starts (mils.)	10.7	11.1	9.8	5.9	2.1
Population, July 1 (mils.)	0.7	0.8	0.8	0.8	0.8
DIFFERENCE					
Gross Domestic Product (bils. \$09)	0.2	-0.5	-0.3	0.2	0.0
Employment (mils.)	0.0	-0.1	0.2	0.2	0.1
Personal income (bils. \$)	0.0	-0.8	-0.4	0.0	0.4
Consumer price index (1982-84=1.000)	0.1	0.0	0.2	-0.1	0.0
Housing starts (mils.)	0.0	-5.0	-0.9	0.3	0.8
Population, July 1 (mils.)	0.0	0.0	0.0	0.0	0.0

*The May 2017 and March 2016 Blue Chip national forecasts were used to produce the May 2017 and April 2016 Sound Transit tax base forecasts.

Table 3
Puget Sound Forecast, 2015-2019

	2015	2016	2017	2018	2019
MAY 2017 FORECAST					
Employment (thous.)	1,888.6	1,952.0	2,002.0	2,035.1	2,057.8
Personal income (mils. \$)	227,827.1	239,222.0	251,287.7	263,855.1	277,768.4
Consumer price index (1982-84=1.000)	2.493	2.549	2.615	2.679	2.744
Housing permits (thous.)	26.3	24.8	23.5	22.3	21.6
Population, July 1 (thous.)	3,694.8	3,756.6	3,812.8	3,861.5	3,902.9
Taxable retail sales (mils. \$)	81,301.1	87,867.2	90,907.5	94,628.2	97,862.3
Motor vehicle excise tax base (mils. \$)	37,481.2	40,228.0	42,948.2	45,367.8	47,169.4

Table 4
Puget Sound Forecast, 2015-2019

Annual Percent Change

	2015	2016	2017	2018	2019
MAY 2017 FORECAST					
Employment (thous.)	3.1	3.4	2.6	1.7	1.1
Personal income (mils. \$)	4.3	5.0	5.0	5.0	5.3
Consumer price index (1982-84=1.000)	1.4	2.2	2.6	2.5	2.4
Housing permits (thous.)	22.1	-5.7	-5.3	-5.2	-3.0
Population, July 1 (thous.)	1.7	1.7	1.5	1.3	1.1
Taxable retail sales (mils. \$)	9.8	8.1	3.5	4.1	3.4
Motor vehicle excise tax base (mils. \$)	7.2	7.5	6.8	5.6	4.0
APRIL 2016 FORECAST					
Employment (thous.)	3.1	1.9	1.2	0.8	0.9
Personal income (mils. \$)	5.3	4.3	4.6	4.3	4.4
Consumer price index (1982-84=1.000)	1.4	1.4	2.3	2.3	2.2
Housing permits (thous.)	17.5	-20.9	1.2	-0.1	1.2
Population, July 1 (thous.)	1.3	1.3	1.0	0.8	0.8
Taxable retail sales (mils. \$)	10.2	4.0	3.7	2.9	3.3
Motor vehicle excise tax base (mils. \$)	7.2	4.2	2.9	2.7	2.8
DIFFERENCE					
Employment (thous.)	0.0	1.5	1.4	0.9	0.2
Personal income (mils. \$)	-1.0	0.7	0.4	0.7	0.9
Consumer price index (1982-84=1.000)	0.0	0.8	0.3	0.2	0.2
Housing permits (thous.)	4.6	15.2	-6.5	-5.1	-4.2
Population, July 1 (thous.)	0.4	0.4	0.5	0.5	0.3
Taxable retail sales (mils. \$)	-0.4	4.1	-0.2	1.2	0.1
Motor vehicle excise tax base (mils. \$)	0.0	3.3	3.9	2.9	1.2

expanded by only one-seventh over the ten-year period, the economy created just 8 million jobs, and housing starts ended up at 1.2 million.

It is tempting to lay all of the blame for the poor showing on the unforeseen Great Recession, the deepest national downturn since the Great Depression. But an anemic recovery has also played a role. Normally, a severe recession is followed by a sharp upturn, a so-called “V-shape” recovery. Since the trough of the recession in 2009, however, real GDP has advanced at only a 2.1 percent annual rate. A decade ago, the Blue Chip economists predicted that the economy would expand at a 3.0 percent annual rate, the projected trend rate, between 2009 and 2016. During the seven-year recovery from the Fed Slam Recession (1982-1989), real GDP soared at a 4.4 percent annual rate.

Why has the current economic recovery failed to get out of first gear? As noted in earlier reports, one impediment has been tight fiscal policy. By raising taxes and cutting spending in attempt to hold the line on debt, the federal government has been the biggest drag on the economy during the rebound. Between 2009 and 2016, the federal effective tax rate (federal tax revenue as a percent of personal income) rose from 9.6 percent to 13.7 percent, while constant-dollar federal spending declined at a 1.2 percent annual rate.

Another factor holding back the recovery has been the lethargic growth of labor productivity. On a positive note, between 2009 and 2016, U.S. employment grew at a 1.4 percent annual rate, ultimately lowering the unemployment rate to 4.9 percent. But labor productivity—real GDP per worker—increased at only a 0.7 percent rate, well below the 1.9 percent rate predicted by the Blue Chip panel back in 2006. Thus, with a 1.4 percent job growth rate, real GDP rose at only a 2.1 percent rate, as noted above. This in turn effectively limited the annual growth rates of both real employee compensation and real personal consumption expenditures to 2.3 percent, considerably slower than the 3.0 percent trend rate projected a decade ago.

President Trump promises to “Make America Great Again.” President Trump insists that he has a plan to fix “our broken economy.” It consists of four major planks: reducing taxes, increasing infrastructure investment, negotiating better trade deals, and limiting the number of foreign workers. As a general proposition, Trump’s plan holds some promise. But its ultimate success depends on how it is implemented, the details of which are mostly unknown.

Tax cuts are a top priority. As President Reagan discovered in attempting to lift the economy out of the Fed Slam Recession, across-the-board tax cuts can boost consumer spending and give the economy a good kick. There is a concern that Trump’s plan skews the tax breaks in favor of high-income individuals and families. In that case, much of the tax savings could end up sitting idle in people’s pockets.

Politically, there is widespread agreement that the nation needs to upgrade its highways, bridges, dams, and other infrastructure. This could create thousands of much needed jobs for blue-collar workers, though not immediately. The key question, however, is how to pay for the infrastructure, especially if sizable federal tax reductions are in the offing. Since 2000 federal spending has been increasingly constrained by a mounting national debt. Trump has proposed to possibly pay for infrastructure with tax credits, but that appears to be a non-starter.

Trump's intervention in international trade holds some risk. He points out that the nation is running a \$600 billion trade deficit, which he will correct. But economists generally agree that a trade imbalance of that magnitude is no problem. In fact, the United States has run similar deficits for the past fifty years with no obvious ill effect. If Trump's goal is to rebalance trade, his decision to pull out of the Trans-Pacific Partnership could backfire, since it gives China the upper hand in the world's fastest growing trading region.

It is not clear how many foreign workers—inside and outside Washington—will be subject to Trump's immigration orders. Considering the alarm expressed by high-tech executives, construction contractors, tourism officials, and farmers, the number must be large.

The short-term economic outlook is still upbeat but increasingly uncertain. Compared to the forecast made last year, the latest predictions by the Blue Chip panel of national economists are a shade more negative. The panel has reduced its expected total gain in U.S. real Gross Domestic Product between 2015 to 2019 from 8.8 percent to 8.2 percent. However, a comprehensive examination of the latest forecasts shows no appreciable change in the Blue Chip outlook since Trump's election. A supplementary survey of the economists in February provides a little more information about their thinking. In 2017, the U.S. economy will create 165,000 payroll jobs per month, down 20,000 from the rate in 2016. Perhaps more alarming, the panel believes that there is a one-third change that a recession will start in 2017 or 2018.

With 69,000 employees rolling out 660 airplanes per year, Boeing is still the “big dog” in town. Nevertheless, after adding 14,900 jobs early in the recovery, Boeing and its aerospace subcontractors have eliminated 10,600. Despite an eight-year backlog of airplane orders, Boeing is clearly past its production and employment peak for this cycle. Because of the weakening demand for commercial aircraft, cost-cutting measures, and normal gains in labor productivity, the forecast calls for a decline in aerospace jobs over the rest of the decade.

A big question mark in the future course of the Puget Sound economy is construction. After being slammed by the Great Recession, the industry has been a major force in the recovery, adding 33,400 jobs. One unusual feature of the building boom has been the concentration of new high-rise residential buildings in Seattle. Due to a surge in jobs led by Amazon, Seattle boosted its population by 80,000 residents and built 32,000 housing units between 2010 and 2016. Because of crowding in the city just 1,000 units were single-family homes. This of course cannot last. There is evidence that construction may be leveling off. Employment and taxable retail sales related to new construction have been relatively flat since the middle of 2016. Because of the volatility of construction activity, the building industry should be viewed as a vulnerable part of the regional economy.

As one of the three big players in the Puget Sound economy, Microsoft's impact should be gauged in terms of income not employment. While the software company has added only 4,000 jobs since the trough of the recession, its total wages and salaries have increased by a staggering \$4 billion. In the next couple of years, we expect little relatively change in either Microsoft jobs or income.

Amazon, which is the world's largest internet retailer, is hard to track, since the company does not divulge its local employment figures. The company recently announced that it will hire

100,000 employees over an eighteen-month period. Most of them will be located in Amazon's new fulfillment centers being built around the world, but that still leaves thousands of new jobs for the Seattle area. Job estimates for the electronic shopping industry (mostly Amazon) show that between 2010 and 2016 employment increased from 9,000 to 36,000 in the region. Currently, Amazon appears to be hiring between 1,000 and 2,000 workers per quarter. Many of Amazon's employees work at its South Lake Union headquarters and make over \$150,000 per year. We expect the company to add another 6,000 jobs in 2017 and 4,000 in 2018. However, with little actual knowledge about the company's plans, these predictions are the wild card in our short-term outlook.

Despite the decline in aerospace employment and the likely leveling off of construction activity, we are not calling for a recession in 2017 or 2018. Regional employment is currently growing 2.6 percent per year, the unemployment rate has fallen to a record low, and Amazon is still hiring. On the other hand, similar to the Blue Chip economists, we think there is a one-third chance of a recession starting sometime around 2019.

The regional growth rate is likely to converge to the national rate sometime soon. The Puget Sound economy has rebounded from the Great Recession much faster than the nation. Between 2010 and 2016, regional employment grew at a 2.7 percent annual rate, while national employment advanced at only a 1.7 percent rate.

But virtually all of the difference in growth rates is due to Boeing and Amazon. With average compensation exceeding \$125,000 per year, the two companies added 35,000 jobs between 2010 and 2016. Counting the indirect impact (much of it falling on construction), they were responsible for 110,000 of the 285,000 jobs created during this period. Without the lift from Boeing and Amazon, regional employment would have grown at the 1.7 percent national rate.

This finding hints at what the future holds for the Puget Sound economy. In simple terms, the regional economy presently has of three dominant players—Boeing, Microsoft, and Amazon—that control roughly one-quarter of the jobs. The rest of the regional economy is diversified and tends to follow the national economy, a characteristic clearly evident during the recovery. Assuming that Microsoft remains in neutral and that the expected job losses at Boeing are more or less offset by the job gains at Amazon, the regional and national employment growth rates will tend to converge sometime around 2020.

The regional leading index has been moving up lately but with less steam. Following a strong upward surge since 2008, the Puget Sound Index of Leading Economic Indicators headed down in the fourth quarter of 2015 and again in the first quarter of 2016. The two-quarter drop totaled 1.5 percent. One year later, after shooting up 2.5 percent in the fourth quarter of 2016, the leading index inched up 0.3 percent in the first quarter 2017. In the latest quarter, five components (Boeing backlog-delivery ratio, help-wanted ads, initial claims for unemployment compensation, real durable goods spending, and the interest rate spread) pulled the leading index down, while two components (housing permits and the manufacturing workweek) provided a lift.

While the leading index is not signaling a downturn, the message that it is conveying has changed substantially over time. Two years ago, we concluded that “the nearly two-year advance in the leading index indicates that the short-term prospects for the Puget Sound regional economy

are as good now as anytime during the current economic recovery.” Now it appears that the recent fits and starts of the index may portend an economic slowdown.

The Puget Sound region should continue to grow faster than the nation in the long run. Presuming that Boeing, Microsoft, and Amazon will remain solidly rooted in the region, there is no reason to believe this trend will change in the future (Tables 7 and 8).

The low point of the regional economic cycle in terms of job growth is predicted to be 2020. As previously noted, employment will be advancing at a 0.9 percent rate, 0.1 percentage point slower than the national rate. But the regional economy will then pick up speed, continuing to outpace the nation. Between 2020 and 2030, the region is expected to display higher annual growth rates than the nation: employment (1.2 percent versus 0.9 percent), personal income (5.0 percent versus 4.6 percent), and population (1.0 percent and 0.7 percent).

Between 2020 and 2030, the Puget Sound economy will add 255,100 jobs, a vast improvement over the 1,600 between 2000 and 2010 but significantly less than the 408,900 between 2010 and 2020. Next decade new employment opportunities will help give a \$182.5 billion boost to personal income. By 2030, the region will have 2,331,000 jobs and \$473.3 billion dollars in personal income.

Long-range prognoses are problematic, but there are six good reasons for this optimistic outlook:

- *Geographic location.* The Puget Sound region is located in the one of the fastest growing parts of the nation, as U.S. population continues to march west and south.
- *International trade.* No U.S. metropolitan area has taken greater advantage of foreign trade than the Puget Sound region. The rapid expansion of international trade—much of it with Asia, the world’s fastest growing continent—is the principal reason why the region has outperformed the nation since 1960.
- *World class companies.* The Puget Sound region is home to several companies who are recognized leaders in their industries: Boeing, Microsoft, Weyerhaeuser, Russell Investments, Amazon, Costco, Starbucks, Nordstrom, REI, Expedia, Paccar, Alaska Airlines, Expeditors International, and Group Health Cooperative (now Kaiser Permanente).
- *High technology.* The region is not Silicon Valley, but it ranks near the top among areas with high concentrations of high-technology activities: software development, internet commerce, medical research, telecommunications, medical device manufacturing, and aircraft production.
- *Well-educated workforce.* Based on Census data, Seattle has been called the “Best Educated City” in the nation. It is also the home of the University of Washington, which has been ranked as the twenty-fifth best university in the world by the London-based *Times Higher Education* magazine and the world’s most innovative public university by Reuters.

Table 5
U.S. Forecast, 1990-2030

	1990	2000	2010	2020	2030
MAY 2017 BLUE CHIP FORECAST					
Gross Domestic Product (bils. \$09)	8,955.0	12,559.7	14,783.8	18,145.7	22,141.2
Employment (mils.)	109.5	132.0	130.4	151.7	165.4
Personal income (bils. \$)	4,906.4	8,637.1	12,477.1	19,188.7	30,085.9
Consumer price index (1982-84=1.000)	1.307	1.722	2.181	2.632	3.326
Housing starts (mils.)	1.203	1.573	0.585	1.430	1.500
Population, July 1 (mils.)	250.2	282.4	309.8	333.9	358.5

Table 6
U.S. Forecast, 1980-2030

Annual Percent Change

	1980-90	1990-00	2000-10	2010-20	2020-30
MAY 2017 BLUE CHIP FORECAST					
Gross Domestic Product (bils. \$09)	3.3	3.4	1.6	2.1	2.0
Employment (mils.)	1.9	1.9	-0.1	1.5	0.9
Personal income (bils. \$)	7.8	5.8	3.7	4.4	4.6
Consumer price index (1982-84=1.000)	4.7	2.8	2.4	1.9	2.4
Housing starts (mils.)	-0.8	2.7	-9.4	9.4	0.5
Population, July 1 (mils.)	0.9	1.2	0.9	0.8	0.7
MARCH 2016 BLUE CHIP FORECAST					
Gross Domestic Product (bils. \$09)	3.3	3.4	1.6	2.1	2.1
Employment (mils.)	1.9	1.9	-0.1	1.5	0.8
Personal income (bils. \$)	7.8	5.8	3.7	4.4	4.5
Consumer price index (1982-84=1.000)	4.7	2.8	2.4	1.9	2.3
Housing starts (mils.)	-0.8	2.7	-9.4	9.4	0.5
Population, July 1 (mils.)	0.9	1.2	0.9	0.8	0.7
DIFFERENCE					
Gross Domestic Product (bils. \$09)	0.0	0.0	0.0	0.0	-0.1
Employment (mils.)	0.0	0.0	0.0	0.0	0.1
Personal income (bils. \$)	0.0	0.0	0.0	0.0	0.1
Consumer price index (1982-84=1.000)	0.0	0.0	0.0	0.0	0.1
Housing starts (mils.)	0.0	0.0	0.0	0.0	0.0
Population, July 1 (mils.)	0.0	0.0	0.0	0.0	0.0

*The May 2017 and March 2016 Blue Chip national forecasts were used to produce the May 2017 and April 2016 Sound Transit tax base forecasts.

Table 7
Puget Sound Forecast, 1990-2030

	1990	2000	2010	2020	2030
MAY 2017 FORECAST					
Employment* (thous.)	1,302.5	1,665.4	1,667.0	2,075.9	2,331.0
Personal income (mils. \$)	58,741.7	119,111.7	166,155.7	290,780.1	473,301.0
Consumer price index (1982-84=1.000)	1.268	1.792	2.268	2.810	3.541
Housing permits (thous.)	28.9	22.7	10.0	21.2	23.3
Population, July 1 (thous.)	2,578.8	3,052.2	3,448.6	3,939.6	4,343.2
Taxable retail sales (mils. \$)	30,042.3	53,520.0	59,123.2	101,153.7	149,055.7
Motor vehicle excise tax base (mils. \$)	10,415.5	26,355.8	30,968.5	48,424.7	65,804.9

Table 8
Puget Sound Forecast, 1980-2030

Annual Percent Change

	1980-90	1990-00	2000-10	2010-20	2020-30
MAY 2017 FORECAST					
Employment* (thous.)	3.5	2.5	0.0	2.2	1.2
Personal income (mils. \$)	8.7	7.3	3.4	5.8	5.0
Consumer price index (1982-84=1.000)	4.4	3.5	2.4	2.2	2.3
Housing permits (thous.)	3.3	-2.4	-7.9	7.8	0.9
Population, July 1 (thous.)	2.0	1.7	1.2	1.3	1.0
Taxable retail sales (mils. \$)	8.8	5.9	1.0	5.5	4.0
Motor vehicle excise tax base (mils. \$)	11.3	9.7	1.6	4.6	3.1
APRIL 2016 FORECAST					
Employment* (thous.)	3.5	2.5	0.0	1.9	1.2
Personal income (mils. \$)	8.7	7.3	3.7	5.0	4.9
Consumer price index (1982-84=1.000)	4.4	3.5	2.4	2.0	2.3
Housing permits (thous.)	3.1	-2.4	-7.9	7.7	1.1
Population, July 1 (thous.)	2.0	1.7	1.2	1.1	1.0
Taxable retail sales (mils. \$)	8.8	5.9	1.0	5.1	4.0
Motor vehicle excise tax base (mils. \$)	11.3	9.7	1.6	3.5	3.3
DIFFERENCE					
Employment* (thous.)	0.0	0.0	0.0	0.3	0.0
Personal income (mils. \$)	0.0	0.0	-0.3	0.8	0.1
Consumer price index (1982-84=1.000)	0.0	0.0	0.0	0.2	0.0
Housing permits (thous.)	0.2	0.0	0.0	0.1	-0.2
Population, July 1 (thous.)	0.0	0.0	0.0	0.2	0.0
Taxable retail sales (mils. \$)	0.0	0.0	0.0	0.4	0.0
Motor vehicle excise tax base (mils. \$)	0.0	0.0	0.0	1.1	-0.2

*Nonagricultural wage and salary employment.

