PUGET SOUND ECONOMIC AND DEMOGRAPHIC FORECAST

DETAILED FORECASTS AND METHODOLOGY

Prepared for

Puget Sound Regional Council

by

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PUGET SOUND ECONOMIC AND DEMOGRAPHIC FORECAST

1. INTRODUCTION

This report presents an updated economic and demographic forecast for the Puget Sound region (King, Kitsap, Pierce, and Snohomish counties). This forecast has been prepared using the Puget Sound Forecasting Model, a new regional econometric model developed for the Puget Sound Regional Council (PSRC). The annual projections extend to 2040. Underlying the regional forecast is a long-range outlook for the U.S. economy developed by Global Insight, Inc. (formerly DRI-WEFA, Inc.) in March 2005.

The preliminary regional forecast was presented to PSRC in July. After a review by PSRC staff, which resulted in minor modifications to the household projections, the final forecast was delivered in November.

The rest of the report is divided into three parts. Section 2 provides a description of the national economic outlook as predicted by Global Insight. Section 3 summarizes the economic and demographic forecasts for the Puget Sound region based on the U.S. projections. Special attention is given to the forecast for The Boeing Company, the largest and most volatile employer in the region, and Microsoft Corporation, the most prominent high-technology company. Finally, Section 4 compares the current regional forecast with the previous long-range forecast produced for the PSRC using STEP02.

2. U.S. FORECAST

The Puget Sound region, the largest manufacturing and commercial center in the Pacific Northwest, has strong links to the national economy. Between one-third and one-half of the goods and services produced in the region are sold to customers outside of it. Such sales create jobs not only directly in Puget Sound's export industries but also indirectly in its supporting industries through the so-called multiplier process. Consequently, much of the business activity in the region is affected in one way or another by the performance of the national economy.

The national outlook in effect represents a major forecasting assumption underlying the regional forecast (Table 1):

1. Prepared in March 2005, the long-range national economic forecast comes from an econometric model of the U.S. economy maintained by Global Insight. The model is designed to predict the long-term path of the national economy. As a consequence, the projections do not portray the cyclical movements of the U.S. economy beyond the current business cycle.

2. The Global Insight outlook calls for generally steady growth over the next three decades, as measured by real Gross Domestic Product (GDP). In the near term, the U.S. economy is expected to continue the expansion that began with the recovery from the 2001 recession. After peaking above 4 percent in 2004, the annual growth rate of real GDP will slow in 2006 but only to 3.1 percent. Over the entire 36-year forecast period real GDP is predicted to expand at an average annual rate of 2.9 percent. This is slightly less than the 3.1 percent rate achieved between 1970 and 2004 (Figure1).

Table 1

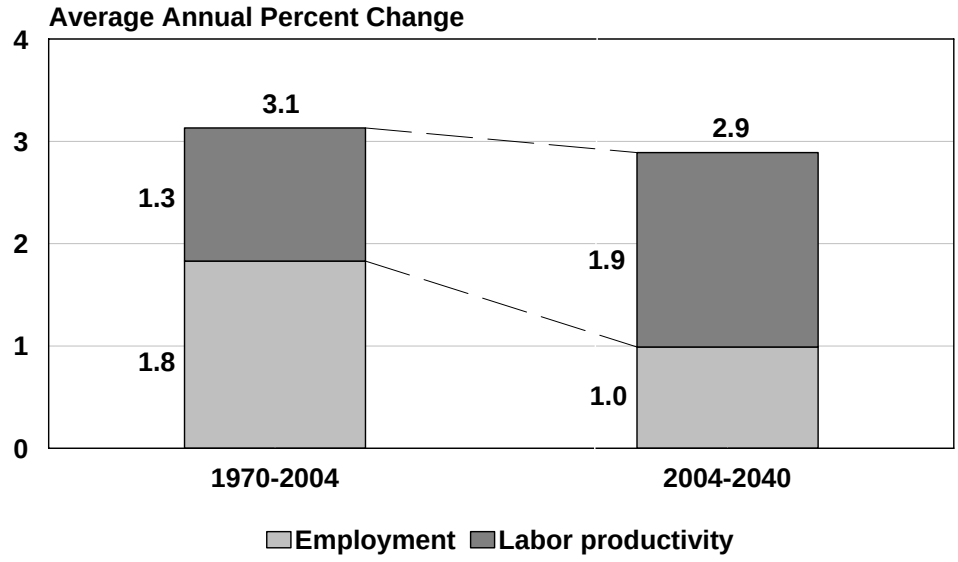
U.S. FORECAST

	1990	2000	2010	2020	2030	2040
Gross Domestic Product (bils. $00)	7,113	9,817	13,138	17,715	23,435	30,439
Employment (mils.)	109.5	131.8	140.6	154.3	172.0	187.7
Personal income (bils. $00)	6,061	8,430	10,999	15,089	20,304	26,658
Per capita income ($00)	24,184	29,809	35,468	44,776	55,658	67,831
Consumer price index (82-84=1.000)	1.307	1.722	2.134	2.786	3.651	4.807
Population, July 1 (mils.)	250.6	282.8	310.1	337.0	364.8	393.0

*Wage and salary employment excluding agricultural workers and the military.

Figure 1

U.S. REAL GROSS DOMESTC PRODUCT



Note that over the past ten years, the national outlook, as measured by the long-term growth rate of real GDP has changed substantially. In 1997, DRI-WEFA projected that real GDP would grow at only a 1.9 percent annual rate between 1996 and 2020.

3. Global Insight's long-range projection of real GDP is based upon two key assumptions regarding labor supply and productivity. U.S. wage and salary employment is expected to grow at a low rate by historical standards. During the current expansion, the employment growth rate will not hit 2 percent, according to the forecast. In the 1990s, employment growth peaked at 3.1 percent in 1994 and 2.6 percent in 1998. In the long run, the employment growth rate will eventually drop to about one percent per year, much less than the 1.8 percent average growth rate since 1970. This substantial reduction in the long-term growth of labor is the result of the slowing growth of two factors: (1) the working-age population (16 to 65 years of age); and (2) the fraction of population participating in the labor force. A slower growing labor supply will help maintain the national long-term unemployment rate around the 5 percent mark. Most of the new jobs will be created in the service-producing sector.