- *Amenities.* The region is well known for its natural features, such as Mount Rainier, Puget Sound, and the Olympic rain forest and beaches. But it has also made large investments in cultural amenities in recent years: a symphony hall, an opera house, the Experience Music Project, an art museum, the zoo, the aquarium, a baseball park, and a football stadium. These amenities are not only a draw to tourists, but they also make the region a more attractive place to live and locate a business.

The recession and recovery have on net given a lift to regional population growth. People follow jobs. When the region is creating employment opportunities faster than the nation, such as it did during the recovery from the 2001-03 recession, people move into the region. While the Great Recession caused major job losses both nationally and regionally, it nevertheless led to a modest pick-up in regional population growth.

A rule of thumb holds that the long-run difference between the regional and national employment growth rates equals the long-run difference between their respective population growth rates (after lagging population growth one year). This rule of thumb applies somewhat less to the Puget Sound region, since many people working in the region live outside it. Nevertheless, the rule explains why regional population growth sped up during the downturn.

Our 2007 forecast called for regional employment to outpace its national counterpart by 0.5 percentage points (1.7 percent per year versus 1.2 percent) between 2006 and 2014. Taking into account the lag in population growth, regional population was projected to increase 0.3 percentage points faster than national population (1.1 percent versus 0.8 percent) between 2007 and 2015. According to the latest estimates, which cover the recession and recovery, regional employment outpaced national employment by 0.7 percentage points (0.9 percent versus 0.2 percent) between 2006 and 2014, while regional population bettered national population by 0.6 percentage points (1.4 percent versus 0.8 percent) between 2007 and 2015. Thus, while the recession led to job losses in virtually every part of country, it increased the difference between the Puget Sound and U.S. employment growth rates. As a consequence, the recession had the effect of further spurring the migration of people into the Puget Sound region looking for jobs.

Between 2010 and 2020, regional population is forecast to increase at a 1.3 percent rate, 0.5 percentage points faster than the national rate. Note that, despite the expectation of much faster job growth this decade, the projected 1.3 percent population growth rate is only slightly faster than the 1.2 percent pace last decade. Between 2010 and 2020, the number of Puget Sound residents is predicted to increase from 3,448,600 to 3,939,600.

The three counties will share in the future growth of the region but not equally. King, Snohomish, and Pierce counties, which compose the Puget Sound region, more or less operate as a single economy. Many people live in one county but work in another, while many businesses serve customers region-wide. As a consequence, the county economies tend to rise and fall together over the course of a business cycle. Measured on a quarterly basis, the Great recession cost the region 7.1 percent of its employment. The loss in each county was similar: King County 7.4 percent, Snohomish County 7.4 percent, and Pierce County 6.0 percent.

Since Boeing and Amazon have played major roles in the economic recovery of the Puget Sound region, it is not surprising that King and Snohomish counties are outpacing Pierce County. King

County is not only the home of Boeing facilities in Seattle and Renton, it is also the world headquarters of Amazon. Snohomish County, which is much smaller, has a large Boeing plant in Everett. Between 2010 and 2016, King County experienced slightly faster job growth than Snohomish County, 2.8 percent per year compared to 2.5 percent. Overall, King County garnered 209,800 jobs, nearly three-fourths of the new jobs in the region. After sporting a 4.1 percent employment gain in 2012, Snohomish County job growth has slowed due to cutbacks in the Boeing workforce. Pierce County, with just a handful of Boeing jobs, has had a bit more difficult time—a 2.1 percent employment growth rate—digging itself out of the recession.

Historically, King County has been the core of the region. But as the region has added more jobs and people, growth has increasingly spread to the periphery. Thus, King County expanded at a slower rate than the rest. Between 2010 and 2020, however, while regional population is expected to climb at a 1.3 percent annual rate, King County population will increase at a 1.4 percent rate due to the economic boom centered in Seattle. King County will also experience the greatest absolute growth. In the current decade, the county will account for 283,700 (57.8 percent) of the region's 491,000 new residents.

The inflation rate is expected to remain appreciably below 3 percent. There have been concerns that the federal policies to halt the recession—lowering interest rates, injecting capital into financial institutions, and implementing fiscal stimulus—would eventually ignite inflation. But no one appears to be forecasting more than a modest rise in prices. In the 1980s, the long-term core inflation rate—the rate excluding volatile energy and food prices—was thought to be about 6 percent. Now, it is believed to be around 2 or 3 percent. More specifically, the annual inflation rate, as measured by the Seattle consumer price index, is expected to average 2.2 percent between 2010 and 2020 and 2.3 percent between 2020 and 2030.

After being slammed by the recession, the Sound Transit tax base should continue to experience more normal growth rates. Historically, taxable retail sales have been a volatile but predictable tax base. If we knew the changes in personal income, housing permits, and the unemployment rate, it was possible to make a reasonably accurate forecast of the change in taxable retail sales. Even the unprecedented drop in taxable retail sales in 2001 was in this sense predictable. With known values for personal income, housing permits, and the unemployment rate, the taxable retail sales forecasting equation would have predicted a 1.0 decline. The actual decrease was 2.3 percent.

But the taxable retail sales forecasting equation did not hold up during the Great Recession. The tax base fell much more than one would have predicted even taking into account the severity of the recession. For example, between the fourth quarter of 2007 and the second quarter of 2010, while current-dollar personal income decreased 1.7 percent, taxable retail sales plummeted 18.6 percent. Clearly, factors not incorporated into the taxable retail sales forecasting equation were at work. One obvious candidate was the credit freeze, which brought homebuilding and car-buying to a standstill. The decline in new construction, which is subject to the retail sales tax, and the decline in consumer spending were in turn exacerbated by the stock market crash, the fall in home prices, and a precipitous decline in consumer sentiment. See the January 2012 report for an analysis of the taxable retail sales prediction errors associated with consumer sentiment and household wealth during the recession.

The return of a relatively healthy economy—strong income growth, falling unemployment, and increasing housing permits—has given us the expected lift in taxable retail sales: 6.2 percent in 2012, 7.8 percent in 2013, 6.6 percent in 2014, 9.8 percent in 2015, and 8.1 percent in 2016. But the economic slowdown is expected to trim the growth rates to 3.5 percent in 2017, 4.1 percent in 2018, and 3.4 percent in 2019.

Even with the healthy pick-up in the economy of late, the Sound Transit tax base has been taking its time to fully recover. For example, nominal taxable retail sales reached a peak of \$71.4 billion in 2007. The tax base finally returned to that level in 2014. Taking into account inflation, as measured by the consumer price index, the real (constant-dollar) tax base did not completely recover until 2016. By 2030, current-dollar taxable retail sales are expected to reach \$149.1 billion, up 3.4 percent from last year's forecast.

The recession, tight credit, falling stock and home prices, and high gasoline prices resulted in the first decline in the motor vehicle excise tax base in at least three decades. However, after decreasing 7.9 percent between 2007 and 2010, the motor vehicle excise tax base stabilized for two years and then increased 4.9 percent in 2013, 7.4 percent in 2014, 7.2 percent in 2015, and 7.5 percent in 2016.

Data show that the number of registered vehicles increased 0.6 percent between 2010 and 2012 but the average value of a vehicle declined 0.5 percent, resulting in virtually no change in the motor vehicle excise tax base. Between 2012 and 2016, the tax base grew at a 6.7 percent annual rate, as both the number of vehicles and the average value increased at a 3.3 percent rate. After being dead in the water from 2008 to 2012, the data suggest that vehicle registrations and Sound Transit tax collections experienced a classic case of released pent-up demand over the past four years.

The economic slowdown will gradually cool the demand for motor vehicles. Currently, we predict that the motor vehicle excise tax base will increase 6.8 percent in 2017, 5.6 percent in 2018, and 4.0 percent in 2019. Compared to the forecast one year ago, the current long-term projections calls for 2.7 percent more motor vehicles (4,067,300) and a 9.3 percent greater motor vehicle excise tax base (\$65.8 billion) in 2030.

Due to the extended recovery from the Great Recession and a higher inflation rate, the current long-run outlook for the Puget Sound economy and the Sound Transit tax base is more optimistic than last year's. As shown in the forecast comparison table (Forecast Tables 2017.xlsx), the revisions to the 2030 predictions for the major economic variables are generally small but positive: employment 3.5 percent, nominal personal income 5.0 percent, and population 1.9 percent. After a series of downward revisions over the last three forecasts, the Seattle consumer price index forecast for 2030 is up 2.5 percent. Primarily reflecting stronger income growth, the forecast of taxable retail sales in 2030 has been raised 3.4 percent. After increasing the forecast of motor vehicles 4.0 percent the last two years, it has been raised another 2.7 percent in the current outlook. With the expectation of more vehicles on the road and higher prices for passenger cars, the forecast of the motor vehicle excise tax base for 2030 has been increased 9.3 percent.

Table 9
Sound Transit Tax Base Forecast, 1975-2030

Annual Percent Change

	Short-Term		Long-Term	
	2011-16	2016-21	1975-16	2016-30
Taxable retail sales (mils. \$)	7.7	3.6	6.2	3.8
Motor vehicle excise tax base (mils. \$)	5.4	4.4	8.2	3.6
Employment (thous.)	2.9	1.5	2.6	1.3
Personal income (mils. \$)	6.1	5.0	7.3	5.0
Housing permits (thous.)	17.7	-2.9	0.9	-0.4
Unemployment rate (%)	-12.0	-1.3	-1.8	0.3
Consumer price index (82-84=1.000)	1.8	2.4	4.0	2.4
Registered vehicles (thous.)	2.4	0.9	2.4	0.6
Population, 20-64 years of age (thous.)	1.1	0.5	1.9	0.5
U.S. average car price (\$)	0.2	2.7	4.1	2.8

Table 10
Sound Transit Tax Base Forecast by County, 1975-2030

Annual Percent Change

	1975-16	2016-30
TAXABLE RETAIL SALES (mils. \$)		
Puget Sound	6.2	3.8
King County	6.2	3.6
Snohomish County	7.1	4.3
Pierce County	5.9	4.2
MOTOR VEHICLE EXCISE TAX BASE (mils. \$)		
Puget Sound	8.2	3.6
King County	7.9	3.2
Snohomish County	9.0	4.1
Pierce County	8.3	4.1

3. FORECAST UNCERTAINTY

It is difficult to assess the uncertainty associated with economic and tax base forecasts, particularly with projections that extend two decades into the future. One way to gauge the degree of uncertainty in the Sound Transit tax base forecasts is to note how they have changed over time.

There has been a total of twenty-four forecasts, the first of which was prepared for the Puget Sound Regional Council in May 1994. Neglecting the fact that the first two forecasts included Kitsap County, which constituted about 5 percent of the total tax base, the highest projection of taxable retail sales for 2020 was made in May 1994, when forecasters expected a relatively high long-term inflation rate. The lowest projection of taxable retail sales is the June 2014 forecast, which follows on the heels of the Great Recession.

Excluding the first three projections (the May 1994 and September 1997 predictions that include Kitsap County and the August 1998 prediction that only extends to 2000), the average forecast of taxable retail sales for 2020 is \$117.9 billion, while the highest is \$146.9 billion (24.6 percent above the average) and the lowest is \$96.3 billion (18.3 percent below the average). The current projection of taxable retail sales is \$101.2 billion, the seventh lowest forecast since July 1999.

The average prediction for the motor vehicle excise tax base in 2020 is \$54.5 billion, while the highest is \$69.4 billion (27.3 percent above the average) and the lowest is \$41.1 billion (24.6 percent below the average). The current projection of the motor vehicle excise tax base at \$48.4 billion is the tenth lowest forecast.

These calculations illustrate that no matter how reasonable forecasts may look at the time that they are made, there is no guarantee of accuracy. Table 11 clearly shows the damage to Sound Transit's tax base caused by the Great Recession. The July 1999 forecast (my first for Sound Transit) predicted that taxable retail sales would amount to \$128.5 billion in 2020. As late as July 2008, the brink of the recession, the forecast for 2020 had hardly changed (\$128.3 billion). But, as a result of the devastating downturn, taxable retail sales fell from \$71.4 billion in 2007 to \$59.1 billion in 2010, a 17.2 percent drop. There has been a recent pick-up in taxable retail sales due to the Seattle area building boom. But the generally disappointing economic recovery is expected to hold the annual growth rate of taxable retail sales to 5.5 percent between 2010 and 2020. In July 1999, the predicted growth rate was 5.4 percent for the same period. This means that the recession has dug a hole into Sound Transit's tax base that is unlikely to be filled. The latest forecast of taxable retail sales for 2020 is \$101.2 billion, 21.2 percent lower than the July 1999 prediction.

4. FORECASTING METHODOLOGY

The Sound Transit tax base forecasts are based on economic and demographic projections from the Puget Sound Economic Forecasting Model (PSEFM), which was originally built in 1993 (Conway, 2001). In general, the forecasting methodology is formal, relying heavily on economic theory and statistical analysis. The methodology involves five steps:

Table 11
Sound Transit Tax Base Forecasts, 1990-2020

	1990	2000	2010	2020	Annual Growth Rate (%)		
					1990-00	2000-10	2010-20
TAXABLE RETAIL SALES (bils. \$)							
May 2017	30.0	53.5	59.1	101.2	5.9	1.0	5.5
April 2016	30.0	53.5	59.1	97.0	5.9	1.0	5.1
June 2015	30.0	53.5	59.1	99.7	5.9	1.0	5.4
June 2014	30.0	53.5	59.1	96.3	5.9	1.0	5.0
June 2013	30.0	53.5	59.1	97.3	5.9	1.0	5.1
June 2012	30.0	53.5	59.1	98.5	5.9	1.0	5.2
June 2011	30.0	53.5	59.1	101.0	5.9	1.0	5.5
June 2010	30.0	53.5	60.1	101.4	5.9	1.2	5.4
September 2009	30.0	53.5	61.3	107.1	5.9	1.4	5.7
March 2009	30.0	53.5	68.1	114.2	5.9	2.4	5.3
July 2008	30.0	53.5	81.1	128.3	5.9	4.2	4.7
July 2007	30.0	53.5	82.5	134.8	5.9	4.4	5.0
July 2006	30.0	53.5	81.9	134.0	5.9	4.3	5.1
August 2005	30.0	53.5	78.2	129.1	5.9	3.9	5.1
August 2004	30.0	53.5	78.0	132.6	5.9	3.8	5.5
August 2003	30.0	53.5	77.6	128.0	5.9	3.8	5.1
May 2002	30.0	53.5	79.1	130.0	5.9	4.0	5.1
October 2001	30.0	53.5	80.7	135.6	5.9	4.2	5.3
August 2001	30.0	53.5	86.1	145.0	5.9	4.9	5.4
August 2000	30.0	53.3	89.2	146.9	5.9	5.3	5.1
July 1999	30.0	48.7	76.0	128.5	4.9	4.5	5.4
August 1998	30.0	49.0	NA	NA	5.0	NA	NA
September 1997*	31.4	51.7	86.8	147.7	5.1	5.3	5.5
May 1994*	31.4	54.3	93.0	159.2	5.6	5.5	5.5
MOTOR VEHICLE EXCISE TAX BASE, 2.000% (bils. \$)							
May 2017**	10.4	26.4	31.0	48.4	9.7	1.6	4.6
April 2016**	10.4	26.4	31.0	43.5	9.7	1.6	3.4
June 2015**	10.4	26.4	31.0	42.1	9.7	1.6	3.1
June 2014**	10.4	26.4	31.0	41.1	9.7	1.6	2.9
June 2013**	10.4	26.4	31.0	44.1	9.7	1.6	3.6
June 2012**	10.4	26.4	31.0	43.6	9.7	1.6	3.5
June 2011**	10.4	26.4	31.0	44.1	9.7	1.6	3.6
June 2010**	10.4	26.4	29.5	41.2	9.7	1.1	3.4
September 2009**	10.4	26.4	30.2	41.8	9.7	1.4	3.3
March 2009**	10.4	26.4	34.0	48.1	9.7	2.6	3.5
July 2008**	10.4	26.4	37.8	59.3	9.7	3.7	4.6
July 2007**	10.4	26.4	40.0	64.3	9.7	4.2	4.9
July 2006**	10.4	26.4	39.1	65.6	9.7	4.0	5.3
August 2005**	10.4	26.4	42.0	69.4	9.7	4.8	5.1
August 2004**	10.4	26.4	43.2	68.1	9.7	5.1	4.7
August 2003**	10.4	26.4	40.2	65.5	9.7	4.3	5.0
May 2002**	10.4	25.0	38.8	63.1	9.1	4.5	5.0
October 2001**	10.4	25.0	39.0	64.9	9.1	4.6	5.2
August 2001**	10.4	25.0	39.4	65.3	9.1	4.7	5.2
August 2000	10.4	23.2	39.6	65.5	8.3	5.5	5.2
July 1999	10.4	21.7	36.4	58.5	7.6	5.3	4.9
August 1998	10.4	21.6	NA	NA	7.6	NA	NA
September 1997*	11.0	19.0	33.5	56.6	5.6	5.8	5.4
May 1994*	11.0	19.7	34.9	60.1	6.0	5.9	5.6

*Tax base includes Kitsap County.

**2000 estimate and 1990-00 and 2000-10 growth rates are distorted because of I-695.

1. Model formulation. The model is formulated in accordance with the economic base theory of regional growth (Conway, 2015). The theory states that the production of exports (e.g., airplanes and software) and other basic activities (e.g., tourism and the operation of military bases) are the primary determinants of growth. Each basic activity brings money into the regional economy and leads to rounds of spending—the so-called multiplier effect—that in turn create employment and income in the non-basic sector of the economy (principally trade, services, and local government).

There are two other key assumptions embodied in the regional model. First, labor and capital are mobile. They move freely into and out of the region in response to economic opportunities. Second, the region is a price-taker. Except for homes, the prices of goods and services are primarily determined in the national market.

The model is designed to depict how the regional economy reacts to changes in basic activity, which is affected by the national and world economic environment. The key regional economic variables predicted by the model are personal income, employment by industry, the unemployment rate, the consumer price index, housing permits, and population. Including the various extensions of the model, PSEFM makes predictions for approximately 100 variables.

The regional economy is viewed as an integral part of the national economy. Thus, the model includes national economic variables, such as real Gross Domestic Product, personal income, employment, the consumer price index, and the mortgage rate. These variables are exogenous to the model, meaning that they are not predicted by the model. But the exogenous variables in conjunction with the model ultimately determine the predictions of the regional endogenous variables. We obtain the U.S. forecasts from Blue Chip Economic Indicators. The monthly publication reports the consensus predictions of fifty national economists.

Regional models are not as complex as national models because of the relative scarcity of regional data. But PSEFM, with about 100 equations, provides a comprehensive set of forecasts. Moreover, as the 20-year experience with the model has shown, these forecasts, though not always accurate, are consistent and reasonable. The projections are both internally compatible (i.e., the predictions of the regional variables, such as income and employment, are in line with one another) and externally compatible (i.e., the regional predictions are in line with the national predictions).

2. Data collection and processing. The data series used to estimate the model come from government sources. The principal agencies include Washington Employment Security Department (employment and labor force), the U.S. Bureau of Economic Analysis (personal income), the U.S. Bureau of the Census (population and housing permits), and the U.S. Bureau of Labor Statistics (consumer price index).

On only a few occasions have data created serious problems in the forecasting process. Preliminary sample-based estimates of employment during the early stages of the dot-com bust significantly over-estimated regional jobs, resulting in a late recognition of the 2001-03 recession. Until a few years ago, Microsoft stock option income, which amounted to billions of dollars per year, played havoc with the preliminary estimates of personal income.