4. With regard to labor productivity (real GDP per wage and salary job), annual gains will average 1.9 percent between 2004 and 2040, up from 1.3 percent between 1970 and 2004 but down from 2.4 percent projected last time with STEP02. This means that with regard to the long-term growth of real GDP the increase in the productivity growth rate is expected to largely compensate for the decrease in the labor supply growth rate.

   In effect, Global Insight believes that the upturn in labor productivity that began in the late 1990s, stemming from the investment in information technology (computers, software, and the internet), has revolutionized the economy. Despite the continuing gains in productivity, however, some economists are still questioning this presumption.

   When adjusted for inflation, labor compensation will increase at rates similar to those for productivity. Real per capita income will rise at a long-run rate of 2.3 percent per year.

5. Healthy productivity gains should help keep the inflation rate under control. As measured by the consumer price index, the U.S. annual inflation rate is currently running a little above two percent, excluding volatile energy and food prices. The inflation rate is expected to climb slowly to 2.7 percent in 2012, where it will stabilize. Compared to last time, this is a significant downward revision. In 2002, Global Insight predicted a 3.5 percent long-run inflation rate.

3. REGIONAL FORECAST

Forecast Summary

The Puget Sound Forecasting Model generates annual forecasts from 2005 to 2040 for 103 economic and demographic variables for the region and its four counties. Beyond the first few years of the projection period, these forecasts are trend projections, portraying the expected mean path of the regional economy. Table 2 summarizes the Puget Sound projections, showing forecasts for five principal variables.

As expected, the regional outlook is similar to the national outlook in certain respects: historically slow employment growth, healthy income growth, and a low inflation rate (Table 3). Again, the latter two projections are predicated on unprecedented gains in long-term productivity.

The most significant trend in the regional economy is the slowdown of employment growth. After averaging 2.8 percent between 1970 and 2004, wage and salary employment is expected to increase at a 1.4 percent rate between 2004 and 2040 (Table 4). While future employment growth in relative terms will be modest compared to the past, job gains in absolute terms will still be substantial. Between 2004 and 2040, the Puget Sound region is expected to create 1,132,200 new wage and salary jobs, bringing total wage and salary employment to about 2.8 million in 2040. This compares with a total wage and salary employment gain of 1,021,100 between 1970 and 2004. Moreover, despite slowing growth, Puget Sound employment is expected to continue to grow faster than national employment over the 36-year forecast period, a difference of 0.4 percent per year.

Representing a continuation of a past trend both regionally and nationally, most of the new jobs will be found in the service-producing sector of the economy. Whereas the goods-producing industries (resources, construction, and manufacturing) will add only 117,000 jobs between 2004 and 2040, the employment count in the service-producing industries (transportation and utilities, trade, financial activities, services, and government) will increase by 1,015,100. In terms of employment, the three fastest growing industries will be food services and drinking places, professional and business services including information, and health services, accounting for 672,400 new employment opportunities over the period. The employment growth in these sectors will reflect a combination of four factors: the increased demand for services as a result of rising income and expanding business activity; the emergence of the high-technology sector; an aging population; and lagging labor productivity in many service industries. An aging population will strongly affect health services employment.

The strength of its manufacturing industries has been a significant factor in the above-average performance of the Puget Sound economy. Historically, those regions with rapid growth in manufacturing employment have invariably grown faster than the nation. In the future, the strength of Puget Sound's manufacturing sector will be measured not so much by how many jobs are gained but by how many jobs are kept. Over the next three decades, the United States is projected to lose 1.5 million manufacturing jobs. According to the regional forecast, Puget Sound will lose only 9,700 manufacturing jobs between 2004 and 2040. Considering the long-term national decline, this relatively modest loss implies that the region's share of U.S. manufacturing employment will increase from 1.2 percent in 2004 to 1.3 percent in 2040.

Table 2

PUGET SOUND FORECAST

	1990	2000	2010	2020	2030	2040
Employment* (thous.)	1,366.5	1,721.9	1,915.5	2,216.9	2,498.2	2,804.7
Personal income (mils. $00)	76,870	122,058	162,608	232,585	316,227	424,578
Per capita income ($00)	27,743	37,162	43,999	56,058	69,584	85,118
Consumer price index (82-84=1.000)	1.268	1.792	2.204	2.911	3.826	5.061
Population, July 1 (thous.)	2,770.7	3,284.4	3,695.6	4,149.0	4,544.5	4,988.0

*Wage and salary employment excluding agricultural workers and the military.

Table 3

PUGET SOUND AND U.S. GROWTH RATES

Average Annual Percent Change

	1990-00	2000-10	2010-20	2020-30	2030-40
PUGET SOUND					
Employment (thous.)	2.3	1.1	1.5	1.2	1.2
Personal income (mils. $00)	4.7	2.9	3.6	3.1	3.0
Per capita income ($00)	3.0	1.7	2.4	2.3	2.1
Consumer price index (82-84=1.000)	3.5	2.1	2.8	2.8	2.8
Population, July 1 (thous.)	1.7	1.2	1.2	0.9	0.9
UNITED STATES					
Gross Domestic Product (bils. $00)	3.3	3.0	3.0	2.8	2.6
Employment (mils.)	1.9	0.6	0.9	1.1	0.9
Personal income (bils. $00)	3.4	2.7	3.2	3.0	2.8
Per capita income ($00)	2.2	1.8	2.4	2.2	2.1
Consumer price index (82-84=1.000)	2.8	2.2	2.7	2.7	2.8
Population, July 1 (mils.)	1.2	0.9	0.8	0.8	0.7

Table 4

PUGET SOUND AND U.S. GROWTH RATES

Average Annual Percent Change

	1970-04	2004-40
PUGET SOUND		
Employment* (thous.)	2.8	1.4
Goods producing	1.2	1.0
Construction	3.6	2.3
Manufacturing	0.4	-0.2
Service producing	3.2	1.5
Personal income (mils. $00)	4.1	3.3
Per capita income ($00)	2.4	2.2
Consumer price index (82-84=1.000)	5.0	2.7
Population, July 1	1.7	1.1
UNITED STATES		
Gross Domestic Product (bils. $00)	3.1	2.9
Employment* (mils.)	1.8	1.0
Goods producing	-0.0	0.8
Construction	1.9	2.5
Manufacturing	-0.6	-0.6
Service producing	2.4	1.0
Personal income (bils. $00)	3.1	3.1
Per capita income ($00)	2.0	2.3
Consumer price index (82-84=1.000)	4.8	2.6
Population, July 1	1.1	0.8

*Wage and salary employment excluding agricultural workers and the military.

Relatively fast employment growth in the region, led in part by a strong manufacturing sector and the rise of high-technology companies, will mean relatively fast population and personal income growth. As in the past, the differences between the regional and national employment growth rates will be generally reflected in the differences between the regional and national population and personal income growth rates. Puget Sound population, for example, is expected to grow at an average annual rate of 1.1 percent between 2004 and 2040, which is 0.3 percentage points above the national population growth rate. As noted previously, the difference between the projected regional and national employment growth rates is 0.4 percent. Measured in 2000 dollars, real personal income in Puget Sound will increase at an average rate of 3.3 percent, 0.2 percentage points above the corresponding national rate. On a per capita basis, Puget Sound and U.S. real personal income will tend to move together, rising at annual rates of 2.2 percent and 2.3 percent, respectively.

Figure 2

PUGET SOUND AND U.S. EMPLOYMENT

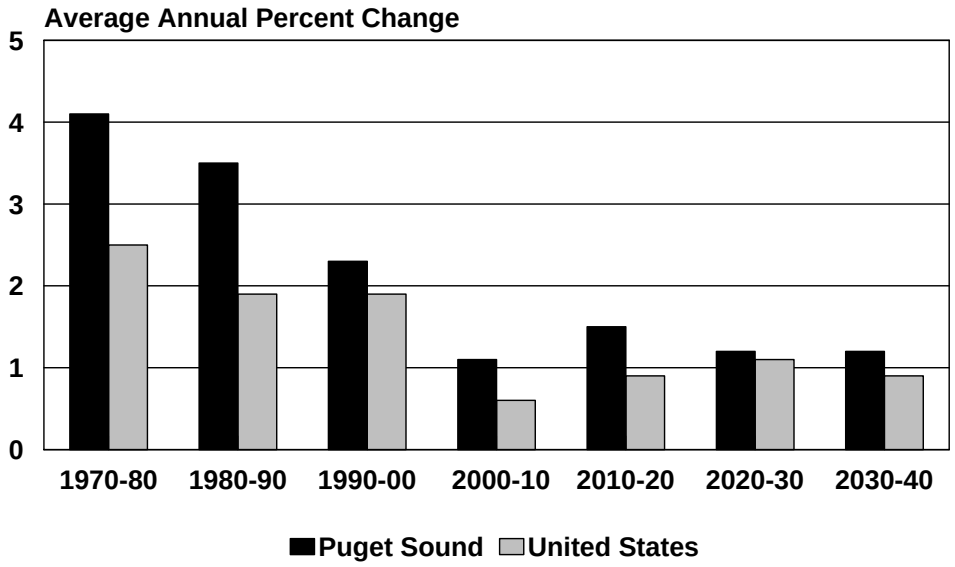


Figure 3

PUGET SOUND AND U.S. POPULATION

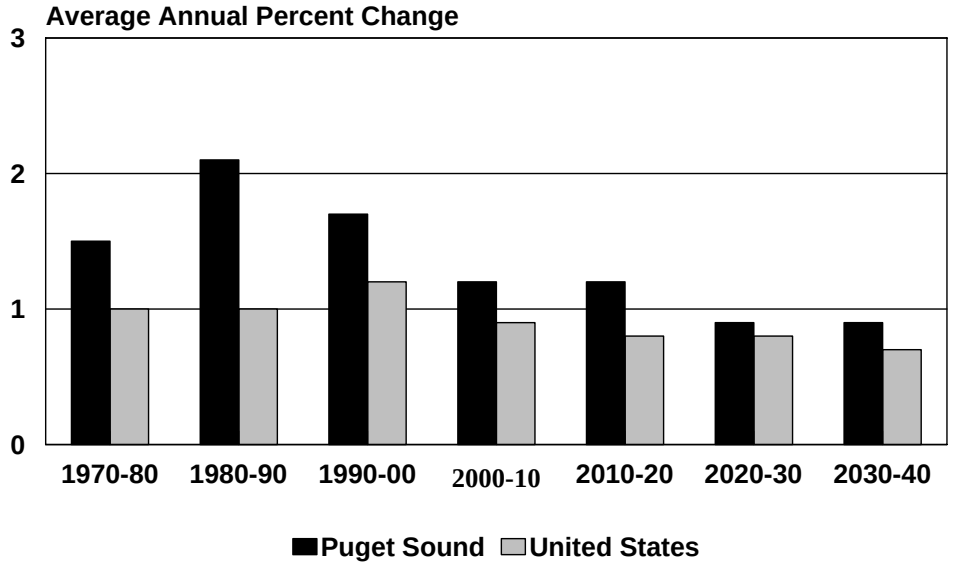


Figure 4

PUGET SOUND AND U.S. PER CAPITA INCOME

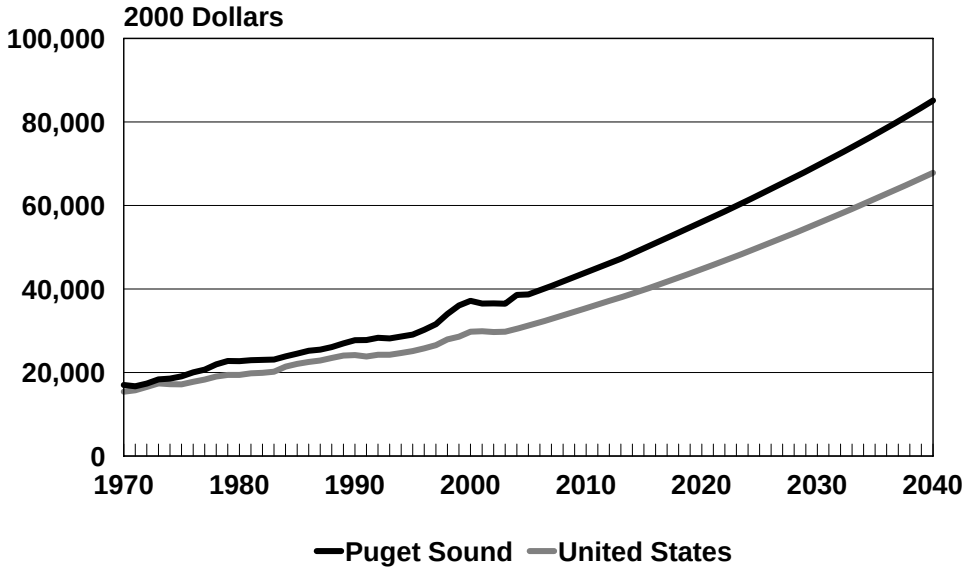
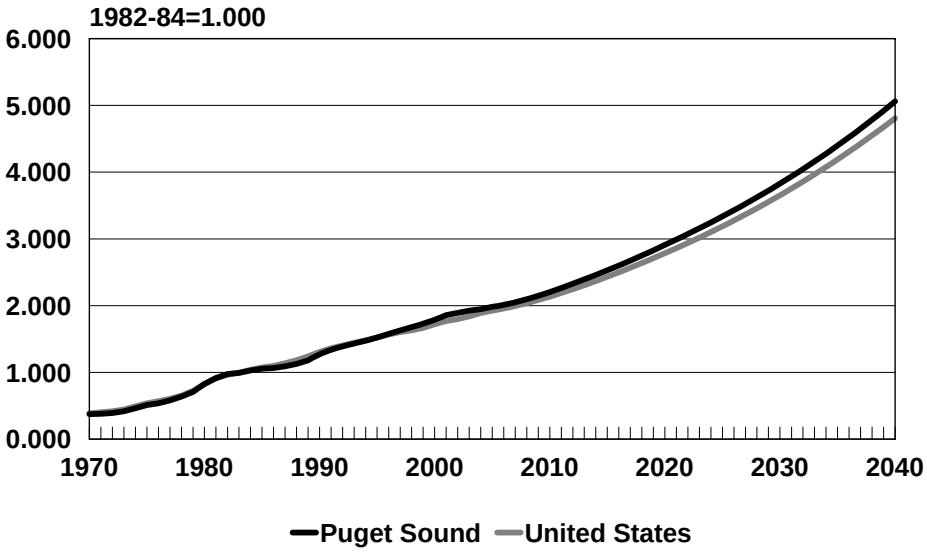


Figure 5

SEATTLE AND U.S. CONSUMER PRICE INDEX



Boeing and Microsoft

Although there is much more to the Puget Sound economy than Boeing and Microsoft, they are the two biggest engines of the economy, currently supporting about one-fifth of the total jobs. As such, they have a substantial impact on regional growth. During the 1990s, for example, the loss of 30,000 aerospace jobs cost the region a total of 80,000 jobs, reducing the ten-year average growth rate by 0.5 percentage points. Fortunately, this was more than offset by the spiraling growth of Microsoft, which added 18,000 employees and generated another 72,000 other jobs in the economy, boosting the average employment growth rate by 0.6 percentage points.

The last set of long-range regional forecasts prepared in 2002 were based on two assumptions: Boeing would add 15,000 or more workers during the current decade as a result of a strong rebound in aircraft production; and Microsoft would expand its local workforce by 10,000 over the ten-year period, as it continued to invest heavily in research and development to maintain its leadership as the top producer of software for personal computers. So far, there is no reason to fundamentally change these prognoses.

After bottoming out in 2004, Boeing production and employment are clearly on the rebound. The favorable response to the new 787, which the company decided to build in Everett, the longevity of the 737, and the improvement in the airline market, particularly overseas, have turned Boeing's fortunes around. Despite losing a questionable aircraft order race to Airbus in 2005, Boeing will likely again be the number one producer of commercial jet aircraft. If the company continues on course, its next production peak, probably in 2008 or 2009, will exceed 500 airplanes. As a consequence, the local aerospace industry is predicted to hire back 21,400 workers between 2004 and 2009, despite concerted efforts such as computer-aided design and moving assembly lines to improve productivity. In the long run, however, productivity gains will lead to a decline in Boeing employment. After peaking at 81,800 in 2009, the number of aerospace jobs is expected to fall to 50,800 in 2040.

There are three signs that Microsoft will continue to be a growth force in the regional economy. First, between 2002 and 2005, the company expanded local jobs at a rate of 1,400 per year. Second, officials report that because of Microsoft's growing needs the company has thousands of unfilled jobs. Finally, Microsoft is expanding its Redmond campus to house another 10,000 workers. Currently, we are predicting that local employment will rise from 28,000 in 2004 to 34,100 in 2010 and 39,400 in 2040.

Forecasts of Selected Variables

There are several tests of the logical consistency of regional forecasts. Most of them involve comparing regional and national projections. Does the regional employment rate (i.e., the fraction of population with a job) follow the national employment rate? Are the regional and national forecasts of per capita income in line with one another? Although differences in the forecasts are expected, much as there have been differences in the past, the two sets of projections should display certain similarities.

Table 7 compares the regional and national projections for three variables: the employment rate, real per capita income, and the consumer price index. Due in large part to demographic factors causing a rise in the labor force participation rate, the employment rates in both Puget Sound and the United States have increased significantly since 1980. Historically, the employment rate has been higher in the region than the nation. In 2000, the regional employment rate exceeded the national employment rate by 12.4 percent. According to the regional forecast, this difference will increase to 17.6 percent in 2040.

With regard to real per capita income, the gap between regional and national per capita income increased from 17.0 percent in 1980 to 24.7 percent in 2000 due in large part to the phenomenal growth of stock option income in the late 1990s. By 2040, the projected difference is 25.5 percent.

Reflecting the fact that prices are primarily set in the national marketplace, the Seattle and U.S. consumer price indices have increased at about the same annual rate since 1960, 4.4 percent and 4.3 percent, respectively. Although there will be substantial year-to-year differences in the future, both price indices are expected to increase at the same pace in the long run, 2.6 percent between 2000 and 2040.