The published data are converted into quarterly series, seasonally adjusted, and transformed into their change-in-log form. This last step in effect transforms the variables from their level form (e.g., personal income expressed in millions of dollars) to growth rates (e.g., the fractional or percent change in personal income). Expressing variables in terms of their growth rates prior to estimating the model results in a more statistically robust model. In particular, this step helps avoid two common problems—spurious correlation and multi-collinearity—that plague econometric models whose variables are expressed in level form.

3. Model estimation. In general, each equation in the model is estimated with regression analysis on time-series data from the first quarter of 1970 to the latest quarter for which data are available (currently the first quarter of 2017). This constitutes 189 observations. Explanatory variables on the right-hand side of the equation are accepted into the equation only if their estimated regression coefficients are statistically significant and the signs of the coefficients are consistent with economic theory. In addition to explanatory variables—a forecasting equation may have up to five explanatory variables—many equations have simple Box-Jenkins (AR and MA) terms to improve the predictive capability of the model. The model also employs simple and complex lag structures, which depict how variables are related over time.

When the variables are expressed in change-in-log form, the regression coefficients are elasticities. This makes it possible to evaluate the coefficients for reasonableness. For example, the regional personal income equation shows that the regression coefficient in front of U.S. personal income is 1.017. Thus, the equation implies that, all else being equal, a one percent increase in national income will lead to about a one percent increase in regional income, a reasonable expectation.

Being estimated with 189 observations, the model is very stable. This means that the regression coefficients do not change much when the model is re-estimated with additional observations. This is a desirable property, since unstable coefficients indicate specification problems.

4. Forecasting. Once the model is estimated and assembled, producing a forecast is simple. It only entails feeding the projections of the exogenous variables into the model and solving the system of equations. In addition to the national variables forecast by Blue Chip, the exogenous variables include aerospace employment, Microsoft employment and stock option income, and Amazon employment. Microsoft stock option income is no longer a concern since the company has replaced it with periodic bonuses. Projections of Boeing, Microsoft, and Amazon

employment are made judgmentally based on company announcements as well as analyses of the three firms that are conducted on the side.

Each forecast undergoes a thorough analysis to assess its reasonableness. Again, the main issue is the internal and external compatibility of the forecasts. Is regional population growth consistent with employment growth? Does the regional unemployment rate follow the national unemployment rate in the long run, as it has in the past? Is industry employment changing in accordance with expected output growth and labor productivity gains?

If an individual projection is out of line, its forecasting equation is sometimes reformulated with a pre-specified constant. If the new equation fails to resolve the problem, the projection is adjusted with an add-factor. Our objective is to minimize the use of add-factors, thereby limiting the degree to which judgment influences the projections. In fact, the model typically requires very few add-factors, especially when making forecasts over periods of less than ten years. For example, the core model, which forecasts 28 variables for the Puget Sound region, currently requires only three add-factors—two to modify the forecasts of trade employment and personal income due to the rapid expansion of Amazon—to produce the current projections through 2027. Three other add-factors are required to produce a reasonable forecast through 2040.

5. Prediction error analysis. Evaluating past prediction errors is important for two reasons. First, it is a necessary step to improving the model. Second, it gives us an appreciation of the uncertainty of the future and our limited ability to make accurate forecasts.

We regularly evaluate the one-year, two-year, and ten-year predictions errors of PSEFM. With the exception of the onset of the Dot-Com/911 recession (2001-03) and the Great Recession (2008-10, the forecasts have been reasonably accurate.

In assessing the prediction errors, we try to identify and quantify the sources of error. There are four sources: (1) measurement errors in the historical data; (2) misspecified equations and random errors in the model; (3) inaccurate national forecasts; and (4) judgment (namely, inaccurate Boeing, Microsoft, and Amazon projections).

In general, we have found that the prediction errors are largely due to inaccurate forecasts of the U.S. economy and Boeing. Data problems at the beginning of the dot-com bust contributed to sizable prediction errors during the 2001-03 recession. The model itself appears to contribute relatively little to prediction errors. In other words, the model does a good job of translating the exogenous U.S., Boeing, and Microsoft projections into fairly accurate regional forecasts. As we have said in the past, “Give us good forecasts of the national economy and Boeing, and we will give you a good forecast of the regional economy.” The January 2012 report provides an analysis of the prediction errors associated with the Great Recession.

The Sound Transit tax base consists of taxable retail sales and the motor vehicle excise tax base for King, Snohomish, and Pierce counties. The same five-step forecasting methodology is employed to predict the tax base. However, instead of national forecasts, the tax base model makes use of regional economic and population projections from PSEFM. Again, each variable is expressed as the change in the logarithm of its value.

The variables used to predict taxable retail sales include Puget Sound personal income, housing permits, and the unemployment rate. The motor vehicle excise tax base is forecast in two steps. The first step predicts the number of motor vehicles by type (passenger cars, gasoline trucks, diesel trucks, and other motor vehicles), using driving-age population and the unemployment rate as the principal explanatory variables. The second step predicts the motor vehicle excise tax base from the number of motor vehicles and their expected average value, which is based on a projection of the average car price in the United States. Appendix B shows the forecasting equations for the tax base model.

PSEFM and the tax base model also forecast economic and tax base variables by county. Initially, the county tax base projections are based on the county forecasts of personal income, driving-age population, housing permits, and the unemployment rate. Ultimately, the county forecasts are reconciled with the regional forecasts, thereby ensuring that for a given variable the county forecasts sum to the regional forecast. Appendix A contains the county projections.

Finally, a word is needed about the relative strength and weakness of the taxable retail sales and motor vehicle excise tax base models. The taxable retail sales forecasting model has been reasonably well behaved and has produced, with the exception of the Great Recession, fairly accurate predictions (an article discussing the modeling of Washington taxable retail sales can be found in Conway Pedersen Economics, September 2015). One reason for this is that the historical data series underlying the model are long and have relatively little measurement error.

In contrast, the motor vehicle excise tax base forecasting model is plagued by what appears to be significant measurement problems. The trouble lies not with the count of vehicles but with the implied average value of the vehicles. For example, the average value inexplicably jumps 52.5 percent in 1977 and then drops 5.9 percent in 1978. There is also a 37.3 percent run-up in the average vehicle value in 1990-91 when the valuation method shifts from being based on Blue Book values to being based on MSRP (Manufacturers' Suggested Retail Price) values. The gyrations in the average value are so large that they make it difficult to predict the average value in both the short run and the long run. Since the variables in the tax base models are expressed in terms of growth rates (as represented by changes in the natural logarithms of the variables), dummy variables are included in the forecasting equations in an attempt to counteract the problems created by the apparent measurement errors.

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APPENDIX A
SOUND TRANSIT TAX BASE FORECAST

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 1. Puget Sound Region

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Employment	622.3	594.6	613.6	648.5	672.3	685.0	708.3	754.5	832.6	900.3	924.5	925.0
Aerospace employment (thous.)	59.7	39.5	40.3	49.3	53.1	49.3	43.9	44.6	58.2	70.4	77.2	76.7
Unemployment rate (%)	9.5	11.6	10.4	7.8	6.6	9.5	8.9	8.5	6.2	5.7	6.6	8.2
Personal income (mils. \$09)	38,965.7	38,264.4	38,987.1	41,080.2	42,007.7	43,955.4	46,236.6	48,308.6	52,853.9	56,296.8	58,109.5	60,024.0
Personal income (mils. \$)	8,691.8	8,898.7	9,377.8	10,417.8	11,763.5	13,330.3	14,793.7	16,463.1	19,277.5	22,351.8	25,551.4	28,713.4
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	4,737	4,849	5,193	5,784	6,413	7,142	7,842	8,588	9,777	10,996	12,131	13,343
Seattle consumer price index (82-84=1.000)	0.374	0.381	0.393	0.418	0.464	0.511	0.539	0.582	0.640	0.709	0.827	0.916
Housing permits (thous.)	13.4	11.3	9.8	10.9	12.1	17.0	23.5	31.0	33.0	28.6	20.9	14.6
Population (thous.)	1,835.0	1,835.2	1,806.1	1,801.0	1,834.0	1,866.3	1,886.2	1,916.7	1,971.1	2,032.1	2,105.8	2,151.7
Population, 20-64 years of age (thous.)	991.6	1,001.1	995.7	1,004.5	1,034.9	1,064.8	1,089.3	1,119.6	1,163.8	1,212.8	1,269.8	1,307.9
Taxable retail sales (mils. \$)	na	na	na	na	6,603.3	7,352.8	8,321.2	9,693.0	11,312.5	12,418.1	12,868.1	13,390.5
Motor vehicles (thous.)	na	na	na	na	na	1,393.7	1,458.2	1,576.2	1,699.2	1,773.9	1,904.0	1,963.9
Passenger cars	na	na	na	na	na	919.7	950.3	1,026.0	1,092.6	1,176.2	1,213.7	1,267.8
Gas trucks	na	na	na	na	na	229.6	247.5	273.6	319.7	333.4	347.0	356.2
Diesel trucks	na	na	na	na	na	6.0	6.2	9.5	12.5	14.5	20.6	23.2
Other vehicles	na	na	na	na	na	238.5	254.2	267.1	274.4	249.8	322.8	316.7
Motor vehicle excise tax base, 2.000% (mils. \$)	na	na	na	na	na	1,618.3	1,820.1	3,000.0	3,043.3	3,305.5	3,568.4	3,741.5
Annual growth rate (%)												
Employment	na	-4.4	3.2	5.7	3.7	1.9	3.4	6.5	10.4	8.1	2.7	0.1
Personal income (mils. \$)	na	2.4	5.4	11.1	12.9	13.3	11.0	11.3	17.1	15.9	14.3	12.4
Consumer price index	na	1.8	3.2	6.4	11.1	10.1	5.6	8.0	9.9	10.7	16.8	10.7
Housing permits	na	-16.1	-12.9	10.9	11.5	39.7	38.3	32.3	6.3	-13.3	-26.9	-29.9
Population	na	0.0	-1.6	-0.3	1.8	1.8	1.1	1.6	2.8	3.1	3.6	2.2
Taxable retail sales	na	na	na	na	na	11.4	13.2	16.5	16.7	9.8	3.6	4.1
Motor vehicle excise tax base	na	na	na	na	na	na	12.5	64.8	1.4	8.6	8.0	4.9

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 1. Puget Sound Region

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Employment	906.7	914.4	966.0	1,006.6	1,052.8	1,108.1	1,170.5	1,242.4	1,302.5	1,309.8	1,328.0	1,341.9
Aerospace employment (thous.)	73.0	63.3	64.8	74.0	82.6	90.3	97.9	110.3	112.3	113.0	109.6	100.4
Unemployment rate (%)	10.6	10.0	8.1	6.8	6.8	6.4	5.1	4.9	4.1	5.2	6.2	6.2
Personal income (mils. \$09)	60,768.2	61,262.4	63,792.4	66,627.5	70,440.6	73,098.5	77,493.7	82,401.5	87,095.0	89,584.2	93,977.9	95,213.8
Personal income (mils. \$)	30,671.7	32,251.9	34,858.2	37,700.1	40,717.7	43,604.4	48,029.9	53,268.4	58,741.7	62,401.5	67,183.7	69,768.9
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	128.7	242.5	589.5	307.5
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	14,083	14,739	15,729	16,694	17,695	18,503	19,791	21,362	22,776	23,718	24,967	25,459
Seattle consumer price index (82-84=1.000)	0.978	0.993	1.030	1.055	1.066	1.092	1.129	1.182	1.268	1.341	1.390	1.429
Housing permits (thous.)	10.8	16.9	19.9	24.0	25.8	26.8	31.3	33.0	28.9	14.6	19.0	18.4
Population (thous.)	2,177.9	2,188.1	2,216.0	2,258.0	2,301.0	2,356.3	2,426.4	2,493.2	2,578.8	2,630.7	2,690.9	2,740.3
Population, 20-64 years of age (thous.)	1,330.9	1,342.8	1,365.6	1,395.2	1,422.0	1,455.7	1,499.4	1,542.9	1,599.3	1,634.4	1,669.9	1,699.1
Taxable retail sales (mils. \$)	14,708.7	16,466.3	17,759.8	18,737.9	20,689.8	22,158.7	24,529.5	27,501.8	30,042.3	31,087.7	32,603.5	33,527.1
Motor vehicles (thous.)	1,873.2	1,940.8	1,996.4	2,069.7	2,218.5	2,274.0	2,303.6	2,418.4	2,506.2	2,577.7	2,524.0	2,500.0
Passenger cars	1,204.7	1,247.2	1,289.5	1,335.1	1,418.6	1,478.3	1,512.1	1,587.0	1,645.9	1,705.8	1,665.1	1,652.1
Gas trucks	341.8	356.9	372.5	388.9	419.9	433.3	441.6	467.5	480.8	493.6	490.9	486.0
Diesel trucks	24.9	29.2	28.8	33.5	56.7	37.9	31.2	39.4	50.1	52.6	52.2	35.7
Other vehicles	301.8	307.5	305.7	312.1	323.4	324.4	318.7	324.5	329.5	325.7	315.7	326.3
Motor vehicle excise tax base, 2.000% (mils. \$)	3,832.2	4,263.6	4,821.4	5,420.7	6,630.9	7,197.4	7,718.9	8,655.6	10,415.5	12,674.1	13,284.5	13,808.7
Annual growth rate (%)												
Employment	-2.0	0.8	5.6	4.2	4.6	5.3	5.6	6.2	4.8	0.6	1.4	1.1
Personal income (mils. \$)	6.8	5.2	8.1	8.2	8.0	7.1	10.1	10.9	10.3	6.2	7.7	3.8
Consumer price index	6.7	1.5	3.7	2.5	1.0	2.4	3.4	4.7	7.3	5.8	3.7	2.8
Housing permits	-26.0	55.8	17.9	20.8	7.5	3.8	16.9	5.3	-12.3	-49.5	29.8	-3.2
Population	1.2	0.5	1.3	1.9	1.9	2.4	3.0	2.8	3.4	2.0	2.3	1.8
Taxable retail sales	9.8	11.9	7.9	5.5	10.4	7.1	10.7	12.1	9.2	3.5	4.9	2.8
Motor vehicle excise tax base	2.4	11.3	13.1	12.4	22.3	8.5	7.2	12.1	20.3	21.7	4.8	3.9

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 1. Puget Sound Region

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Employment	1,362.9	1,390.7	1,439.9	1,519.9	1,588.0	1,626.8	1,665.4	1,649.5	1,603.2	1,593.8	1,610.0	1,652.3
Aerospace employment (thous.)	90.0	79.4	85.3	103.9	110.3	96.9	84.5	85.5	74.6	64.4	60.5	64.2
Unemployment rate (%)	5.8	5.6	5.1	4.2	4.1	4.1	4.4	5.4	6.7	6.8	5.7	5.0
Personal income (mils. \$09)	97,931.3	101,778.6	107,596.5	115,529.5	128,315.3	137,686.3	143,289.7	142,289.4	142,694.2	143,732.9	152,351.3	154,090.5
Personal income (mils. \$)	73,254.3	77,712.0	83,907.5	91,646.9	102,571.2	111,676.2	119,111.7	120,568.1	122,534.7	125,865.2	136,722.8	142,180.2
Microsoft stock option income (mils. \$)	482.2	749.1	1,500.0	2,800.0	5,300.0	8,400.0	7,600.0	4,400.0	3,300.0	3,100.0	1,300.0	800.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5,425.0	0.0
Per capita income (\$)	26,405	27,609	29,369	31,403	34,430	36,981	39,025	38,983	39,295	40,173	43,272	44,450
Seattle consumer price index (82-84=1.000)	1.478	1.522	1.575	1.630	1.678	1.728	1.792	1.858	1.894	1.925	1.947	2.001
Housing permits (thous.)	20.2	18.4	20.9	22.8	26.6	24.9	22.7	21.1	21.0	20.5	23.5	25.9
Population (thous.)	2,774.2	2,814.6	2,856.8	2,918.1	2,978.8	3,019.7	3,052.2	3,092.9	3,118.3	3,133.0	3,159.0	3,198.3
Population, 20-64 years of age (thous.)	1,718.4	1,743.1	1,769.5	1,809.9	1,849.5	1,878.3	1,914.0	1,945.4	1,966.6	1,980.6	2,000.8	2,029.4
Taxable retail sales (mils. \$)	35,046.7	36,432.0	38,093.6	42,111.0	45,415.0	49,642.9	53,520.0	52,296.3	51,520.4	52,575.0	55,578.6	60,899.3
Motor vehicles (thous.)	2,540.5	2,543.1	2,578.4	2,639.1	2,710.9	2,661.6	2,980.5	2,953.3	2,945.1	3,006.7	3,100.3	3,119.2
Passenger cars	1,691.9	1,701.9	1,740.7	1,788.0	1,842.5	1,792.4	2,054.8	1,970.6	1,963.8	2,013.1	2,076.3	2,091.6
Gas trucks	484.9	484.7	487.5	497.6	507.3	508.2	535.3	535.2	527.2	531.4	540.8	533.7
Diesel trucks	38.7	37.7	38.9	41.8	43.2	44.9	51.7	56.7	56.6	59.7	65.0	68.7
Other vehicles	325.1	318.9	311.4	311.7	317.9	316.1	338.6	390.8	397.5	402.4	418.2	425.2
Motor vehicle excise tax base, 2.000% (mils. \$)	14,671.4	15,353.6	16,372.4	17,749.8	19,510.4	20,355.6	26,355.8	26,351.8	27,401.7	28,797.5	30,472.8	31,117.7
Annual growth rate (%)												
Employment	1.6	2.0	3.5	5.6	4.5	2.4	2.4	-1.0	-2.8	-0.6	1.0	2.6
Personal income (mils. \$)	5.0	6.1	8.0	9.2	11.9	8.9	6.7	1.2	1.6	2.7	8.6	4.0
Consumer price index	3.4	3.0	3.4	3.5	2.9	3.0	3.7	3.7	1.9	1.7	1.1	2.8
Housing permits	9.8	-8.9	13.3	9.2	16.9	-6.5	-8.8	-7.0	-0.3	-2.5	14.3	10.5
Population	1.2	1.5	1.5	2.1	2.1	1.4	1.1	1.3	0.8	0.5	0.8	1.2
Taxable retail sales	4.5	4.0	4.6	10.5	7.8	9.3	7.8	-2.3	-1.5	2.0	5.7	9.6
Motor vehicle excise tax base	6.2	4.6	6.6	8.4	9.9	4.3	29.5	0.0	4.0	5.1	5.8	2.1