Table 7

SELECTED PUGET SOUND AND U.S. FORECASTS

	1980	2000	2020	2040
EMPLOYMENT-POPULATION RATIO				
Puget Sound	0.430	0.524	0.534	0.562
United States	0.397	0.466	0.458	0.478
PER CAPITA INCOME ($00)				
Puget Sound	22,743	37,163	56,058	85,120
United States	19,438	29,809	44,776	67,831
CONSUMER PRICE INDEX (82-84=0.000)				
Puget Sound	0.827	1.792	2.911	5.061
United States	0.824	1.722	2.786	4.807

4. COMPARISON OF FORECASTS

The current forecast has been extended to 2040, ten years longer than the previous forecast produced in 2002 (Tables 8 and 9). In terms of employment and population growth through 2030, the two forecasts are virtually the same. For example, between 2000 and 2030, both forecasts project a 1.2 percent annual growth rate for employment and a 1.1 percent annual growth rate for population. On the other hand, over the thirty-year period, the current forecast predicts a significantly lower inflation rate, 2.6 percent per year compared to 3.2 percent.

The 2005 and 2002 Puget Sound forecasts are similar because they are based on similar assumptions (exogenous variables): slow but steady national growth, especially with regard to employment (about one percent per year); a cyclical rebound in Boeing employment (about 21,000 new jobs between 2004 and 2009) followed by a long-term decline; an additional 11,000 employees at Microsoft, most of them by 2015; and stable military employment.

There is a big jump in personal income in 2004 followed by a small gain in 2005. This distortion is due to the Microsoft dividend paid out in the fourth quarter of 2004. The dividend amounted to $5.4 billion and accounted for 4.0 percent of Puget Sound personal income in 2004. The current forecast also considers Microsoft stock option income, which has been declining since 1999.

As we noted in the 2002 report, there is little difference between the current projections and the original STEP86 forecasts of employment and population for 2020. The difference amounts to 4.3 percent and 1.6 percent, respectively. Thus, despite the ups and downs of Boeing, the emergence of Microsoft, and the swift rise and fall of the dot-coms and other internet companies, the projections made twenty years ago are still on course for these two important variables.

Table 8

PUGET SOUND AND U.S. FORECASTS

STEP02 Forecasts

	1990	2000	2010	2020	2030
PUGET SOUND					
Employment* (thous.)	1,438.3	1,778.8	2,020.8	2,293.0	2,549.6
Personal income (mils. $96)	72,815	112,266	147,023	206,560	281,102
Consumer price index (82-84=1.000)	1.268	1.792	2.301	3.148	4.544
Population, July 1 (thous.)	2,770.3	3,287.8	3,681.5	4,130.7	4,545.2
UNITED STATES					
Gross Domestic Product (bils. $96)	6,708	9,224	12,287	16,953	22,673
Employment* (mils.)	109.4	131.8	147.5	162.0	176.8
Personal income (bils. $96)	5,728	7,739	10,184	13,871	18,463
Consumer price index (82-84=1.000)	1.308	1.723	2.173	2.952	4.234
Population, July 1 (mils.)	250.3	275.7	300.2	325.3	351.5

*Wage and salary employment including agricultural workers and the military.

Table 9

PUGET SOUND AND U.S. GROWTH RATES

STEP02 Forecasts

Average Annual Percent Change

	1990-00	2000-10	2010-20	2020-30
PUGET SOUND				
Employment* (thous.)	2.1	1.3	1.3	1.1
Personal income (mils. $96)	4.4	2.7	3.5	3.1
Consumer price index (82-84=1.000)	3.5	2.5	3.2	3.7
Population, July 1 (thous.)	1.8	1.1	1.1	1.0
UNITED STATES				
Gross Domestic Product (bils. $96)	3.2	2.9	3.3	3.0
Employment* (mils.)	1.9	1.1	0.9	0.9
Personal income (bils. $96)	3.1	2.8	3.1	2.9
Consumer price index (82-84=1.000)	2.8	2.3	3.1	3.7
Population, July 1 (mils.)	1.0	0.9	0.8	0.8

*Wage and salary employment including agricultural workers and the military.