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 1. Puget Sound Region

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Employment	1,705.7	1,758.2	1,775.5	1,688.3	1,667.0	1,694.4	1,733.8	1,783.0	1,831.8	1,888.6	1,952.0	2,002.0
Aerospace employment (thous.)	71.5	77.7	80.4	80.6	78.5	83.9	91.0	92.7	90.8	90.2	86.9	81.8
Unemployment rate (%)	4.5	4.0	4.9	9.0	9.6	8.7	7.2	5.9	5.3	4.8	4.6	3.8
Personal income (mils. \$09)	165,484.2	175,559.9	176,686.3	164,082.4	163,452.2	170,382.0	184,845.8	187,849.7	200,035.4	208,006.0	216,041.8	222,467.1
Personal income (mils. \$)	156,764.4	170,482.6	176,795.1	164,059.2	166,155.7	177,452.4	196,186.6	201,994.3	218,349.1	227,827.1	239,222.0	251,287.7
Microsoft stock option income (mils. \$)	1,000.0	1,900.0	1,600.0	1,800.0	2,000.0	2,100.0	2,200.0	2,300.0	2,400.0	2,500.0	2,600.0	2,700.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	48,127	51,588	52,699	48,047	48,179	50,941	55,634	56,477	60,078	61,662	63,675	65,905
Seattle consumer price index (82-84=1.000)	2.076	2.155	2.248	2.261	2.268	2.327	2.386	2.416	2.459	2.493	2.549	2.615
Housing permits (thous.)	25.6	26.3	14.9	7.4	10.0	11.0	16.7	18.2	21.6	26.3	24.8	23.5
Population (thous.)	3,257.1	3,304.5	3,355.0	3,414.8	3,448.6	3,483.4	3,525.9	3,576.6	3,634.0	3,694.8	3,756.6	3,812.8
Population, 20-64 years of age (thous.)	2,069.5	2,100.6	2,132.5	2,172.3	2,196.1	2,218.2	2,238.5	2,263.9	2,290.3	2,317.9	2,345.5	2,366.0
Taxable retail sales (mils. \$)	66,493.0	71,397.9	67,788.2	59,448.5	59,123.2	60,624.9	64,402.0	69,419.9	74,016.9	81,301.1	87,867.2	90,907.5
Motor vehicles (thous.)	3,202.8	3,272.9	3,276.1	3,227.9	3,253.8	3,298.1	3,271.9	3,355.2	3,472.1	3,599.3	3,720.9	3,797.0
Passenger cars	2,147.0	2,199.8	2,210.5	2,186.8	2,223.5	2,272.7	2,270.4	2,338.0	2,436.9	2,539.6	2,634.3	2,691.9
Gas trucks	536.7	537.9	526.4	510.0	508.1	505.3	490.5	491.9	497.4	506.8	519.8	528.2
Diesel trucks	75.3	79.9	81.0	79.7	79.6	80.3	80.3	85.8	89.1	92.3	99.3	103.4
Other vehicles	443.8	455.3	458.2	451.4	442.6	439.8	430.7	439.5	448.7	460.6	467.5	473.6
Motor vehicle excise tax base, 2.000% (mils. \$)	32,722.5	33,613.5	32,301.1	31,618.2	30,968.5	30,999.3	30,988.0	32,497.2	34,891.3	37,418.2	40,228.0	42,948.2
Annual growth rate (%)												
Employment	3.2	3.1	1.0	-4.9	-1.3	1.6	2.3	2.8	2.7	3.1	3.4	2.6
Personal income (mils. \$)	10.3	8.8	3.7	-7.2	1.3	6.8	10.6	3.0	8.1	4.3	5.0	5.0
Consumer price index	3.8	3.8	4.3	0.6	0.3	2.6	2.5	1.3	1.8	1.4	2.2	2.6
Housing permits	-1.1	2.6	-43.2	-50.2	34.8	9.5	52.3	9.1	18.3	22.1	-5.7	-5.3
Population	1.8	1.5	1.5	1.8	1.0	1.0	1.2	1.4	1.6	1.7	1.7	1.5
Taxable retail sales	9.2	7.4	-5.1	-12.3	-0.5	2.5	6.2	7.8	6.6	9.8	8.1	3.5
Motor vehicle excise tax base	5.2	2.7	-3.9	-2.1	-2.1	0.1	0.0	4.9	7.4	7.2	7.5	6.8

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 1. Puget Sound Region

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Employment	2,035.1	2,057.8	2,075.9	2,098.3	2,120.6	2,145.3	2,171.8	2,198.7	2,226.8	2,255.5	2,281.9	2,306.4
Aerospace employment (thous.)	79.6	78.2	77.4	76.6	75.8	74.8	74.0	73.2	72.4	71.6	70.8	70.2
Unemployment rate (%)	3.8	4.0	4.2	4.3	4.4	4.5	4.5	4.6	4.7	4.7	4.7	4.8
Personal income (mils. \$09)	228,499.3	235,142.8	240,854.5	247,113.3	253,548.6	260,336.6	267,480.3	274,879.4	282,568.9	290,523.9	298,696.2	306,920.0
Personal income (mils. \$)	263,855.1	277,768.4	290,780.1	304,905.3	319,732.7	335,521.4	352,317.4	370,035.0	388,761.0	408,505.9	429,243.3	450,771.4
Microsoft stock option income (mils. \$)	2,800.0	2,900.0	3,000.0	3,100.0	3,200.0	3,300.0	3,400.0	3,500.0	3,600.0	3,700.0	3,800.0	3,900.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	68,327	71,167	73,808	76,714	79,679	82,809	86,098	89,521	93,112	96,862	100,761	104,778
Seattle consumer price index (82-84=1.000)	2.679	2.744	2.810	2.872	2.936	3.001	3.072	3.145	3.220	3.297	3.376	3.458
Housing permits (thous.)	22.3	21.6	21.2	21.4	22.1	22.6	22.8	23.1	23.2	23.4	23.5	23.5
Population (thous.)	3,861.5	3,902.9	3,939.6	3,974.5	4,012.6	4,051.6	4,091.9	4,133.4	4,175.1	4,217.3	4,259.9	4,302.0
Population, 20-64 years of age (thous.)	2,381.4	2,391.0	2,396.4	2,403.1	2,410.6	2,418.5	2,427.2	2,435.9	2,446.6	2,458.4	2,471.7	2,485.0
Taxable retail sales (mils. \$)	94,628.2	97,862.3	101,153.7	105,052.6	108,954.7	113,261.3	117,751.3	122,437.7	127,314.5	132,411.2	137,792.6	143,331.9
Motor vehicles (thous.)	3,845.7	3,866.9	3,870.1	3,881.8	3,896.1	3,909.6	3,927.2	3,944.2	3,964.8	3,987.1	4,012.2	4,038.1
Passenger cars	2,732.0	2,747.2	2,746.5	2,753.6	2,762.9	2,771.2	2,783.2	2,794.6	2,808.5	2,823.7	2,840.9	2,858.9
Gas trucks	532.6	535.9	538.1	540.7	543.5	546.4	549.5	552.5	556.1	559.9	564.0	568.2
Diesel trucks	106.5	109.3	112.0	114.7	117.4	120.2	123.1	126.0	129.0	132.1	135.3	138.5
Other vehicles	474.6	474.5	473.5	472.8	472.3	471.8	471.5	471.2	471.2	471.5	472.0	472.5
Motor vehicle excise tax base, 2.000% (mils. \$)	45,367.8	47,169.4	48,424.7	49,809.8	51,343.3	52,868.9	54,483.7	56,108.4	57,832.4	59,655.6	61,600.7	63,633.9
Annual growth rate (%)												
Employment	1.7	1.1	0.9	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.2	1.1
Personal income (mils. \$)	5.0	5.3	4.7	4.9	4.9	4.9	5.0	5.0	5.1	5.1	5.1	5.0
Consumer price index	2.5	2.4	2.4	2.2	2.2	2.2	2.4	2.4	2.4	2.4	2.4	2.4
Housing permits	-5.2	-3.0	-1.8	0.9	3.1	2.4	1.0	1.1	0.5	0.6	0.5	0.1
Population	1.3	1.1	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Taxable retail sales	4.1	3.4	3.4	3.9	3.7	4.0	4.0	4.0	4.0	4.0	4.1	4.0
Motor vehicle excise tax base	5.6	4.0	2.7	2.9	3.1	3.0	3.1	3.0	3.1	3.2	3.3	3.3

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 1. Puget Sound Region

	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Employment	2,331.0	2,356.0	2,382.1	2,409.4	2,437.5	2,466.4	2,496.1	2,526.8	2,558.4	2,591.0	2,624.7
Aerospace employment (thous.)	69.6	69.0	68.4	67.8	67.2	66.6	66.0	65.4	64.8	64.2	63.6
Unemployment rate (%)	4.8	4.8	4.8	4.8	4.8	4.8	4.7	4.7	4.7	4.7	4.7
Personal income (mils. \$09)	315,317.8	324,137.3	333,307.2	342,866.0	352,774.2	363,045.8	373,691.8	384,720.3	396,151.3	408,014.3	420,317.5
Personal income (mils. \$)	473,301.0	497,251.8	522,576.3	549,398.6	577,720.6	607,631.6	639,219.9	672,573.5	707,805.0	745,050.7	784,414.8
Microsoft stock option income (mils. \$)	4,000.0	4,100.0	4,200.0	4,300.0	4,400.0	4,500.0	4,600.0	4,700.0	4,800.0	4,900.0	5,000.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	108,973	113,439	118,091	122,992	128,111	133,463	139,096	144,984	151,143	157,628	164,412
Seattle consumer price index (82-84=1.000)	3.541	3.625	3.711	3.801	3.892	3.987	4.083	4.183	4.285	4.389	4.497
Housing permits (thous.)	23.3	23.3	23.6	23.8	24.0	24.2	24.3	24.4	24.6	24.7	24.9
Population (thous.)	4,343.2	4,383.3	4,425.1	4,466.8	4,509.4	4,552.7	4,595.4	4,638.8	4,682.9	4,726.5	4,770.9
Population, 20-64 years of age (thous.)	2,500.2	2,518.1	2,538.2	2,559.2	2,579.1	2,598.4	2,618.0	2,640.3	2,665.6	2,692.0	2,718.5
Taxable retail sales (mils. \$)	149,055.7	155,168.5	161,631.4	168,402.1	175,462.2	182,847.9	190,570.7	198,655.4	207,117.6	215,986.8	225,276.6
Motor vehicles (thous.)	4,067.3	4,101.2	4,139.1	4,178.8	4,216.7	4,253.7	4,291.5	4,333.7	4,381.1	4,430.5	4,480.3
Passenger cars	2,879.3	2,903.0	2,929.7	2,957.7	2,984.4	3,010.5	3,037.1	3,066.9	3,100.3	3,135.1	3,170.3
Gas trucks	572.8	578.1	583.8	589.9	595.6	601.3	607.0	613.4	620.5	627.9	635.4
Diesel trucks	141.8	145.3	149.0	152.8	156.6	160.4	164.2	168.2	172.5	176.9	181.4
Other vehicles	473.4	474.7	476.5	478.4	480.1	481.6	483.2	485.2	487.8	490.5	493.2
Motor vehicle excise tax base, 2.000% (mils. \$)	65,804.9	68,165.0	70,711.1	73,389.5	76,104.9	78,883.4	81,776.0	84,903.6	88,300.2	91,883.1	95,604.5
Annual growth rate (%)											
Employment	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3
Personal income (mils. \$)	5.0	5.1	5.1	5.1	5.2	5.2	5.2	5.2	5.2	5.3	5.3
Consumer price index	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Housing permits	-0.6	0.0	1.2	1.0	0.7	0.6	0.5	0.6	0.6	0.6	0.7
Population	1.0	0.9	1.0	0.9	1.0	1.0	0.9	0.9	1.0	0.9	0.9
Taxable retail sales	4.0	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.3	4.3	4.3
Motor vehicle excise tax base	3.4	3.6	3.7	3.8	3.7	3.7	3.7	3.8	4.0	4.1	4.1

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 2. King County

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Employment (thous.)	445.4	427.5	445.2	473.1	492.6	501.5	517.2	553.1	610.7	659.3	679.0	680.8
Aerospace employment (thous.)	43.6	31.4	35.2	43.8	46.6	43.0	38.0	39.1	49.7	56.3	60.9	61.2
Unemployment rate (%)	9.6	12.2	10.7	7.5	6.4	9.2	8.6	8.2	5.8	5.2	6.1	7.5
Personal income (mils. \$09)	25,937.9	25,404.5	26,240.4	27,533.6	27,999.2	29,243.8	30,611.6	32,031.9	34,971.9	37,117.8	38,245.9	39,538.9
Personal income (mils. \$)	5,785.6	5,908.1	6,312.0	6,981.6	7,840.7	8,868.6	9,794.2	10,916.2	12,754.9	14,736.9	16,816.2	18,914.4
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	5,001	5,139	5,542	6,130	6,799	7,640	8,386	9,229	10,573	11,924	13,171	14,544
Seattle consumer price index (82-84=1.000)	0.374	0.381	0.393	0.418	0.464	0.511	0.539	0.582	0.640	0.709	0.827	0.916
Housing permits (thous.)	7.0	4.9	5.1	5.8	6.5	10.2	14.2	19.7	20.3	17.0	13.3	9.6
Population (thous.)	1,156.8	1,149.6	1,138.9	1,138.9	1,153.0	1,160.8	1,167.9	1,182.7	1,206.1	1,235.6	1,276.5	1,300.4
Population, 20-64 years of age (thous.)	634.5	637.4	638.8	646.7	662.9	675.5	688.3	705.5	727.8	754.3	787.9	809.2
Taxable retail sales (mils. \$)	na	na	na	na	4,617.2	5,126.0	5,768.1	6,728.7	7,876.3	8,694.5	9,105.0	9,403.3
Motor vehicles (thous.)	na	na	na	na	na	871.3	913.6	988.1	1,072.8	1,135.9	1,207.7	1,244.5
Passenger cars	na	na	na	na	na	595.7	618.2	667.5	708.5	756.9	789.2	824.7
Gas trucks	na	na	na	na	na	129.6	140.2	155.0	190.0	196.4	205.6	210.4
Diesel trucks	na	na	na	na	na	3.9	4.1	6.3	8.1	9.3	13.3	15.3
Other vehicles	na	na	na	na	na	142.2	151.1	159.4	166.2	173.3	199.6	194.2
Motor vehicle excise tax base, 2.000% (mils. \$)	na	na	na	na	na	1,067.8	1,202.8	1,978.8	2,010.1	2,187.0	2,383.0	2,531.4
Annual growth rate (%)												
Employment	na	-4.0	4.1	6.3	4.1	1.8	3.1	6.9	10.4	8.0	3.0	0.3
Personal income (mils. \$)	na	2.1	6.8	10.6	12.3	13.1	10.4	11.5	16.8	15.5	14.1	12.5
Consumer price index	na	1.8	3.2	6.4	11.1	10.1	5.6	8.0	9.9	10.7	16.8	10.7
Housing permits	na	-29.2	3.0	13.3	11.8	57.8	39.5	38.9	3.1	-16.6	-21.4	-28.1
Population	na	-0.6	-0.9	0.0	1.2	0.7	0.6	1.3	2.0	2.4	3.3	1.9
Taxable retail sales	na	na	na	na	na	11.0	12.5	16.7	17.1	10.4	4.7	3.3
Motor vehicle excise tax base	na	na	na	na	na	na	12.6	64.5	1.6	8.8	9.0	6.2

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 2. King County

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Employment (thous.)	668.0	672.1	710.5	739.5	772.0	808.7	849.3	898.7	938.0	942.5	951.4	950.6
Aerospace employment (thous.)	59.6	53.3	55.1	62.8	69.1	74.7	77.7	83.8	85.7	86.2	82.1	67.6
Unemployment rate (%)	9.9	9.6	7.5	6.4	6.2	5.8	4.7	4.5	3.9	4.8	5.8	5.9
Personal income (mils. \$09)	40,004.9	40,272.4	41,972.8	43,954.4	46,522.5	48,347.4	51,401.4	54,550.8	57,489.6	59,014.9	61,771.4	62,163.8
Personal income (mils. \$)	20,191.3	21,201.7	22,935.3	24,871.2	26,892.0	28,840.0	31,858.9	35,264.0	38,774.2	41,107.4	44,159.2	45,551.2
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	128.7	242.5	589.5	307.5
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	15,397	16,106	17,269	18,385	19,522	20,504	22,116	23,884	25,554	26,665	28,099	28,539
Seattle consumer price index (82-84=1.000)	0.978	0.993	1.030	1.055	1.066	1.092	1.129	1.182	1.268	1.341	1.390	1.429
Housing permits (thous.)	6.7	10.6	13.3	14.2	15.2	16.7	18.2	18.6	15.8	7.5	9.4	7.8
Population (thous.)	1,311.4	1,316.3	1,328.0	1,352.7	1,377.5	1,406.4	1,440.3	1,476.3	1,517.2	1,541.5	1,571.5	1,596.0
Population, 20-64 years of age (thous.)	820.6	827.3	838.4	856.4	872.5	890.9	913.2	937.8	966.5	984.2	1,002.7	1,017.9
Taxable retail sales (mils. \$)	10,227.3	11,448.6	12,439.4	13,242.5	14,648.2	15,522.9	17,152.3	19,154.1	20,922.6	21,407.3	21,941.6	22,607.0
Motor vehicles (thous.)	1,153.7	1,195.1	1,226.7	1,261.4	1,348.3	1,382.6	1,393.5	1,461.6	1,506.0	1,534.3	1,490.0	1,468.1
Passenger cars	760.6	788.8	814.0	837.5	889.0	924.8	940.9	987.6	1,021.7	1,051.5	1,018.3	1,005.2
Gas trucks	194.7	204.1	213.0	221.0	238.1	246.5	249.6	263.0	268.5	272.7	267.4	265.7
Diesel trucks	16.3	18.1	18.4	20.9	35.5	24.0	20.0	21.3	29.0	30.5	30.4	21.8
Other vehicles	182.1	184.1	181.3	182.0	185.7	187.3	183.1	189.7	186.8	179.6	173.9	175.5
Motor vehicle excise tax base, 2.000% (mils. \$)	2,542.5	2,817.9	3,226.5	3,613.9	4,418.7	4,789.2	5,111.3	5,748.5	6,869.8	8,272.1	8,555.9	8,824.4
Annual growth rate (%)												
Employment	-1.9	0.6	5.7	4.1	4.4	4.8	5.0	5.8	4.4	0.5	1.0	-0.1
Personal income (mils. \$)	6.8	5.0	8.2	8.4	8.1	7.2	10.5	10.7	10.0	6.0	7.4	3.2
Consumer price index	6.7	1.5	3.7	2.5	1.0	2.4	3.4	4.7	7.3	5.8	3.7	2.8
Housing permits	-30.6	58.5	25.8	6.9	7.3	9.9	9.0	1.9	-14.8	-52.7	25.2	-17.0
Population	0.8	0.4	0.9	1.9	1.8	2.1	2.4	2.5	2.8	1.6	1.9	1.6
Taxable retail sales	8.8	11.9	8.7	6.5	10.6	6.0	10.5	11.7	9.2	2.3	2.5	3.0
Motor vehicle excise tax base	0.4	10.8	14.5	12.0	22.3	8.4	6.7	12.5	19.5	20.4	3.4	3.1