APPENDIX A

DETAILED ECONOMIC AND DEMOGRAPHIC FORECASTS

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 1. Puget Sound Region

	1970	1971	1972	1973	1974	1975	1976	1977
Wage and salary employment (thous.)	651.4	623.4	642.5	677.9	704.9	719.2	744.6	794.6
Goods producing	176.9	149.6	154.5	170.4	177.4	173.9	173.5	186.9
Natural resources and mining	2.7	2.8	3.0	3.0	3.0	2.8	2.9	3.0
Construction	30.5	27.1	27.6	29.7	29.1	30.6	33.8	40.6
Manufacturing	143.7	119.7	123.9	137.8	145.3	140.5	136.8	143.3
Aerospace products	59.7	39.5	40.3	49.3	53.1	49.3	44.1	45.0
Other durable goods	51.6	48.4	51.7	56.1	59.6	59.5	59.1	63.0
Nondurable goods	32.4	31.8	31.9	32.4	32.7	31.7	33.6	35.3
Service producing	474.5	473.8	488.0	507.5	527.5	545.4	571.2	607.7
Wholesale and retail trade	109.9	106.4	108.7	112.8	115.2	119.7	126.5	134.3
Wholesale trade	NA	NA	NA	NA	NA	NA	NA	NA
Retail trade	NA	NA	NA	NA	NA	NA	NA	NA
Transportation, warehousing, and utilities	33.1	31.9	31.9	33.0	33.0	32.4	34.9	36.0
Transportation and warehousing	NA	NA	NA	NA	NA	NA	NA	NA
Utilities	NA	NA	NA	NA	NA	NA	NA	NA
Information	17.8	17.3	17.2	17.4	17.9	17.9	18.4	19.7
Telecommunications	NA	NA	NA	NA	NA	NA	NA	NA
Other information	NA	NA	NA	NA	NA	NA	NA	NA
Financial activities	41.9	40.9	41.5	43.0	44.2	45.1	46.6	51.0
Professional and business services	27.3	28.5	30.9	34.7	38.3	40.7	44.4	49.8
Other services	107.3	107.5	111.8	119.1	126.7	134.3	143.6	156.5
Food services and drinking places	NA	NA	NA	NA	NA	NA	NA	NA
Educational services	NA	NA	NA	NA	NA	NA	NA	NA
Health services	NA	NA	NA	NA	NA	NA	NA	NA
Other	NA	NA	NA	NA	NA	NA	NA	NA
Government	137.2	141.3	146.1	147.5	152.3	155.2	156.8	160.5
State and local	99.7	104.3	109.2	110.9	113.1	115.0	116.3	119.3
State education	NA	NA	NA	NA	NA	NA	NA	NA
Local education	NA	NA	NA	NA	NA	NA	NA	NA
Other state and local	NA	NA	NA	NA	NA	NA	NA	NA
Federal, civilian	37.6	37.0	36.9	36.6	39.2	40.2	40.5	41.3
Military employment	70.6	60.3	40.8	46.0	51.1	49.8	50.2	48.7
Unemployment rate (%)	9.5	11.6	10.4	7.8	6.6	9.5	8.9	8.5
Personal income (mils. $)	8733.2	8935.6	9464.1	10578.1	12010.7	13640.6	15275.7	17089.4
Personal income (mils. $00)	33027.6	32410.2	33176.1	35154.7	36170.0	37939.2	40249.0	42286.3
Wage and salary disbursements	22427.8	21313.8	21779.8	23207.3	23596.8	24208.3	25345.6	26943.9
Other income	10599.8	11096.3	11396.3	11947.3	12573.3	13730.9	14903.4	15342.4
Per capita income ($00)	17056	16734	17386	18374	18586	19108	20051	20701
Consumer price index (1982-84=1.000)	0.374	0.381	0.393	0.418	0.464	0.511	0.539	0.582
Housing permits (thous.)	14.6	12.6	10.7	12.3	13.9	18.8	25.4	33.4
Population (thous.)	1936.5	1936.8	1908.3	1913.2	1945.9	1985.4	2007.2	2042.6
Population, 0-4	161.0	158.7	152.7	148.7	146.1	143.7	139.8	140.0
Population, 5-19	559.3	550.5	533.3	524.8	523.7	524.4	519.2	514.3
Population, 20-64	1049.7	1059.5	1054.8	1069.4	1100.2	1134.8	1161.0	1194.9
Population, 65+	166.5	168.1	167.5	170.4	175.9	182.5	187.2	193.4
Group-quarter population	71.5	70.1	67.0	65.1	65.2	65.2	64.1	63.4
Household population	1865.0	1866.7	1841.4	1848.1	1880.8	1920.2	1943.1	1979.2
Single-family	1594.6	1587.8	1557.6	1555.0	1573.9	1598.7	1609.2	1630.3
Multi-family	270.4	278.9	283.8	293.1	306.9	321.5	334.0	348.9
Households (thous.)	631.0	640.2	640.4	651.7	672.5	695.8	713.8	737.2
Single-family	486.3	490.4	487.3	493.0	505.7	520.6	531.1	545.5
Multi-family	144.7	149.8	153.1	158.6	166.8	175.3	182.8	191.7
Household size (number)	2.956	2.916	2.875	2.836	2.797	2.760	2.722	2.685
Single-family	3.279	3.238	3.196	3.154	3.113	3.071	3.030	2.989
Multi-family	1.869	1.862	1.854	1.848	1.840	1.834	1.827	1.820
Annual growth (% change)								
Employment	NA	-4.3	3.1	5.5	4.0	2.0	3.5	6.7
Personal income (mils. $)	NA	2.3	5.9	11.8	13.5	13.6	12.0	11.9
Personal income (mils. $00)	NA	-1.9	2.4	6.0	2.9	4.9	6.1	5.1
Consumer price index	NA	1.8	3.2	6.4	11.1	10.1	5.6	8.0
Population	NA	0.0	-1.5	0.3	1.7	2.0	1.1	1.8
Households	NA	1.5	0.0	1.8	3.2	3.5	2.6	3.3

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 1. Puget Sound Region

	1978	1979	1980	1981	1982	1983	1984	1985
Wage and salary employment (thous.)	874.8	944.9	970.5	971.7	954.0	963.5	1017.3	1059.4
Goods producing	218.4	246.3	244.5	237.5	224.6	212.6	223.9	234.6
Natural resources and mining	3.2	3.1	2.8	2.7	2.6	2.8	2.8	2.6
Construction	49.7	56.5	50.3	45.5	41.4	43.3	49.3	52.0
Manufacturing	165.5	186.7	191.4	189.2	180.6	166.5	171.8	180.0
Aerospace products	58.6	70.8	77.7	77.1	73.4	63.7	65.2	74.4
Other durable goods	70.1	77.8	76.4	74.9	71.1	68.1	70.3	68.8
Nondurable goods	36.8	38.2	37.3	37.2	36.1	34.7	36.2	36.7
Service producing	656.4	698.6	726.0	734.2	729.4	750.9	793.4	824.8
Wholesale and retail trade	145.0	153.7	154.7	157.6	157.5	160.4	170.1	175.6
Wholesale trade	NA	NA	NA	NA	NA	NA	NA	NA
Retail trade	NA	NA	NA	NA	NA	NA	NA	NA
Transportation, warehousing, and utilities	37.9	40.2	40.8	39.6	39.4	40.1	43.0	44.7
Transportation and warehousing	NA	NA	NA	NA	NA	NA	NA	NA
Utilities	NA	NA	NA	NA	NA	NA	NA	NA
Information	21.5	24.6	26.3	27.2	27.9	27.7	27.4	28.5
Telecommunications	NA	NA	NA	NA	NA	NA	NA	NA
Other information	NA	NA	NA	NA	NA	NA	NA	NA
Financial activities	56.8	61.3	63.9	64.7	64.3	65.5	68.5	71.3
Professional and business services	57.2	66.1	71.5	73.5	65.6	69.7	79.4	86.8
Other services	171.2	182.5	190.6	196.1	202.6	212.7	224.0	232.8
Food services and drinking places	NA	NA	NA	NA	NA	NA	NA	NA
Educational services	NA	NA	NA	NA	NA	NA	NA	NA
Health services	NA	NA	NA	NA	NA	NA	NA	NA
Other	NA	NA	NA	NA	NA	NA	NA	NA
Government	166.8	170.2	178.1	175.5	172.1	174.8	181.0	185.2
State and local	124.6	127.1	133.4	131.3	127.9	129.5	134.0	137.2
State education	NA	NA	NA	NA	NA	NA	NA	NA
Local education	NA	NA	NA	NA	NA	NA	NA	NA
Other state and local	NA	NA	NA	NA	NA	NA	NA	NA
Federal, civilian	42.2	43.1	44.7	44.2	44.2	45.3	47.0	48.0
Military employment	48.4	46.6	49.8	51.1	53.1	53.7	55.1	56.7
Unemployment rate (%)	6.2	5.7	6.6	8.2	10.6	10.0	8.1	6.8
Personal income (mils. $)	20005.8	23304.2	26707.5	30044.0	32199.6	33894.2	36794.0	39762.4
Personal income (mils. $00)	46245.1	49508.4	51271.5	52960.9	53798.6	54293.3	56786.0	59402.8
Wage and salary disbursements	29839.7	32439.8	33001.9	33527.1	33310.6	32885.8	33734.7	35275.9
Other income	16405.4	17068.6	18269.6	19433.8	20488.1	21407.5	23051.3	24127.0
Per capita income ($00)	21979	22784	22742	22960	23060	23117	23881	24529
Consumer price index (1982-84=1.000)	0.640	0.709	0.827	0.916	0.978	0.993	1.030	1.055
Housing permits (thous.)	35.3	30.1	22.4	15.7	11.7	18.7	21.4	25.5
Population (thous.)	2103.8	2172.9	2254.4	2306.6	2333.0	2348.6	2377.8	2421.6
Population, 0-4	144.1	149.9	157.5	164.3	168.7	171.8	174.8	178.5
Population, 5-19	513.9	513.3	517.0	516.5	510.7	502.8	499.5	500.3
Population, 20-64	1244.0	1298.7	1358.9	1397.7	1420.5	1436.9	1461.4	1493.8
Population, 65+	201.8	211.0	221.0	228.1	233.1	237.1	242.1	248.9
Group-quarter population	63.3	63.2	63.3	63.8	63.7	63.2	63.0	63.1
Household population	2040.5	2109.7	2191.1	2242.8	2269.3	2285.4	2314.8	2358.5
Single-family	1672.1	1719.9	1776.7	1809.8	1822.3	1826.3	1840.7	1865.9
Multi-family	368.3	389.8	414.4	432.9	447.0	459.2	474.1	492.5
Households (thous.)	770.3	807.3	850.1	872.8	885.9	895.0	909.1	929.1
Single-family	567.2	591.6	619.9	633.4	639.7	643.1	650.2	661.2
Multi-family	203.1	215.6	230.2	239.4	246.2	251.8	258.9	268.0
Household size (number)	2.649	2.613	2.577	2.569	2.561	2.554	2.546	2.538
Single-family	2.948	2.907	2.866	2.857	2.849	2.840	2.831	2.822
Multi-family	1.814	1.807	1.800	1.808	1.816	1.823	1.831	1.838
Annual growth (% change)								
Employment	10.1	8.0	2.7	0.1	-1.8	1.0	5.6	4.1
Personal income (mils. $)	17.1	16.5	14.6	12.5	7.2	5.3	8.6	8.1
Personal income (mils. $00)	9.4	7.1	3.6	3.3	1.6	0.9	4.6	4.6
Consumer price index	9.9	10.7	16.8	10.7	6.7	1.5	3.7	2.5
Population	3.0	3.3	3.8	2.3	1.1	0.7	1.2	1.8
Households	4.5	4.8	5.3	2.7	1.5	1.0	1.6	2.2

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 1. Puget Sound Region