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 2. King County

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Employment (thous.)	963.8	984.2	1,022.5	1,079.6	1,128.7	1,165.8	1,200.9	1,184.2	1,141.5	1,126.0	1,131.0	1,154.9
Aerospace employment (thous.)	58.2	51.0	53.3	63.4	67.1	59.5	53.0	54.0	47.2	39.8	37.4	39.1
Unemployment rate (%)	5.3	5.3	4.9	4.1	4.0	3.8	4.0	5.1	6.1	6.2	5.1	4.7
Personal income (mils. \$09)	63,951.6	66,513.3	70,482.5	75,001.5	85,077.8	93,041.7	96,387.8	93,234.9	92,977.7	93,521.1	101,109.9	101,922.3
Personal income (mils. \$)	47,836.8	50,786.1	54,964.5	59,496.5	68,010.9	75,464.7	80,122.7	79,000.4	79,843.7	81,894.3	90,758.7	94,049.8
Microsoft stock option income (mils. \$)	482.2	749.1	1,500.0	2,800.0	5,300.0	8,400.0	7,600.0	4,400.0	3,300.0	3,100.0	1,300.0	800.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5,425.0	0.0
Per capita income (\$)	29,677	31,119	33,210	35,311	39,711	43,644	46,074	45,039	45,399	46,440	51,110	52,381
Seattle consumer price index (82-84=1.000)	1.478	1.522	1.575	1.630	1.678	1.728	1.792	1.858	1.894	1.925	1.947	2.001
Housing permits (thous.)	8.4	8.2	10.1	11.7	13.4	11.7	11.8	10.0	10.6	9.8	11.3	12.4
Population (thous.)	1,611.9	1,631.9	1,654.9	1,684.8	1,712.4	1,729.1	1,739.0	1,754.1	1,758.7	1,763.4	1,775.3	1,795.3
Population, 20-64 years of age (thous.)	1,027.4	1,040.3	1,055.3	1,075.9	1,094.9	1,107.7	1,122.8	1,135.8	1,141.8	1,147.3	1,157.0	1,172.0
Taxable retail sales (mils. \$)	23,776.2	25,076.5	26,395.4	29,131.6	31,449.9	34,500.0	37,399.0	35,870.7	34,808.2	34,979.1	36,844.2	39,936.0
Motor vehicles (thous.)	1,506.6	1,506.3	1,527.4	1,561.7	1,596.9	1,551.8	1,739.7	1,708.0	1,684.8	1,689.2	1,733.4	1,726.1
Passenger cars	1,040.3	1,048.8	1,073.1	1,099.9	1,129.1	1,096.3	1,253.0	1,200.2	1,186.6	1,196.5	1,227.2	1,223.7
Gas trucks	265.1	264.1	264.4	269.3	272.8	268.4	285.4	281.9	272.0	268.4	271.5	263.9
Diesel trucks	23.1	22.9	22.6	24.9	25.2	23.9	29.4	31.9	30.8	31.4	34.2	35.9
Other vehicles	178.2	170.5	167.2	167.7	169.8	163.2	172.0	194.1	195.5	192.9	200.5	202.6
Motor vehicle excise tax base, 2.000% (mils. \$)	9,320.9	9,769.2	10,412.0	11,251.1	12,298.9	12,831.9	16,339.2	16,083.0	16,531.6	17,087.8	17,905.9	18,032.0
Annual growth rate (%)												
Employment	1.4	2.1	3.9	5.6	4.5	3.3	3.0	-1.4	-3.6	-1.4	0.4	2.1
Personal income (mils. \$)	5.0	6.2	8.2	8.2	14.3	11.0	6.2	-1.4	1.1	2.6	10.8	3.6
Consumer price index	3.4	3.0	3.4	3.5	2.9	3.0	3.7	3.7	1.9	1.7	1.1	2.8
Housing permits	8.0	-2.8	24.0	15.3	14.7	-12.4	0.5	-14.9	5.1	-6.9	14.6	10.6
Population	1.0	1.2	1.4	1.8	1.6	1.0	0.6	0.9	0.3	0.3	0.7	1.1
Taxable retail sales	5.2	5.5	5.3	10.4	8.0	9.7	8.4	-4.1	-3.0	0.5	5.3	8.4
Motor vehicle excise tax base	5.6	4.8	6.6	8.1	9.3	4.3	27.3	-1.6	2.8	3.4	4.8	0.7

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 2. King County

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Employment (thous.)	1,186.6	1,210.9	1,227.8	1,164.0	1,148.7	1,167.1	1,193.8	1,234.6	1,270.5	1,311.6	1,358.5	1,398.2
Aerospace employment (thous.)	43.0	44.8	44.8	44.0	41.7	42.0	44.0	45.6	45.3	44.8	42.1	39.3
Unemployment rate (%)	4.2	3.6	4.4	8.6	9.0	7.9	6.3	5.0	4.7	4.2	3.9	3.1
Personal income (mils. \$09)	110,561.4	116,962.6	116,797.0	106,268.3	105,800.4	111,145.1	123,670.3	125,713.4	135,160.5	140,197.4	145,957.0	151,117.4
Personal income (mils. \$)	104,736.5	113,578.2	116,867.5	106,248.0	107,552.1	115,758.4	131,263.3	135,176.1	147,538.1	153,554.1	161,621.5	170,694.5
Microsoft stock option income (mils. \$)	1,000.0	1,900.0	1,600.0	1,800.0	2,000.0	2,100.0	2,200.0	2,300.0	2,400.0	2,500.0	2,600.0	2,700.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	57,450	61,457	62,334	55,576	55,502	59,077	66,075	66,948	71,807	73,495	76,059	79,185
Seattle consumer price index (82-84=1.000)	2.076	2.155	2.248	2.261	2.268	2.327	2.386	2.416	2.459	2.493	2.549	2.615
Housing permits (thous.)	13.9	16.3	9.9	3.3	5.9	5.9	10.9	11.2	14.1	19.7	17.2	16.5
Population (thous.)	1,823.0	1,848.0	1,875.0	1,912.0	1,937.7	1,959.4	1,986.2	2,019.2	2,054.3	2,089.4	2,124.7	2,155.6
Population, 20-64 years of age (thous.)	1,191.7	1,208.7	1,226.3	1,251.4	1,269.4	1,283.5	1,297.1	1,314.6	1,331.6	1,348.0	1,364.4	1,375.7
Taxable retail sales (mils. \$)	43,427.5	47,151.4	45,245.7	39,314.4	38,769.9	40,366.6	42,997.9	46,063.5	49,592.9	54,835.9	59,514.9	61,426.0
Motor vehicles (thous.)	1,767.1	1,796.8	1,797.8	1,754.8	1,763.5	1,783.3	1,762.3	1,791.4	1,845.9	1,914.9	1,955.0	1,983.7
Passenger cars	1,253.4	1,280.2	1,286.9	1,262.9	1,284.2	1,310.4	1,303.3	1,330.8	1,383.0	1,437.2	1,475.5	1,500.1
Gas trucks	263.8	262.4	256.1	244.3	241.1	238.0	229.9	227.5	227.4	234.8	234.7	236.2
Diesel trucks	38.5	40.0	40.9	39.6	38.3	38.1	37.8	40.4	40.7	42.1	43.8	45.2
Other vehicles	211.4	214.2	213.9	208.0	199.9	196.8	191.3	192.7	194.8	200.8	201.0	202.2
Motor vehicle excise tax base, 2.000% (mils. \$)	18,988.5	19,513.8	19,076.0	18,466.4	18,174.0	18,335.5	18,361.0	19,375.0	20,895.9	22,411.1	24,025.3	25,663.7
Annual growth rate (%)												
Employment	2.7	2.0	1.4	-5.2	-1.3	1.6	2.3	3.4	2.9	3.2	3.6	2.9
Personal income (mils. \$)	11.4	8.4	2.9	-9.1	1.2	7.6	13.4	3.0	9.1	4.1	5.3	5.6
Consumer price index	3.8	3.8	4.3	0.6	0.3	2.6	2.5	1.3	1.8	1.4	2.2	2.6
Housing permits	11.6	17.4	-39.0	-66.7	78.9	0.2	83.5	2.9	25.8	40.2	-13.1	-3.8
Population	1.5	1.4	1.5	2.0	1.3	1.1	1.4	1.7	1.7	1.7	1.7	1.5
Taxable retail sales	8.7	8.6	-4.0	-13.1	-1.4	4.1	6.5	7.1	7.7	10.6	8.5	3.2
Motor vehicle excise tax base	5.3	2.8	-2.2	-3.2	-1.6	0.9	0.1	5.5	7.8	7.3	7.2	6.8

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 2. King County

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Employment (thous.)	1,420.9	1,436.1	1,448.0	1,462.8	1,477.6	1,494.2	1,512.0	1,530.1	1,549.0	1,568.2	1,585.9	1,601.9
Aerospace employment (thous.)	38.3	37.6	37.2	36.7	36.3	35.8	35.4	35.0	34.6	34.1	33.7	33.3
Unemployment rate (%)	3.1	3.4	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.4
Personal income (mils. \$09)	155,097.5	159,483.6	163,248.7	167,380.7	171,576.6	175,988.4	180,614.7	185,389.5	190,347.7	195,470.0	200,723.7	206,008.4
Personal income (mils. \$)	179,095.4	188,393.8	197,087.6	206,525.5	216,363.1	226,813.2	237,900.1	249,565.7	261,881.6	274,850.0	288,450.7	302,562.5
Microsoft stock option income (mils. \$)	2,800.0	2,900.0	3,000.0	3,100.0	3,200.0	3,300.0	3,400.0	3,500.0	3,600.0	3,700.0	3,800.0	3,900.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	82,109	85,534	88,721	92,226	95,812	99,600	103,583	107,733	112,085	116,632	121,361	126,234
Seattle consumer price index (82-84=1.000)	2.679	2.744	2.810	2.872	2.936	3.001	3.072	3.145	3.220	3.297	3.376	3.458
Housing permits (thous.)	15.1	14.2	13.4	13.1	13.2	13.1	12.7	12.4	12.0	11.6	11.4	11.3
Population (thous.)	2,181.1	2,202.5	2,221.4	2,239.3	2,258.1	2,277.2	2,296.6	2,316.5	2,336.4	2,356.5	2,376.7	2,396.8
Population, 20-64 years of age (thous.)	1,383.4	1,387.8	1,389.8	1,392.6	1,395.4	1,398.3	1,401.4	1,404.4	1,408.6	1,413.4	1,418.9	1,424.6
Taxable retail sales (mils. \$)	63,909.5	65,926.7	68,005.5	70,488.3	72,941.1	75,652.9	78,466.7	81,391.5	84,426.3	87,588.1	90,968.6	94,471.5
Motor vehicles (thous.)	2,008.4	2,015.5	2,012.1	2,013.4	2,015.6	2,016.9	2,020.3	2,023.1	2,027.8	2,033.2	2,040.1	2,047.8
Passenger cars	1,523.6	1,530.6	1,528.0	1,529.8	1,532.5	1,534.3	1,538.1	1,541.5	1,546.2	1,551.6	1,558.1	1,565.4
Gas trucks	236.8	236.9	236.6	236.5	236.3	236.0	235.9	235.6	235.6	235.7	235.9	236.0
Diesel trucks	46.6	47.9	49.1	50.3	51.5	52.8	54.0	55.3	56.6	57.9	59.3	60.6
Other vehicles	201.4	200.0	198.4	196.9	195.3	193.8	192.3	190.7	189.4	188.1	186.9	185.7
Motor vehicle excise tax base, 2.000% (mils. \$)	27,063.8	28,040.1	28,669.2	29,376.5	30,159.6	30,923.2	31,732.0	32,535.6	33,388.6	34,289.9	35,252.6	36,267.8
Annual growth rate (%)												
Employment	1.6	1.1	0.8	1.0	1.0	1.1	1.2	1.2	1.2	1.2	1.1	1.0
Personal income (mils. \$)	4.9	5.2	4.6	4.8	4.8	4.8	4.9	4.9	4.9	5.0	4.9	4.9
Consumer price index	2.5	2.4	2.4	2.2	2.2	2.2	2.4	2.4	2.4	2.4	2.4	2.4
Housing permits	-8.6	-6.2	-5.1	-2.2	0.3	-0.8	-2.5	-2.5	-3.5	-3.6	-1.5	-0.6
Population	1.2	1.0	0.9	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.8
Taxable retail sales	4.0	3.2	3.2	3.7	3.5	3.7	3.7	3.7	3.7	3.7	3.9	3.9
Motor vehicle excise tax base	5.5	3.6	2.2	2.5	2.7	2.5	2.6	2.5	2.6	2.7	2.8	2.9

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 2. King County

	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Employment (thous.)	1,618.1	1,634.5	1,651.6	1,669.6	1,688.0	1,707.1	1,726.7	1,746.9	1,767.8	1,789.4	1,811.6
Aerospace employment (thous.)	32.9	32.5	32.1	31.7	31.3	30.9	30.4	30.0	29.6	29.2	28.8
Unemployment rate (%)	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.3	4.3	4.3	4.3
Personal income (mils. \$09)	211,415.6	217,112.1	223,012.7	229,165.7	235,532.5	242,122.3	248,961.9	256,036.7	263,359.7	270,968.1	278,846.7
Personal income (mils. \$)	317,340.3	333,066.3	349,650.2	367,207.9	385,719.0	405,240.6	425,862.0	447,606.2	470,544.9	494,797.8	520,394.9
Microsoft stock option income (mils. \$)	4,000.0	4,100.0	4,200.0	4,300.0	4,400.0	4,500.0	4,600.0	4,700.0	4,800.0	4,900.0	5,000.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	131,318	136,731	142,372	148,312	154,520	161,013	167,843	174,986	182,459	190,326	198,559
Seattle consumer price index (82-84=1.000)	3.541	3.625	3.711	3.801	3.892	3.987	4.083	4.183	4.285	4.389	4.497
Housing permits (thous.)	11.1	11.1	11.1	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2
Population (thous.)	2,416.5	2,435.9	2,455.9	2,475.9	2,496.2	2,516.8	2,537.3	2,558.0	2,578.9	2,599.7	2,620.9
Population, 20-64 years of age (thous.)	1,431.5	1,440.0	1,449.7	1,459.9	1,469.4	1,478.4	1,487.8	1,498.6	1,511.1	1,524.2	1,537.4
Taxable retail sales (mils. \$)	98,091.2	101,960.0	106,038.4	110,304.7	114,742.4	119,374.3	124,214.3	129,270.5	134,551.6	140,082.4	145,862.6
Motor vehicles (thous.)	2,057.6	2,070.0	2,084.2	2,099.3	2,113.3	2,126.7	2,140.7	2,156.7	2,175.2	2,194.8	2,214.4
Passenger cars	1,574.4	1,585.3	1,597.8	1,610.9	1,623.2	1,635.2	1,647.5	1,661.4	1,677.3	1,694.0	1,710.8
Gas trucks	236.4	237.1	237.9	238.8	239.6	240.3	241.0	242.0	243.2	244.5	245.7
Diesel trucks	62.1	63.6	65.2	66.8	68.5	70.1	71.7	73.4	75.2	77.1	79.0
Other vehicles	184.7	183.9	183.3	182.7	182.0	181.2	180.5	179.9	179.5	179.2	178.8
Motor vehicle excise tax base, 2.000% (mils. \$)	37,361.0	38,557.9	39,846.5	41,200.6	42,562.2	43,945.8	45,385.5	46,942.7	48,635.0	50,420.4	52,265.3
Annual growth rate (%)											
Employment	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2
Personal income (mils. \$)	4.9	5.0	5.0	5.0	5.0	5.1	5.1	5.1	5.1	5.2	5.2
Consumer price index	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Housing permits	-1.5	-0.7	0.7	0.5	0.1	0.0	-0.1	-0.1	-0.1	0.0	0.0
Population	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Taxable retail sales	3.8	3.9	4.0	4.0	4.0	4.0	4.1	4.1	4.1	4.1	4.1
Motor vehicle excise tax base	3.0	3.2	3.3	3.4	3.3	3.3	3.3	3.4	3.6	3.7	3.7

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 3. Snohomish County

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Employment (thous.)	71.0	62.3	61.2	64.3	66.3	67.3	70.7	75.9	87.2	100.9	103.7	102.9
Aerospace employment (thous.)	16.2	8.1	5.1	5.5	6.4	6.2	5.9	5.5	8.5	14.2	16.4	15.5
Unemployment rate (%)	10.4	13.2	11.4	8.0	6.9	9.9	9.2	8.8	6.2	5.9	7.2	8.8
Personal income (mils. \$09)	4,833.2	4,656.7	4,766.4	5,061.7	5,183.9	5,539.8	5,935.1	6,320.1	7,171.7	8,129.0	8,507.7	8,732.9
Personal income (mils. \$)	1,077.9	1,083.0	1,146.6	1,283.5	1,452.0	1,680.2	1,899.2	2,154.1	2,616.4	3,228.9	3,741.1	4,177.0
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	4,061	4,042	4,366	4,824	5,460	6,142	6,800	7,504	8,619	9,979	10,982	11,894
Seattle consumer price index (82-84=1.000)	0.374	0.381	0.393	0.418	0.464	0.511	0.539	0.582	0.640	0.709	0.827	0.916
Housing permits (thous.)	3.0	1.6	1.4	1.3	1.6	1.7	3.2	4.5	6.6	5.6	4.0	2.5
Population (thous.)	265.4	267.9	262.6	266.1	265.9	273.5	279.2	287.0	303.4	323.4	340.5	351.2
Population, 20-64 years of age (thous.)	136.4	139.2	138.1	141.8	143.6	149.7	155.0	161.4	172.8	186.5	198.6	206.6
Taxable retail sales (mils. \$)	na	na	na	na	723.5	809.5	978.8	1,183.3	1,411.1	1,595.9	1,649.6	1,696.2
Motor vehicles (thous.)	na	na	na	na	na	215.5	227.7	246.0	266.3	262.1	305.3	320.2
Passenger cars	na	na	na	na	na	127.2	132.6	143.2	157.8	182.4	180.6	192.5
Gas trucks	na	na	na	na	na	44.3	47.4	52.4	57.3	62.2	64.6	67.7
Diesel trucks	na	na	na	na	na	1.2	1.2	1.8	2.4	2.6	3.7	3.9
Other vehicles	na	na	na	na	na	42.9	46.5	48.5	48.8	14.8	56.5	56.1
Motor vehicle excise tax base, 2.000% (mils. \$)	na	na	na	na	na	232.7	261.6	424.3	447.2	492.5	526.7	548.0
Annual growth rate (%)												
Employment	na	-12.3	-1.8	5.1	3.0	1.6	5.0	7.4	15.0	15.7	2.7	-0.8
Personal income (mils. \$)	na	0.5	5.9	11.9	13.1	15.7	13.0	13.4	21.5	23.4	15.9	11.7
Consumer price index	na	1.8	3.2	6.4	11.1	10.1	5.6	8.0	9.9	10.7	16.8	10.7
Housing permits	na	-45.6	-15.4	-6.8	25.2	4.3	94.9	39.0	46.1	-15.4	-27.6	-37.0
Population	na	0.9	-2.0	1.3	-0.1	2.9	2.1	2.8	5.7	6.6	5.3	3.1
Taxable retail sales	na	na	na	na	na	11.9	20.9	20.9	19.3	13.1	3.4	2.8
Motor vehicle excise tax base	na	na	na	na	na	na	12.4	62.2	5.4	10.1	6.9	4.0