	1986	1987	1988	1989	1990	1991	1992	1993
Wage and salary employment (thous.)	1105.6	1163.4	1229.1	1303.4	1366.5	1375.7	1394.7	1406.1
Goods producing	247.4	260.4	279.9	305.6	313.4	304.7	302.2	290.1
Natural resources and mining	2.8	2.8	2.8	2.9	2.5	2.3	2.1	2.1
Construction	56.5	60.1	64.7	70.9	77.6	74.3	76.6	73.9
Manufacturing	188.1	197.5	212.3	231.9	233.4	228.1	223.6	214.1
Aerospace products	82.9	90.6	98.2	110.6	112.3	113.0	109.6	100.4
Other durable goods	67.9	69.1	73.6	78.7	78.3	71.9	69.5	68.4
Nondurable goods	37.2	37.8	40.5	42.6	42.8	43.2	44.5	45.3
Service producing	858.2	903.0	949.3	997.8	1053.1	1071.0	1092.4	1116.1
Wholesale and retail trade	183.3	192.2	202.2	212.2	221.2	219.1	220.6	223.0
Wholesale trade	NA	NA	NA	NA	69.7	69.0	69.1	70.8
Retail trade	NA	NA	NA	NA	151.5	150.1	151.5	152.2
Transportation, warehousing, and utilities	47.3	49.3	51.0	54.0	57.5	59.6	58.5	57.4
Transportation and warehousing	NA	NA	NA	NA	53.7	55.5	55.2	54.6
Utilities	NA	NA	NA	NA	3.9	4.1	3.2	2.9
Information	29.6	31.7	31.1	34.0	36.4	37.1	39.2	42.1
Telecommunications	NA	NA	NA	NA	14.6	14.4	14.2	13.9
Other information	NA	NA	NA	NA	21.8	22.7	25.0	28.2
Financial activities	75.7	77.2	78.2	80.3	82.0	83.0	83.3	86.1
Professional and business services	93.0	108.7	117.3	128.6	143.8	144.0	146.4	151.7
Other services	241.0	249.8	268.2	280.3	293.6	302.2	312.1	320.7
Food services and drinking places	NA	NA	NA	NA	84.7	84.8	86.9	92.1
Educational services	NA	NA	NA	NA	15.4	16.3	17.2	17.4
Health services	NA	NA	NA	NA	112.3	119.2	124.5	128.5
Other	NA	NA	NA	NA	81.2	81.9	83.5	82.7
Government	188.3	194.1	201.3	208.4	218.6	226.0	232.3	235.0
State and local	141.0	145.8	150.9	156.1	165.2	173.1	179.4	183.3
State education	NA	NA	NA	NA	32.0	34.2	35.6	36.1
Local education	NA	NA	NA	NA	51.7	53.6	53.9	56.2
Other state and local	NA	NA	NA	NA	81.4	85.3	89.9	91.0
Federal, civilian	47.2	48.3	50.4	52.4	53.4	52.9	52.9	51.7
Military employment	55.4	56.8	59.3	57.3	56.8	55.7	55.2	53.5
Unemployment rate (%)	6.8	6.4	5.1	4.9	3.8	5.3	6.7	6.7
Personal income (mils. $)	42663.6	45733.2	50167.8	55581.6	61888.4	65616.4	70552.6	72997.1
Personal income (mils. $00)	62223.0	64459.0	68015.1	72204.8	76870.0	78655.6	82206.3	83134.9
Wage and salary disbursements	37342.7	39031.5	41086.0	43289.7	45941.4	47059.9	49911.1	49463.6
Other income	24880.3	25427.5	26929.1	28915.2	30928.6	31595.7	32295.2	33671.2
Per capita income ($00)	25239	25517	26105	26984	27743	27789	28342	28165
Consumer price index (1982-84=1.000)	1.066	1.092	1.129	1.182	1.268	1.341	1.390	1.429
Housing permits (thous.)	27.0	28.5	32.8	34.8	31.5	17.2	21.3	20.6
Population (thous.)	2465.3	2526.0	2605.3	2675.7	2770.7	2830.4	2900.5	2951.6
Population, 0-4	182.0	186.7	193.5	201.0	210.0	214.7	219.6	221.7
Population, 5-19	502.2	509.5	522.4	533.6	551.1	559.6	573.4	586.9
Population, 20-64	1525.2	1565.1	1614.6	1656.8	1714.0	1754.2	1798.3	1828.6
Population, 65+	255.9	264.8	274.8	284.2	295.6	302.0	309.2	314.4
Group-quarter population	63.1	63.6	64.5	65.0	66.1	67.4	68.9	69.8
Household population	2402.2	2462.4	2540.8	2610.7	2704.6	2763.0	2831.6	2881.8
Single-family	1890.9	1928.7	1980.7	2024.8	2087.6	2131.2	2182.6	2219.2
Multi-family	511.3	533.7	560.2	585.9	617.0	631.8	649.0	662.7
Households (thous.)	949.2	975.7	1009.3	1039.9	1079.8	1103.5	1131.2	1151.8
Single-family	672.1	687.6	708.3	726.3	751.0	767.1	786.0	799.5
Multi-family	277.1	288.1	301.0	313.6	328.8	336.4	345.3	352.3
Household size (number)	2.531	2.524	2.517	2.511	2.505	2.504	2.503	2.502
Single-family	2.813	2.805	2.796	2.788	2.780	2.778	2.777	2.776
Multi-family	1.845	1.853	1.861	1.868	1.876	1.878	1.880	1.881
Annual growth (% change)								
Employment	4.4	5.2	5.6	6.0	4.8	0.7	1.4	0.8
Personal income (mils. $)	7.3	7.2	9.7	10.8	11.3	6.0	7.5	3.5
Personal income (mils. $00)	4.7	3.6	5.5	6.2	6.5	2.3	4.5	1.1
Consumer price index	1.0	2.4	3.4	4.7	7.3	5.8	3.7	2.8
Population	1.8	2.5	3.1	2.7	3.6	2.2	2.5	1.8
Households	2.2	2.8	3.4	3.0	3.8	2.2	2.5	1.8