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 3. Snohomish County

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Employment (thous.)	97.9	97.8	103.6	109.3	118.0	129.0	143.1	157.9	169.5	171.0	176.0	184.0
Aerospace employment (thous.)	13.4	10.1	9.7	11.2	13.5	15.5	20.2	26.4	26.6	26.4	27.0	31.7
Unemployment rate (%)	11.8	10.9	9.4	7.6	7.5	6.6	5.2	4.9	4.5	5.6	6.4	6.4
Personal income (mils. \$09)	8,739.5	8,791.4	9,178.5	9,657.7	10,407.3	10,934.6	11,783.0	12,903.1	13,660.2	14,135.9	14,932.6	15,318.3
Personal income (mils. \$)	4,411.4	4,628.2	5,015.5	5,464.7	6,016.0	6,522.9	7,303.3	8,341.8	9,212.3	9,847.2	10,675.1	11,224.7
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	12,371	12,858	13,624	14,490	15,465	16,108	17,172	18,685	19,555	20,323	21,338	21,839
Seattle consumer price index (82-84=1.000)	0.978	0.993	1.030	1.055	1.066	1.092	1.129	1.182	1.268	1.341	1.390	1.429
Housing permits (thous.)	2.0	3.0	3.3	4.7	5.4	5.6	8.1	8.7	7.6	3.0	4.1	5.2
Population (thous.)	356.6	359.9	368.1	377.1	389.0	404.9	425.2	446.3	471.1	484.5	500.3	514.0
Population, 20-64 years of age (thous.)	211.1	214.2	220.1	226.2	233.4	243.0	255.3	268.3	283.8	292.2	301.3	309.2
Taxable retail sales (mils. \$)	1,921.4	2,171.1	2,226.0	2,353.9	2,670.2	3,013.8	3,374.2	4,049.0	4,398.1	4,606.6	5,215.4	5,266.0
Motor vehicles (thous.)	321.0	339.4	354.2	377.5	408.4	425.2	435.1	461.8	480.7	497.6	491.7	488.4
Passenger cars	193.4	204.3	214.7	227.8	245.3	260.1	269.6	284.2	296.1	308.2	303.6	304.4
Gas trucks	68.2	72.4	76.2	81.4	88.4	93.0	95.2	101.9	104.7	108.6	108.4	107.3
Diesel trucks	4.1	5.3	5.2	6.3	10.8	7.1	5.8	9.5	11.5	11.9	11.3	7.0
Other vehicles	55.2	57.4	58.1	62.0	63.9	65.0	64.4	66.3	68.3	68.9	68.5	69.7
Motor vehicle excise tax base, 2.000% (mils. \$)	582.8	667.2	746.8	857.1	1,059.6	1,175.6	1,280.0	1,441.4	1,763.4	2,197.3	2,312.9	2,425.2
Annual growth rate (%)												
Employment	-4.9	-0.1	6.0	5.5	8.0	9.3	10.9	10.4	7.3	0.9	2.9	4.6
Personal income (mils. \$)	5.6	4.9	8.4	9.0	10.1	8.4	12.0	14.2	10.4	6.9	8.4	5.1
Consumer price index	6.7	1.5	3.7	2.5	1.0	2.4	3.4	4.7	7.3	5.8	3.7	2.8
Housing permits	-21.2	49.4	9.5	43.5	15.2	2.9	45.6	7.9	-12.6	-61.1	38.3	27.9
Population	1.5	0.9	2.3	2.4	3.1	4.1	5.0	5.0	5.5	2.8	3.3	2.7
Taxable retail sales	13.3	13.0	2.5	5.7	13.4	12.9	12.0	20.0	8.6	4.7	13.2	1.0
Motor vehicle excise tax base	6.3	14.5	11.9	14.8	23.6	10.9	8.9	12.6	22.3	24.6	5.3	4.9

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 3. Snohomish County

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Employment (thous.)	185.7	188.0	194.6	208.8	221.2	218.5	216.2	217.1	213.3	214.9	219.4	229.6
Aerospace employment (thous.)	30.6	27.3	30.7	38.7	41.4	35.7	30.0	30.0	25.9	23.0	21.7	23.7
Unemployment rate (%)	6.2	5.9	5.3	4.2	4.1	4.7	4.5	5.3	7.0	7.1	5.8	5.1
Personal income (mils. \$09)	15,891.9	16,485.0	17,612.7	19,567.3	20,855.2	21,518.1	22,699.3	23,792.0	23,937.2	23,731.9	24,071.3	24,668.0
Personal income (mils. \$)	11,887.9	12,586.4	13,735.9	15,522.7	16,669.7	17,453.8	18,869.9	20,160.8	20,554.4	20,781.5	21,592.7	22,758.9
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	22,689	23,576	25,170	27,313	28,382	29,187	30,974	32,391	32,547	32,695	33,552	34,752
Seattle consumer price index (82-84=1.000)	1.478	1.522	1.575	1.630	1.678	1.728	1.792	1.858	1.894	1.925	1.947	2.001
Housing permits (thous.)	6.5	5.8	5.9	6.1	7.6	7.8	6.2	5.3	5.0	5.6	6.2	6.7
Population (thous.)	523.9	533.9	545.6	568.2	587.4	597.9	609.2	622.4	631.5	635.6	643.5	654.8
Population, 20-64 years of age (thous.)	314.9	320.9	328.0	342.0	353.9	361.0	371.1	380.5	387.3	390.9	396.7	404.4
Taxable retail sales (mils. \$)	5,325.2	5,352.6	5,558.3	6,403.6	6,880.8	7,385.8	7,843.5	7,867.9	7,861.9	8,097.7	8,608.2	9,700.5
Motor vehicles (thous.)	493.0	497.4	507.0	528.1	548.1	548.7	609.9	610.6	619.9	650.9	669.9	678.6
Passenger cars	306.6	311.1	319.4	334.0	348.4	339.6	389.4	373.6	377.3	398.5	412.9	419.8
Gas trucks	107.7	108.5	109.4	113.7	116.7	119.5	122.7	123.3	125.8	128.9	130.3	130.3
Diesel trucks	7.8	7.3	7.7	8.9	9.1	10.9	11.5	12.5	13.3	14.6	16.2	17.1
Other vehicles	70.9	70.5	70.5	71.5	73.8	78.7	86.3	101.1	103.5	108.9	110.5	111.4
Motor vehicle excise tax base, 2.000% (mils. \$)	2,573.0	2,717.3	2,884.4	3,202.5	3,582.9	3,750.6	4,941.5	5,082.8	5,316.8	5,707.1	6,066.0	6,305.8
Annual growth rate (%)												
Employment	1.0	1.2	3.5	7.3	5.9	-1.2	-1.0	0.4	-1.8	0.8	2.1	4.6
Personal income (mils. \$)	5.9	5.9	9.1	13.0	7.4	4.7	8.1	6.8	2.0	1.1	3.9	5.4
Consumer price index	3.4	3.0	3.4	3.5	2.9	3.0	3.7	3.7	1.9	1.7	1.1	2.8
Housing permits	23.0	-9.8	1.9	3.5	23.3	3.4	-20.8	-13.8	-6.5	12.4	10.6	8.3
Population	1.9	1.9	2.2	4.1	3.4	1.8	1.9	2.2	1.5	0.6	1.2	1.8
Taxable retail sales	1.1	0.5	3.8	15.2	7.5	7.3	6.2	0.3	-0.1	3.0	6.3	12.7
Motor vehicle excise tax base	6.1	5.6	6.1	11.0	11.9	4.7	31.8	2.9	4.6	7.3	6.3	4.0

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 3. Snohomish County

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Employment (thous.)	242.3	261.9	263.0	250.6	247.6	255.4	265.8	268.4	272.7	280.6	287.1	291.2
Aerospace employment (thous.)	27.0	31.4	34.0	35.1	35.3	40.4	45.5	45.6	43.9	43.9	43.3	40.9
Unemployment rate (%)	4.6	4.0	5.2	10.1	10.7	9.5	7.4	5.7	5.2	4.6	4.4	3.5
Personal income (mils. \$09)	26,313.4	28,656.5	29,325.5	28,012.0	27,886.6	28,876.2	30,135.2	30,590.2	31,969.6	33,444.6	34,556.6	35,233.9
Personal income (mils. \$)	24,927.0	27,829.2	29,344.3	28,009.9	28,347.1	30,074.6	31,981.7	32,895.0	34,895.0	36,632.9	38,262.3	39,798.7
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	37,162	40,682	42,247	39,658	39,618	41,740	43,880	44,474	46,382	47,747	48,887	49,902
Seattle consumer price index (82-84=1.000)	2.076	2.155	2.248	2.261	2.268	2.327	2.386	2.416	2.459	2.493	2.549	2.615
Housing permits (thous.)	5.5	4.9	2.7	2.2	2.2	2.6	3.3	4.3	3.5	3.5	3.9	3.0
Population (thous.)	670.7	684.0	694.6	706.3	715.5	720.5	728.8	739.6	752.3	767.2	782.6	797.5
Population, 20-64 years of age (thous.)	414.8	423.3	429.8	437.3	443.4	446.4	450.2	455.5	461.3	468.3	475.3	481.4
Taxable retail sales (mils. \$)	10,909.4	11,710.2	10,812.5	9,650.2	9,734.0	9,734.4	10,328.7	11,169.4	11,691.5	12,630.3	13,515.8	14,011.8
Motor vehicles (thous.)	700.4	718.8	716.6	720.2	723.1	736.4	734.7	762.1	797.7	847.4	889.5	916.6
Passenger cars	434.1	446.0	446.8	451.0	457.5	470.3	473.0	493.4	521.2	559.9	588.8	607.8
Gas trucks	131.1	131.5	128.5	127.1	125.8	125.7	122.8	124.9	127.5	131.7	138.5	142.3
Diesel trucks	19.1	20.6	20.4	20.7	21.0	21.2	21.4	22.7	24.4	25.9	28.0	29.4
Other vehicles	116.1	120.7	120.9	121.4	118.8	119.2	117.5	121.1	124.6	129.9	134.2	137.2
Motor vehicle excise tax base, 2.000% (mils. \$)	6,629.0	6,834.7	6,407.3	6,360.2	6,126.6	6,090.7	6,136.0	6,379.8	6,902.3	7,357.0	7,936.3	8,493.0
Annual growth rate (%)												
Employment	5.5	8.1	0.4	-4.7	-1.2	3.2	4.1	1.0	1.6	2.9	2.3	1.4
Personal income (mils. \$)	9.5	11.6	5.4	-4.5	1.2	6.1	6.3	2.9	6.1	5.0	4.4	4.0
Consumer price index	3.8	3.8	4.3	0.6	0.3	2.6	2.5	1.3	1.8	1.4	2.2	2.6
Housing permits	-17.6	-11.6	-45.2	-19.4	3.0	16.7	28.1	29.4	-18.1	-1.6	13.5	-22.6
Population	2.4	2.0	1.6	1.7	1.3	0.7	1.2	1.5	1.7	2.0	2.0	1.9
Taxable retail sales	12.5	7.3	-7.7	-10.7	0.9	0.0	6.1	8.1	4.7	8.0	7.0	3.7
Motor vehicle excise tax base	5.1	3.1	-6.3	-0.7	-3.7	-0.6	0.7	4.0	8.2	6.6	7.9	7.0

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 3. Snohomish County

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Employment (thous.)	296.6	300.1	302.7	306.3	309.6	313.5	317.6	321.8	326.2	330.9	335.1	339.0
Aerospace employment (thous.)	39.8	39.2	38.8	38.5	38.1	37.6	37.2	36.8	36.4	36.0	35.7	35.5
Unemployment rate (%)	3.5	3.8	4.0	4.2	4.4	4.5	4.6	4.7	4.8	4.9	5.0	5.0
Personal income (mils. \$09)	36,354.0	37,549.0	38,571.2	39,677.8	40,840.9	42,072.9	43,378.6	44,740.3	46,158.4	47,630.2	49,147.9	50,676.1
Personal income (mils. \$)	41,979.3	44,356.0	46,566.7	48,957.4	51,502.0	54,223.8	57,137.4	60,228.5	63,505.5	66,973.2	70,628.7	74,428.1
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	51,754	53,926	55,945	58,168	60,443	62,848	65,379	68,016	70,784	73,677	76,686	79,788
Seattle consumer price index (82-84=1.000)	2.679	2.744	2.810	2.872	2.936	3.001	3.072	3.145	3.220	3.297	3.376	3.458
Housing permits (thous.)	3.2	3.4	3.6	3.9	4.3	4.6	5.0	5.4	5.7	6.1	6.3	6.4
Population (thous.)	811.1	822.5	832.3	841.6	852.0	862.7	873.9	885.5	897.1	909.0	921.0	932.8
Population, 20-64 years of age (thous.)	486.6	490.2	492.5	495.0	498.0	501.0	504.4	507.7	511.5	515.6	520.0	524.4
Taxable retail sales (mils. \$)	14,698.6	15,260.1	15,833.1	16,513.5	17,198.6	17,960.6	18,760.3	19,599.5	20,476.4	21,397.6	22,367.7	23,366.1
Motor vehicles (thous.)	931.4	939.5	943.2	949.1	955.5	962.0	969.7	977.2	985.6	994.6	1,004.3	1,014.3
Passenger cars	618.3	623.0	624.1	627.2	630.7	634.2	638.7	643.0	648.0	653.2	659.1	665.2
Gas trucks	144.3	145.8	147.0	148.3	149.6	151.0	152.5	153.9	155.5	157.2	159.0	160.8
Diesel trucks	30.3	31.1	31.9	32.6	33.4	34.2	35.1	35.9	36.8	37.7	38.7	39.6
Other vehicles	138.6	139.6	140.3	141.0	141.7	142.6	143.4	144.3	145.3	146.4	147.5	148.7
Motor vehicle excise tax base, 2.000% (mils. \$)	9,025.4	9,442.7	9,754.3	10,090.9	10,457.2	10,829.5	11,223.4	11,623.3	12,047.5	12,495.5	12,974.2	13,474.8
Annual growth rate (%)												
Employment	1.8	1.2	0.9	1.2	1.1	1.2	1.3	1.3	1.4	1.4	1.3	1.2
Personal income (mils. \$)	5.5	5.7	5.0	5.1	5.2	5.3	5.4	5.4	5.4	5.5	5.5	5.4
Consumer price index	2.5	2.4	2.4	2.2	2.2	2.2	2.4	2.4	2.4	2.4	2.4	2.4
Housing permits	6.2	5.3	5.9	8.1	9.5	8.8	7.6	7.5	6.7	6.7	3.4	1.3
Population	1.7	1.4	1.2	1.1	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Taxable retail sales	4.9	3.8	3.8	4.3	4.1	4.4	4.5	4.5	4.5	4.5	4.5	4.5
Motor vehicle excise tax base	6.3	4.6	3.3	3.5	3.6	3.6	3.6	3.6	3.6	3.7	3.8	3.9

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 3. Snohomish County

	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Employment (thous.)	342.9	346.9	351.1	355.5	360.1	364.8	369.7	374.8	380.0	385.4	391.1
Aerospace employment (thous.)	35.3	35.1	34.9	34.7	34.5	34.3	34.1	33.9	33.7	33.5	33.3
Unemployment rate (%)	5.0	5.0	5.0	5.0	5.0	4.9	4.9	4.9	4.9	4.9	4.8
Personal income (mils. \$09)	52,231.6	53,855.2	55,557.3	57,331.8	59,179.1	61,101.7	63,090.5	65,158.7	67,309.9	69,539.3	71,860.4
Personal income (mils. \$)	78,401.5	82,618.5	87,106.2	91,867.3	96,915.2	102,266.8	107,920.3	113,911.9	120,263.4	126,982.2	134,109.8
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	83,026	86,475	90,070	93,856	97,815	101,956	106,314	110,872	115,642	120,664	125,922
Seattle consumer price index (82-84=1.000)	3.541	3.625	3.711	3.801	3.892	3.987	4.083	4.183	4.285	4.389	4.497
Housing permits (thous.)	6.5	6.5	6.7	6.8	7.0	7.1	7.2	7.3	7.5	7.6	7.7
Population (thous.)	944.3	955.4	967.1	978.8	990.8	1,003.0	1,015.1	1,027.4	1,040.0	1,052.4	1,065.0
Population, 20-64 years of age (thous.)	529.0	534.2	539.9	545.8	551.6	557.3	563.0	569.3	576.3	583.5	590.9
Taxable retail sales (mils. \$)	24,399.4	25,503.6	26,678.0	27,912.2	29,205.2	30,564.1	31,988.2	33,485.7	35,060.1	36,714.3	38,454.8
Motor vehicles (thous.)	1,025.0	1,036.7	1,049.7	1,063.1	1,076.1	1,089.1	1,102.1	1,116.4	1,132.2	1,148.4	1,164.9
Passenger cars	671.7	679.0	687.1	695.5	703.7	711.8	719.9	728.9	738.8	749.1	759.5
Gas trucks	162.7	164.8	167.0	169.3	171.6	173.8	176.1	178.6	181.3	184.0	186.8
Diesel trucks	40.6	41.7	42.8	43.9	45.0	46.1	47.3	48.5	49.8	51.1	52.5
Other vehicles	149.9	151.3	152.8	154.3	155.8	157.3	158.8	160.4	162.3	164.2	166.1
Motor vehicle excise tax base, 2.000% (mils. \$)	14,005.5	14,577.2	15,194.9	15,845.1	16,510.6	17,196.7	17,911.2	18,682.6	19,518.9	20,400.4	21,320.9
Annual growth rate (%)											
Employment	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.5
Personal income (mils. \$)	5.3	5.4	5.4	5.5	5.5	5.5	5.5	5.6	5.6	5.6	5.6
Consumer price index	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Housing permits	0.8	1.3	2.2	2.1	1.8	1.8	1.7	1.8	1.8	1.8	1.8
Population	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
Taxable retail sales	4.4	4.5	4.6	4.6	4.6	4.7	4.7	4.7	4.7	4.7	4.7
Motor vehicle excise tax base	3.9	4.1	4.2	4.3	4.2	4.2	4.2	4.3	4.5	4.5	4.5

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 4. Pierce County

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Employment (thous.)	105.9	104.9	107.2	111.1	113.4	116.1	120.4	125.5	134.7	140.1	141.8	141.4
Aerospace employment (thous.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unemployment rate (%)	8.9	9.0	9.2	8.3	7.4	10.5	10.3	9.7	7.5	7.4	7.9	10.1
Personal income (mils. \$09)	8,194.5	8,203.2	7,980.2	8,485.0	8,824.6	9,171.8	9,689.8	9,956.7	10,710.3	11,050.0	11,355.9	11,752.3
Personal income (mils. \$)	1,828.2	1,907.7	1,919.2	2,152.6	2,470.8	2,781.5	3,100.3	3,392.9	3,906.2	4,385.9	4,994.1	5,622.0
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	4,429	4,568	4,745	5,435	5,950	6,438	7,059	7,589	8,458	9,267	10,215	11,240
Seattle consumer price index (82-84=1.000)	0.374	0.381	0.393	0.418	0.464	0.511	0.539	0.582	0.640	0.709	0.827	0.916
Housing permits (thous.)	3.5	4.7	3.4	3.8	4.1	5.1	6.0	6.8	6.1	6.1	3.5	2.5
Population (thous.)	412.7	417.6	404.5	396.0	415.1	432.0	439.2	447.0	461.7	473.2	488.8	500.1
Population, 20-64 years of age (thous.)	220.6	224.5	218.9	216.0	228.3	239.6	246.0	252.7	263.2	272.1	283.3	292.1
Taxable retail sales (mils. \$)	na	na	na	na	1,262.6	1,417.4	1,574.4	1,781.0	2,025.1	2,127.6	2,113.4	2,291.0
Motor vehicles (thous.)	na	na	na	na	na	306.9	316.9	342.2	360.1	375.9	391.0	399.2
Passenger cars	na	na	na	na	na	196.8	199.4	215.3	226.2	236.9	243.8	250.6
Gas trucks	na	na	na	na	na	55.7	59.9	66.2	72.4	74.8	76.8	78.2
Diesel trucks	na	na	na	na	na	1.0	0.9	1.4	2.1	2.5	3.6	4.1
Other vehicles	na	na	na	na	na	53.4	56.6	59.2	59.4	61.7	66.8	66.4
Motor vehicle excise tax base, 2.000% (mils. \$)	na	na	na	na	na	317.9	355.7	597.0	586.0	626.0	658.7	662.0
Annual growth rate (%)												
Employment	na	-1.0	2.3	3.6	2.1	2.4	3.7	4.2	7.3	4.0	1.2	-0.3
Personal income (mils. \$)	na	4.3	0.6	12.2	14.8	12.6	11.5	9.4	15.1	12.3	13.9	12.6
Consumer price index	na	1.8	3.2	6.4	11.1	10.1	5.6	8.0	9.9	10.7	16.8	10.7
Housing permits	na	35.2	-28.7	14.5	6.5	24.9	17.6	13.0	-10.7	-0.2	-41.7	-28.9
Population	na	1.2	-3.1	-2.1	4.8	4.1	1.7	1.8	3.3	2.5	3.3	2.3
Taxable retail sales	na	na	na	na	na	12.3	11.1	13.1	13.7	5.1	-0.7	8.4
Motor vehicle excise tax base	na	na	na	na	na	na	11.9	67.8	-1.8	6.8	5.2	0.5

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 4. Pierce County

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Employment (thous.)	140.8	144.4	151.9	157.8	162.8	170.4	178.1	185.9	194.9	196.4	200.6	207.4
Aerospace employment (thous.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.5	1.1
Unemployment rate (%)	12.4	11.0	9.2	7.9	8.3	8.3	6.3	6.3	4.6	6.1	7.2	7.1
Personal income (mils. \$09)	12,023.7	12,198.6	12,641.0	13,015.4	13,510.8	13,816.6	14,309.3	14,947.6	15,945.1	16,433.5	17,273.9	17,731.7
Personal income (mils. \$)	6,069.1	6,421.9	6,907.4	7,364.2	7,809.6	8,241.5	8,867.7	9,662.5	10,755.2	11,446.9	12,349.4	12,993.0
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	11,900	12,546	13,286	13,939	14,608	15,120	15,808	16,933	18,210	18,926	19,947	20,612
Seattle consumer price index (82-84=1.000)	0.978	0.993	1.030	1.055	1.066	1.092	1.129	1.182	1.268	1.341	1.390	1.429
Housing permits (thous.)	2.2	3.4	3.4	5.2	5.2	4.5	5.0	5.7	5.5	4.2	5.5	5.4
Population (thous.)	510.0	511.8	519.9	528.3	534.6	545.0	560.9	570.6	590.5	604.8	619.1	630.3
Population, 20-64 years of age (thous.)	299.2	301.3	307.1	312.6	316.1	321.8	330.9	336.7	349.0	358.0	365.8	372.0
Taxable retail sales (mils. \$)	2,559.9	2,846.6	3,094.4	3,141.5	3,371.5	3,622.1	4,003.0	4,298.7	4,721.6	5,073.9	5,446.5	5,654.1
Motor vehicles (thous.)	398.5	406.3	415.6	430.8	461.9	466.2	475.1	495.0	519.6	545.8	542.4	543.5
Passenger cars	250.7	254.2	260.7	269.8	284.3	293.4	301.6	315.1	328.1	346.1	343.2	342.5
Gas trucks	78.9	80.4	83.3	86.6	93.4	93.9	96.8	102.6	107.6	112.3	115.2	113.0
Diesel trucks	4.5	5.8	5.2	6.3	10.4	6.8	5.4	8.6	9.6	10.2	10.6	6.9
Other vehicles	64.5	66.0	66.3	68.1	73.7	72.2	71.2	68.6	74.3	77.2	73.3	81.0
Motor vehicle excise tax base, 2.000% (mils. \$)	706.9	778.6	848.2	949.7	1,152.6	1,232.6	1,327.6	1,465.7	1,782.4	2,204.8	2,415.7	2,559.2
Annual growth rate (%)												
Employment	-0.4	2.6	5.1	3.9	3.2	4.7	4.5	4.4	4.9	0.7	2.2	3.4
Personal income (mils. \$)	8.0	5.8	7.6	6.6	6.0	5.5	7.6	9.0	11.3	6.4	7.9	5.2
Consumer price index	6.7	1.5	3.7	2.5	1.0	2.4	3.4	4.7	7.3	5.8	3.7	2.8
Housing permits	-13.2	53.5	0.3	53.6	0.9	-13.2	11.0	13.5	-3.7	-24.0	32.1	-2.7
Population	2.0	0.4	1.6	1.6	1.2	1.9	2.9	1.7	3.5	2.4	2.4	1.8
Taxable retail sales	11.7	11.2	8.7	1.5	7.3	7.4	10.5	7.4	9.8	7.5	7.3	3.8
Motor vehicle excise tax base	6.8	10.1	8.9	12.0	21.4	6.9	7.7	10.4	21.6	23.7	9.6	5.9

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 4. Pierce County

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Employment (thous.)	213.3	218.4	222.9	231.5	238.1	242.5	248.3	248.1	248.5	252.9	259.5	267.9
Aerospace employment (thous.)	1.2	1.1	1.3	1.8	1.8	1.7	1.5	1.5	1.5	1.5	1.5	1.5
Unemployment rate (%)	6.7	6.0	5.4	4.2	3.9	4.3	5.0	6.5	8.0	8.2	7.0	5.8
Personal income (mils. \$09)	18,087.7	18,780.2	19,501.3	20,960.7	22,382.3	23,126.4	24,202.6	25,262.4	25,779.3	26,479.9	27,170.0	27,500.2
Personal income (mils. \$)	13,529.6	14,339.6	15,207.1	16,627.8	17,890.7	18,757.8	20,119.1	21,406.9	22,136.7	23,189.4	24,371.5	25,371.5
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	21,192	22,100	23,172	24,996	26,348	27,079	28,578	29,878	30,403	31,593	32,928	33,910
Seattle consumer price index (82-84=1.000)	1.478	1.522	1.575	1.630	1.678	1.728	1.792	1.858	1.894	1.925	1.947	2.001
Housing permits (thous.)	5.3	4.4	4.8	5.0	5.7	5.3	4.7	5.7	5.5	5.1	6.0	6.8
Population (thous.)	638.4	648.8	656.2	665.1	679.0	692.7	704.0	716.4	728.1	734.0	740.1	748.1
Population, 20-64 years of age (thous.)	376.1	381.9	386.2	391.9	400.6	409.6	420.1	429.1	437.6	442.4	447.1	453.0
Taxable retail sales (mils. \$)	5,945.3	6,002.9	6,139.9	6,575.8	7,084.3	7,757.1	8,277.4	8,557.8	8,850.3	9,498.1	10,126.1	11,262.9
Motor vehicles (thous.)	540.8	539.4	544.0	549.3	566.0	561.1	630.9	634.7	640.3	666.6	697.0	714.5
Passenger cars	345.0	341.9	348.1	354.1	365.1	356.6	412.4	396.9	399.9	418.2	436.2	448.1
Gas trucks	112.1	112.1	113.6	114.6	117.7	120.2	127.3	130.0	129.4	134.2	139.0	139.5
Diesel trucks	7.8	7.5	8.6	8.1	8.9	10.1	10.8	12.3	12.6	13.7	14.6	15.7
Other vehicles	75.9	77.8	73.7	72.5	74.3	74.2	80.3	95.5	98.5	100.6	107.2	111.2
Motor vehicle excise tax base, 2.000% (mils. \$)	2,777.5	2,867.1	3,076.0	3,296.2	3,628.7	3,773.1	5,075.1	5,185.9	5,553.3	6,002.6	6,500.9	6,779.9
Annual growth rate (%)												
Employment	2.9	2.4	2.0	3.9	2.9	1.9	2.4	-0.1	0.2	1.8	2.6	3.2
Personal income (mils. \$)	4.1	6.0	6.0	9.3	7.6	4.8	7.3	6.4	3.4	4.8	5.1	4.1
Consumer price index	3.4	3.0	3.4	3.5	2.9	3.0	3.7	3.7	1.9	1.7	1.1	2.8
Housing permits	-0.4	-17.3	8.8	3.2	14.0	-5.8	-11.6	21.6	-4.0	-7.4	17.8	12.7
Population	1.3	1.6	1.1	1.4	2.1	2.0	1.6	1.8	1.6	0.8	0.8	1.1
Taxable retail sales	5.1	1.0	2.3	7.1	7.7	9.5	6.7	3.4	3.4	7.3	6.6	11.2
Motor vehicle excise tax base	8.5	3.2	7.3	7.2	10.1	4.0	34.5	2.2	7.1	8.1	8.3	4.3

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 4. Pierce County

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Employment (thous.)	276.8	285.4	284.7	273.7	270.7	271.9	274.1	280.0	288.6	296.4	306.4	312.6
Aerospace employment (thous.)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Unemployment rate (%)	5.1	4.8	5.8	9.7	10.4	10.1	9.3	8.4	7.0	6.5	6.3	5.5
Personal income (mils. \$09)	28,609.5	29,940.8	30,563.8	29,802.2	29,765.3	30,360.7	31,040.2	31,546.2	32,905.3	34,364.0	35,528.3	36,115.8
Personal income (mils. \$)	27,100.9	29,075.1	30,583.3	29,801.3	30,256.5	31,619.3	32,941.6	33,923.2	35,916.0	37,640.1	39,338.2	40,794.5
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	35,499	37,636	38,941	37,416	38,041	39,352	40,622	41,479	43,407	44,904	46,321	47,450
Seattle consumer price index (82-84=1.000)	2.076	2.155	2.248	2.261	2.268	2.327	2.386	2.416	2.459	2.493	2.549	2.615
Housing permits (thous.)	6.2	5.1	2.3	2.0	1.9	2.5	2.5	2.7	4.0	3.1	3.8	4.0
Population (thous.)	763.4	772.5	785.4	796.5	795.4	803.5	810.9	817.8	827.4	838.2	849.2	859.7
Population, 20-64 years of age (thous.)	462.9	468.7	476.5	483.6	483.3	488.2	491.2	493.8	497.4	501.6	505.8	508.9
Taxable retail sales (mils. \$)	12,156.1	12,536.3	11,730.0	10,483.9	10,619.3	10,524.0	11,075.4	12,187.0	12,732.4	13,834.9	14,836.5	15,469.6
Motor vehicles (thous.)	735.3	757.3	761.7	752.9	767.2	778.4	774.9	801.7	828.5	837.0	876.4	896.7
Passenger cars	459.5	473.6	476.8	472.9	481.8	492.0	494.1	513.8	532.7	542.5	570.0	583.9
Gas trucks	141.8	144.0	141.8	138.6	141.2	141.6	137.8	139.5	142.5	140.3	146.6	149.7
Diesel trucks	17.7	19.3	19.7	19.4	20.3	21.0	21.1	22.7	24.0	24.3	27.5	28.9
Other vehicles	116.3	120.4	123.4	122.0	123.9	123.8	121.9	125.7	129.3	129.9	132.3	134.2
Motor vehicle excise tax base, 2.000% (mils. \$)	7,105.0	7,265.0	6,817.8	6,791.6	6,667.9	6,573.1	6,491.0	6,742.4	7,093.1	7,650.1	8,266.4	8,791.5
Annual growth rate (%)												
Employment	3.3	3.1	-0.2	-3.9	-1.1	0.4	0.8	2.1	3.1	2.7	3.4	2.0
Personal income (mils. \$)	6.8	7.3	5.2	-2.6	1.5	4.5	4.2	3.0	5.9	4.8	4.5	3.7
Consumer price index	3.8	3.8	4.3	0.6	0.3	2.6	2.5	1.3	1.8	1.4	2.2	2.6
Housing permits	-8.1	-17.8	-54.5	-15.2	-4.2	29.9	2.5	8.9	44.9	-21.0	19.9	5.9
Population	2.0	1.2	1.7	1.4	-0.1	1.0	0.9	0.9	1.2	1.3	1.3	1.2
Taxable retail sales	7.9	3.1	-6.4	-10.6	1.3	-0.9	5.2	10.0	4.5	8.7	7.2	4.3
Motor vehicle excise tax base	4.8	2.3	-6.2	-0.4	-1.8	-1.4	-1.2	3.9	5.2	7.9	8.1	6.4

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 4. Pierce County

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Employment (thous.)	317.6	321.6	325.2	329.3	333.4	337.7	342.2	346.8	351.5	356.3	361.0	365.5
Aerospace employment (thous.)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Unemployment rate (%)	5.3	5.6	5.7	5.6	5.7	5.6	5.6	5.5	5.5	5.4	5.4	5.4
Personal income (mils. \$09)	37,047.9	38,110.2	39,034.5	40,054.8	41,131.0	42,275.3	43,487.0	44,749.6	46,062.9	47,423.7	48,824.7	50,235.5
Personal income (mils. \$)	42,780.3	45,018.6	47,125.8	49,422.4	51,867.6	54,484.4	57,280.0	60,240.8	63,373.9	66,682.7	70,163.9	73,780.7
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	49,211	51,276	53,197	55,310	57,473	59,760	62,166	64,674	67,306	70,057	72,918	75,868
Seattle consumer price index (82-84=1.000)	2.679	2.744	2.810	2.872	2.936	3.001	3.072	3.145	3.220	3.297	3.376	3.458
Housing permits (thous.)	4.0	4.1	4.2	4.4	4.6	4.9	5.1	5.3	5.5	5.7	5.8	5.8
Population (thous.)	869.3	877.9	885.9	893.5	902.4	911.7	921.4	931.4	941.5	951.8	962.2	972.5
Population, 20-64 years of age (thous.)	511.4	513.1	514.0	515.4	517.2	519.2	521.5	523.8	526.5	529.5	532.8	536.1
Taxable retail sales (mils. \$)	16,020.1	16,675.5	17,315.1	18,050.9	18,815.0	19,647.8	20,524.2	21,446.7	22,411.8	23,425.5	24,456.3	25,494.3
Motor vehicles (thous.)	905.9	911.9	914.8	919.3	925.0	930.7	937.3	943.9	951.4	959.3	967.8	976.0
Passenger cars	590.1	593.6	594.4	596.6	599.6	602.6	606.3	610.0	614.3	618.9	623.8	628.3
Gas trucks	151.5	153.1	154.5	156.0	157.6	159.3	161.1	162.9	164.9	167.0	169.1	171.3
Diesel trucks	29.6	30.3	31.0	31.7	32.5	33.2	34.0	34.8	35.6	36.5	37.3	38.2
Other vehicles	134.6	134.8	134.9	135.0	135.2	135.5	135.8	136.1	136.5	137.0	137.6	138.1
Motor vehicle excise tax base, 2.000% (mils. \$)	9,278.7	9,686.6	10,001.2	10,342.5	10,726.5	11,116.2	11,528.2	11,949.4	12,396.3	12,870.1	13,373.8	13,891.2
Annual growth rate (%)												
Employment	1.6	1.3	1.1	1.3	1.2	1.3	1.3	1.3	1.4	1.4	1.3	1.2
Personal income (mils. \$)	4.9	5.2	4.7	4.9	4.9	5.0	5.1	5.2	5.2	5.2	5.2	5.2
Consumer price index	2.5	2.4	2.4	2.2	2.2	2.2	2.4	2.4	2.4	2.4	2.4	2.4
Housing permits	-0.3	2.5	3.1	4.7	6.0	5.3	4.2	4.1	3.5	3.4	1.4	0.1
Population	1.1	1.0	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1
Taxable retail sales	3.6	4.1	3.8	4.2	4.2	4.4	4.5	4.5	4.5	4.5	4.4	4.2
Motor vehicle excise tax base	5.5	4.4	3.2	3.4	3.7	3.6	3.7	3.7	3.7	3.8	3.9	3.9

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 4. Pierce County

	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Employment (thous.)	370.0	374.6	379.4	384.3	389.3	394.5	399.7	405.1	410.6	416.2	422.0
Aerospace employment (thous.)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Unemployment rate (%)	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.4	5.4
Personal income (mils. \$09)	51,670.7	53,169.9	54,737.2	56,368.5	58,062.6	59,821.8	61,639.3	63,524.9	65,481.8	67,507.0	69,610.4
Personal income (mils. \$)	77,559.3	81,566.9	85,820.0	90,323.4	95,086.4	100,124.3	105,437.6	111,055.4	116,996.7	123,270.6	129,910.1
Microsoft stock option income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Microsoft dividend income (mils. \$)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Per capita income (\$)	78,947	82,226	85,644	89,244	93,008	96,946	101,090	105,424	109,959	114,735	119,734
Seattle consumer price index (82-84=1.000)	3.541	3.625	3.711	3.801	3.892	3.987	4.083	4.183	4.285	4.389	4.497
Housing permits (thous.)	5.8	5.8	5.8	5.8	5.9	5.9	5.9	5.9	6.0	6.0	6.0
Population (thous.)	982.4	992.0	1,002.1	1,012.1	1,022.3	1,032.8	1,043.0	1,053.4	1,064.0	1,074.4	1,085.0
Population, 20-64 years of age (thous.)	539.7	543.9	548.6	553.5	558.1	562.7	567.2	572.4	578.2	584.2	590.3
Taxable retail sales (mils. \$)	26,565.1	27,704.9	28,915.0	30,185.3	31,514.6	32,909.4	34,368.2	35,899.2	37,505.8	39,190.2	40,959.2
Motor vehicles (thous.)	984.7	994.5	1,005.3	1,016.5	1,027.3	1,038.0	1,048.7	1,060.6	1,073.7	1,087.3	1,101.0
Passenger cars	633.2	638.7	644.9	651.3	657.5	663.6	669.7	676.5	684.2	692.1	700.0
Gas trucks	173.7	176.2	178.9	181.7	184.4	187.1	189.9	192.9	196.1	199.5	202.8
Diesel trucks	39.1	40.1	41.1	42.1	43.1	44.2	45.2	46.3	47.5	48.7	49.9
Other vehicles	138.8	139.5	140.4	141.4	142.2	143.1	143.9	144.9	146.0	147.1	148.3
Motor vehicle excise tax base, 2.000% (mils. \$)	14,438.4	15,029.9	15,669.7	16,343.8	17,032.1	17,740.9	18,479.4	19,278.3	20,146.3	21,062.3	22,018.2
Annual growth rate (%)											
Employment	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4
Personal income (mils. \$)	5.1	5.2	5.2	5.2	5.3	5.3	5.3	5.3	5.3	5.4	5.4
Consumer price index	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
Housing permits	-0.4	0.1	0.8	0.7	0.5	0.5	0.4	0.4	0.4	0.4	0.4
Population	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Taxable retail sales	4.2	4.3	4.4	4.4	4.4	4.4	4.4	4.5	4.5	4.5	4.5
Motor vehicle excise tax base	3.9	4.1	4.3	4.3	4.2	4.2	4.2	4.3	4.5	4.5	4.5

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 5. United States

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
Gross Domestic Product (mils. \$09)	4,722.0	4,877.6	5,134.3	5,424.1	5,396.1	5,385.4	5,675.5	5,937.0	6,267.2	6,466.2	6,450.4	6,617.8
Employment (thous.)	71.0	71.3	73.8	76.9	78.4	77.1	79.5	82.6	86.8	89.9	90.5	91.3
Unemployment rate (%)	5.0	5.9	5.6	4.9	5.6	8.5	7.7	7.1	6.1	5.9	7.2	7.6
Personal income (mils. \$09)	3,875.2	4,007.7	4,255.2	4,490.0	4,463.3	4,507.2	4,683.8	4,855.0	5,100.2	5,235.7	5,271.1	5,427.7
Personal income (mils. \$)	864.6	932.2	1,023.6	1,138.5	1,249.4	1,366.9	1,498.5	1,654.6	1,859.7	2,078.2	2,317.5	2,596.5
Per capita income (\$)	4,215	4,488	4,876	5,372	5,840	6,328	6,870	7,510	8,353	9,231	10,176	11,288
Consumer price index (82-84=1.000)	0.388	0.405	0.418	0.444	0.493	0.538	0.569	0.606	0.652	0.726	0.824	0.909
Personal consumption deflator (09=1.000)	0.223	0.233	0.241	0.254	0.280	0.303	0.320	0.341	0.365	0.397	0.440	0.478
Average car price (\$)	3,542	3,742	3,879	4,052	4,441	4,951	5,416	5,813	6,379	6,848	7,574	8,910
Three-month treasury bill rate (%)	6.4	4.3	4.1	7.0	7.8	5.8	5.0	5.3	7.2	10.1	11.4	14.0
Thirty-year conventional mortgage rate (%)	8.4	7.6	7.4	8.0	9.2	9.0	8.9	8.8	9.6	11.2	13.8	16.6
Housing starts (mils.)	1.435	2.036	2.361	2.044	1.332	1.160	1.535	1.962	2.001	1.717	1.300	1.096
Population (thous.)	205.1	207.7	209.9	211.9	213.9	216.0	218.1	220.3	222.6	225.1	227.7	230.0
Population, 20-64 years of age (thous.)	108.1	110.0	111.7	113.6	115.4	117.4	119.5	121.7	123.9	126.3	128.7	130.9
Annual growth rate (%)												
Gross Domestic Product	na	3.3	5.3	5.6	-0.5	-0.2	5.4	4.6	5.6	3.2	-0.2	2.6
Employment	na	0.5	3.4	4.2	1.9	-1.7	3.2	3.9	5.1	3.6	0.7	0.8
Personal income (mils. \$)	na	7.8	9.8	11.2	9.7	9.4	9.6	10.4	12.4	11.8	11.5	12.0
Consumer price index	na	4.2	3.3	6.3	11.0	9.1	5.8	6.5	7.6	11.3	13.5	10.4
Housing starts	na	41.9	16.0	-13.4	-34.8	-12.9	32.4	27.8	2.0	-14.2	-24.3	-15.7
Population	na	1.3	1.1	1.0	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.0

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 5. United States

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Gross Domestic Product (mils. \$09)	6,491.3	6,792.0	7,285.0	7,593.8	7,860.5	8,132.6	8,474.5	8,786.4	8,955.0	8,948.4	9,266.6	9,521.0
Employment (thous.)	89.7	90.3	94.5	97.5	99.5	102.1	105.3	108.0	109.5	108.4	108.7	110.8
Unemployment rate (%)	9.7	9.6	7.5	7.2	7.0	6.2	5.5	5.3	5.6	6.9	7.5	6.9
Personal income (mils. \$09)	5,506.8	5,641.7	6,005.5	6,215.0	6,445.4	6,631.8	6,900.4	7,147.2	7,275.5	7,283.9	7,571.6	7,709.3
Personal income (mils. \$)	2,779.5	2,970.3	3,281.8	3,516.4	3,725.7	3,955.9	4,276.4	4,619.9	4,906.4	5,073.4	5,413.1	5,649.0
Per capita income (\$)	11,969	12,675	13,882	14,743	15,479	16,289	17,449	18,674	19,611	20,010	21,068	21,703
Consumer price index (82-84=1.000)	0.965	0.996	1.039	1.076	1.097	1.136	1.183	1.239	1.307	1.362	1.403	1.445
Personal consumption deflator (09=1.000)	0.505	0.526	0.546	0.566	0.578	0.596	0.620	0.646	0.674	0.696	0.715	0.733
Average car price (\$)	9,903	10,607	11,374	11,838	12,651	13,383	13,933	14,372	15,045	15,473	16,334	16,829
Three-month treasury bill rate (%)	10.6	8.6	9.5	7.5	6.0	5.8	6.7	8.1	7.5	5.4	3.4	3.0
Thirty-year conventional mortgage rate (%)	16.1	13.2	13.9	12.4	10.2	10.2	10.3	10.3	10.1	9.2	8.4	7.3
Housing starts (mils.)	1.057	1.705	1.766	1.741	1.812	1.631	1.488	1.382	1.203	1.009	1.201	1.292
Population (thous.)	232.2	234.3	236.4	238.5	240.7	242.8	245.1	247.4	250.2	253.5	256.9	260.3
Population, 20-64 years of age (thous.)	133.1	135.1	137.2	139.1	140.9	142.5	143.9	145.3	146.8	149.0	151.0	152.7
Annual growth rate (%)												
Gross Domestic Product	-1.9	4.6	7.3	4.2	3.5	3.5	4.2	3.7	1.9	-0.1	3.6	2.7
Employment	-1.8	0.7	4.7	3.2	2.0	2.6	3.2	2.5	1.4	-1.0	0.3	2.0
Personal income (mils. \$)	7.0	6.9	10.5	7.1	6.0	6.2	8.1	8.0	6.2	3.4	6.7	4.4
Consumer price index	6.2	3.2	4.4	3.5	1.9	3.6	4.1	4.8	5.4	4.2	3.0	3.0
Housing starts	-3.6	61.3	3.6	-1.4	4.0	-10.0	-8.7	-7.1	-12.9	-16.2	19.1	7.5
Population	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.1	1.3	1.3	1.3

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**

Table 5. United States

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Gross Domestic Product (mils. \$09)	9,905.5	10,174.8	10,561.0	11,034.9	11,525.9	12,065.9	12,559.7	12,682.3	12,908.8	13,271.1	13,773.5	14,234.3
Employment (thous.)	114.3	117.3	119.7	122.8	125.9	129.2	132.0	132.1	130.6	130.3	131.7	134.0
Unemployment rate (%)	6.1	5.6	5.4	4.9	4.5	4.2	4.0	4.8	5.8	6.0	5.5	5.1
Personal income (mils. \$09)	7,937.3	8,226.1	8,549.6	8,926.1	9,500.0	9,849.2	10,389.7	10,611.3	10,660.1	10,838.1	11,206.7	11,504.4
Personal income (mils. \$)	5,937.3	6,281.0	6,667.0	7,080.7	7,593.7	7,988.4	8,637.1	8,991.6	9,153.9	9,491.1	10,052.9	10,614.1
Per capita income (\$)	22,535	23,560	24,718	25,939	27,497	28,597	30,584	31,525	31,789	32,656	34,278	35,858
Consumer price index (82-84=1.000)	1.482	1.524	1.569	1.605	1.630	1.666	1.722	1.770	1.799	1.840	1.889	1.953
Personal consumption deflator (09=1.000)	0.748	0.764	0.780	0.793	0.799	0.811	0.831	0.847	0.859	0.876	0.897	0.923
Average car price (\$)	17,803	17,904	18,548	19,237	20,254	20,706	21,047	21,478	21,866	21,663	22,068	23,013
Three-month treasury bill rate (%)	4.2	5.5	5.0	5.1	4.8	4.6	5.8	3.4	1.6	1.0	1.4	3.1
Thirty-year conventional mortgage rate (%)	8.4	8.0	7.8	7.6	6.9	7.4	8.1	7.0	6.5	5.8	5.8	5.9
Housing starts (mils.)	1.446	1.361	1.469	1.475	1.621	1.647	1.573	1.601	1.710	1.854	1.949	2.073
Population (thous.)	263.5	266.6	269.7	273.0	276.2	279.3	282.4	285.2	288.0	290.6	293.3	296.0
Population, 20-64 years of age (thous.)	154.4	156.1	157.9	160.0	162.2	164.4	166.7	169.0	171.2	173.4	175.4	177.3
Annual growth rate (%)												
Gross Domestic Product	4.0	2.7	3.8	4.5	4.4	4.7	4.1	1.0	1.8	2.8	3.8	3.3
Employment	3.1	2.6	2.0	2.6	2.6	2.6	2.2	0.0	-1.1	-0.2	1.1	1.7
Personal income (mils. \$)	5.1	5.8	6.1	6.2	7.2	5.2	8.1	4.1	1.8	3.7	5.9	5.6
Consumer price index	2.6	2.8	2.9	2.3	1.5	2.2	3.4	2.8	1.6	2.3	2.7	3.4
Housing starts	12.0	-5.9	7.9	0.4	9.9	1.6	-4.5	1.8	6.8	8.4	5.1	6.3
Population	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.9

**Puget Sound Economic and
Tax Base Forecasts, 1970-2040**
With Ten-Year Growth Rates (% change)

Table 1. Puget Sound Region

	1970	1980	1990	2000	2010	2020	2030	2040	1970-80	1980-90	1990-00	2000-10	2010-20	2020-30	2030-40
Employment (thous.)	622.3	924.5	1,302.5	1,665.4	1,667.0	2,075.9	2,331.0	2,624.7	4.0	3.5	2.5	0.0	2.2	1.2	1.2
Personal income (mils. \$)	8,691.8	25,551.4	58,741.7	119,111.7	166,155.7	290,780.1	473,301.0	784,414.8	11.4	8.7	7.3	3.4	5.8	5.0	5.2
Consumer price index (82-84=1.000)	0.374	0.827	1.268	1.792	2.268	2.810	3.541	4.497	8.3	4.4	3.5	2.4	2.2	2.3	2.4
Population (thous.)	1,835.0	2,105.8	2,578.8	3,052.2	3,448.6	3,939.6	4,343.2	4,770.9	1.4	2.0	1.7	1.2	1.3	1.0	0.9
Taxable retail sales (mils. \$)	na	12,868.1	30,042.3	53,520.0	59,123.2	101,153.7	149,055.7	225,276.6	na	8.8	5.9	1.0	5.5	4.0	4.2
Motor vehicles (thous.)	na	1,904.0	2,506.2	2,980.5	3,253.8	3,870.1	4,067.3	4,480.3	na	2.8	1.7	0.9	1.7	0.5	1.0
Motor vehicle excise tax (mils. \$)	na	3,568.4	10,415.5	26,355.8	30,968.5	48,424.7	65,804.9	95,604.5	na	11.3	9.7	1.6	4.6	3.1	3.8

Table 2. King County

	1970	1980	1990	2000	2010	2020	2030	2040	1970-80	1980-90	1990-00	2000-10	2010-20	2020-30	2030-40
Employment (thous.)	445.4	679.0	938.0	1,200.9	1,148.7	1,448.0	1,618.1	1,811.6	4.3	3.3	2.5	-0.4	2.3	1.1	1.1
Personal income (mils. \$)	5,785.6	16,816.2	38,774.2	80,122.7	107,552.1	197,087.6	317,340.3	520,394.9	11.3	8.7	7.5	3.0	6.2	4.9	5.1
Consumer price index (82-84=1.000)	0.374	0.827	1.268	1.792	2.268	2.810	3.541	4.497	8.3	4.4	3.5	2.4	2.2	2.3	2.4
Population (thous.)	1,156.8	1,276.5	1,517.2	1,739.0	1,937.7	2,221.4	2,416.5	2,620.9	1.0	1.7	1.4	1.1	1.4	0.8	0.8
Taxable retail sales (mils. \$)	na	9,105.0	20,922.6	37,399.0	38,769.9	68,005.5	98,091.2	145,862.6	na	8.7	6.0	0.4	5.8	3.7	4.0
Motor vehicles (thous.)	na	1,207.7	1,506.0	1,739.7	1,763.5	2,012.1	2,057.6	2,214.4	na	2.2	1.5	0.1	1.3	0.2	0.7
Motor vehicle excise tax (mils. \$)	na	2,383.0	6,869.8	16,339.2	18,174.0	28,669.2	37,361.0	52,265.3	na	11.2	9.1	1.1	4.7	2.7	3.4

Table 3. Snohomish County

	1970	1980	1990	2000	2010	2020	2030	2040	1970-80	1980-90	1990-00	2000-10	2010-20	2020-30	2030-40
Employment (thous.)	71.0	103.7	169.5	216.2	247.6	302.7	342.9	391.1	3.9	5.0	2.5	1.4	2.0	1.3	1.3
Personal income (mils. \$)	1,077.9	3,741.1	9,212.3	18,869.9	28,347.1	46,566.7	78,401.5	134,109.8	13.3	9.4	7.4	4.2	5.1	5.3	5.5
Consumer price index (82-84=1.000)	0.374	0.827	1.268	1.792	2.268	2.810	3.541	4.497	8.3	4.4	3.5	2.4	2.2	2.3	2.4
Population (thous.)	265.4	340.5	471.1	609.2	715.5	832.3	944.3	1,065.0	2.5	3.3	2.6	1.6	1.5	1.3	1.2
Taxable retail sales (mils. \$)	na	1,649.6	4,398.1	7,843.5	9,734.0	15,833.1	24,399.4	38,454.8	na	10.3	6.0	2.2	5.0	4.4	4.7
Motor vehicles (thous.)	na	305.3	480.7	609.9	723.1	943.2	1,025.0	1,164.9	na	4.6	2.4	1.7	2.7	0.8	1.3
Motor vehicle excise tax (mils. \$)	na	526.7	1,763.4	4,941.5	6,126.6	9,754.3	14,005.5	21,320.9	na	12.8	10.9	2.2	4.8	3.7	4.3

Table 4. Pierce County

	1970	1980	1990	2000	2010	2020	2030	2040	1970-80	1980-90	1990-00	2000-10	2010-20	2020-30	2030-40
Employment (thous.)	105.9	141.8	194.9	248.3	270.7	325.2	370.0	422.0	3.0	3.2	2.4	0.9	1.9	1.3	1.3
Personal income (mils. \$)	1,828.2	4,994.1	10,755.2	20,119.1	30,256.5	47,125.8	77,559.3	129,910.1	10.6	8.0	6.5	4.2	4.5	5.1	5.3
Consumer price index (82-84=1.000)	0.374	0.827	1.268	1.792	2.268	2.810	3.541	4.497	8.3	4.4	3.5	2.4	2.2	2.3	2.4
Population (thous.)	412.7	488.8	590.5	704.0	795.4	885.9	982.4	1,085.0	1.7	1.9	1.8	1.2	1.1	1.0	1.0
Taxable retail sales (mils. \$)	na	2,113.4	4,721.6	8,277.4	10,619.3	17,315.1	26,565.1	40,959.2	na	8.4	5.8	2.5	5.0	4.4	4.4
Motor vehicles (thous.)	na	391.0	519.6	630.9	767.2	914.8	984.7	1,101.0	na	2.9	2.0	2.0	1.8	0.7	1.1
Motor vehicle excise tax (mils. \$)	na	658.7	1,782.4	5,075.1	6,667.9	10,001.2	14,438.4	22,018.2	na	10.5	11.0	2.8	4.1	3.7	4.3

Table 5. United States

	1970	1980	1990	2000	2010	2020	2030	2040	1970-80	1980-90	1990-00	2000-10	2010-20	2020-30	2030-40
Gross Domestic Product (mils. \$09)	4,722.0	6,450.4	8,955.0	12,559.7	14,783.8	18,145.7	22,141.2	26,990.0	3.2	3.3	3.4	1.6	2.1	2.0	2.0
Employment (mils.)	71.0	90.5	109.5	132.0	130.4	151.7	165.4	177.3	2.5	1.9	1.9	-0.1	1.5	0.9	0.7
Personal income (bils. \$)	864.6	2,317.5	4,906.4	8,637.1	12,477.1	19,188.7	30,085.9	47,171.6	10.4	7.8	5.8	3.7	4.4	4.6	4.6
Consumer price index (82-84=1.000)	0.388	0.824	1.307	1.722	2.181	2.632	3.326	4.217	7.8	4.7	2.8	2.4	1.9	2.4	2.4
Population (thous.)	205.1	227.7	250.2	282.4	309.8	333.9	358.5	380.0	1.1	0.9	1.2	0.9	0.8	0.7	0.6

APPENDIX B
SOUND TRANSIT TAX BASE MODEL

SOUND TRANSIT TAX BASE MODEL

EQUATION 1
 PUGET SOUND TAXABLE RETAIL SALES

VARIABLE	COEFFICIENT	T-VALUE
DLPSALES		
C	0.0015	0.0
DLPYPW	0.6894	13.4
DLPHS	0.0335	4.1
DLPUNRT	-0.0964	-4.7
MA(1)	-0.2939	-3.7

1974.2-2016.4
 $R^2=0.484$
 SEE=0.018
 DW=1.561

DLPSALES=log(PSALES)-log(PSALES(-1))
 DLPYPW=log(PYPW)-log(PYPW(-1))
 DLPHS=log(PHS)-log(PHS(-1))
 DLPUNRT=log(PUNRT)-log(PUNRT(-1))
 PYPW=PYP-0.6PYSTK

PSALES PUGET SOUND TAXABLE RETAIL SALES (MILS. \$)
 PYP PUGET SOUND PERSONAL INCOME (MILS. \$)
 PYSTK PUGET SOUND STOCK OPTION INCOME (MILS. \$)
 PHS PUGET SOUND HOUSING PERMITS (THOUS.)
 PUNRT PUGET SOUND UNEMPLOYMENT RATE (%)
 DUMI DUMMY VARIABLE I (NOT SHOWN)

NOTE: PUGET SOUND REGION INCLUDES KING, SNOHOMISH, AND PIERCE COUNTIES.

EQUATION 2
 PUGET SOUND REGISTERED PASSENGER CARS

VARIABLE	COEFFICIENT	T-VALUE
DLPMVCARP		
C	0.0010	0.0
PDL(DLPUNRT, 4, 2, 3)	-0.0083	-2.5
AR(1)	0.6566	8.8
MA(1)	0.4318	4.9

1975.2-2016.4
 $R^2=0.872$
 SEE=0.004
 DW=1.898

DLPMVCARP=log(PMVCAR/PPOP20)-log(PMVCAR(-1)/PPOP20(-1))

PMVCAR PUGET SOUND REGISTERED PASSENGER CARS (THOUS.)
 PPOP20 PUGET SOUND POPULATION 20-64 YEARS OF AGE (THOUS.)

EQUATION 3
PUGET SOUND REGISTERED GASOLINE TRUCKS

VARIABLE	COEFFICIENT	T-VALUE
DLPMVTRKGP		
C	0.0005	0.0
MA(1)	0.9910	181.7

1975.2-2016.4
R²=0.719
SEE=0.005
DW=0.835

DLPMVTRKGP=log(PMVTRKG/PPOP20)-log(PMVTRKG(-1)/PPOP20(-1))

PMVTRKG PUGET SOUND REGISTERED GASOLINE TRUCKS (THOUS.)

EQUATION 4
PUGET SOUND REGISTERED DIESEL TRUCKS

VARIABLE	COEFFICIENT	T-VALUE
DLPMVTRKDP		
C	0.0119	3.0
MA(1)	0.8639	16.2

1975.2-2016.4
R²=0.709
SEE=0.027
DW=1.046

DLPMVTRKDP=log(PMVTRKD/PPOP20)-log(PMVTRKD(-1)/PPOP20(-1))

PMVTRKD PUGET SOUND REGISTERED DIESEL TRUCKS (THOUS.)

EQUATION 5
PUGET SOUND OTHER REGISTERED VEHICLES

VARIABLE	COEFFICIENT	T-VALUE
DLPMVOTHP		
C	-0.0011	-1.0
MA(1)	0.9930	159.3

1975.2-2016.4
R²=0.827
SEE=0.007
DW=1.150

DLPMVOTHP=log(PMVOTH/PPOP20)-log(PMVTOTH(-1)/PPOP20(-1))

PMVOTH PUGET SOUND OTHER REGISTERED VEHICLES (THOUS.)

EQUATION 6
 PUGET SOUND TOTAL REGISTERED VEHICLES

$$PMV=PMVCAR+PMVTRKG+PMVTRKD+PMVOTH$$

EQUATION 7
 PUGET SOUND MOTOR VEHICLE EXCISE TAX BASE

VARIABLE	COEFFICIENT	T-VALUE
DLPMVET		
C	-0.0060	0.0
DLPMVETE	1.5892	31.0
AR(1)	0.9015	25.7
MA(1)	0.2962	3.5

1980.1-2016.4

$R^2=0.956$

SEE=0.004

DW=1.956

$$DLPMVET=\log(PMVET)-\log(PMVET(-1))$$

$$DLPMVETE=\log(PMVETE)-\log(PMVETE(-1))$$

$$PMVETE=PMVET03(USPCAR03WT)$$

$$PMVET03=10.7PMVCAR+7.9PMVTRKG+9.9PMVTRKD+6.0PMVOTH$$

$$USPCAR03=USPCAR/24715$$

$$USPCAR03WT=(USPCAR03+USPCAR03(-1)+\dots+USPCAR03(-20))/21$$

PMVET PUGET SOUND MOTOR VEHICLE EXCISE TAX BASE (MILS. \$)
 USPCAR U.S. AVERAGE CAR PRICE (\$)