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 1. Puget Sound Region

	1994	1995	1996	1997	1998	1999	2000	2001
Wage and salary employment (thous.)	1426.7	1453.7	1503.8	1581.1	1646.0	1685.0	1721.9	1704.9
Goods producing	279.3	276.4	290.1	321.1	338.3	330.0	322.2	312.9
Natural resources and mining	2.1	2.2	2.2	2.4	2.5	2.7	2.7	2.6
Construction	73.5	74.0	76.6	83.2	89.4	97.2	104.6	103.3
Manufacturing	203.7	200.2	211.3	235.6	246.4	230.1	214.9	207.0
Aerospace products	90.0	79.4	85.3	103.9	110.3	96.9	84.5	85.5
Other durable goods	68.2	70.9	74.7	81.0	85.6	84.9	83.3	78.1
Nondurable goods	45.6	49.9	51.3	50.7	50.5	48.3	47.1	43.4
Service producing	1147.3	1177.3	1213.7	1259.9	1307.6	1355.0	1399.7	1392.0
Wholesale and retail trade	225.5	233.4	240.7	248.1	257.0	266.1	273.0	268.8
Wholesale trade	70.6	73.4	76.3	77.9	79.3	81.0	83.2	82.2
Retail trade	154.9	160.0	164.3	170.2	177.7	185.1	189.8	186.6
Transportation, warehousing, and utilities	58.1	59.0	60.3	61.0	63.7	64.8	65.1	63.7
Transportation and warehousing	55.3	56.4	57.9	58.7	61.4	62.4	62.7	60.1
Utilities	2.8	2.6	2.4	2.3	2.3	2.3	2.3	3.6
Information	44.9	50.3	54.4	57.9	61.6	69.4	80.9	82.1
Telecommunications	14.5	16.5	17.1	18.1	18.9	21.5	24.0	24.8
Other information	30.4	33.9	37.3	39.9	42.7	47.8	56.9	57.3
Financial activities	87.5	85.3	87.8	90.6	97.0	102.9	102.8	104.5
Professional and business services	162.2	167.9	177.4	193.3	203.5	213.7	226.6	215.1
Other services	331.2	339.8	348.5	361.5	372.1	380.3	389.0	387.9
Food services and drinking places	94.4	97.5	99.9	103.4	105.2	108.3	108.5	108.5
Educational services	18.2	18.9	19.9	21.8	23.0	24.2	26.0	23.5
Health services	132.1	133.7	136.8	141.1	146.1	145.9	149.3	151.8
Other	86.5	89.8	91.9	95.2	97.8	101.9	105.3	104.1
Government	237.9	241.5	244.6	247.5	252.8	257.9	262.4	269.9
State and local	187.1	191.9	196.1	199.7	204.7	209.8	213.5	222.3
State education	36.7	37.7	38.1	39.2	40.3	41.4	42.4	44.1
Local education	57.6	59.5	61.0	61.6	63.9	65.2	66.7	65.2
Other state and local	92.8	94.7	97.0	98.9	100.6	103.2	104.4	113.0
Federal, civilian	50.9	49.6	48.5	47.8	48.0	48.1	48.9	47.6
Military employment	52.9	53.7	55.2	55.9	52.7	51.5	51.6	52.2
Unemployment rate (%)	5.9	5.6	5.3	3.7	3.4	3.7	4.1	5.4
Personal income (mils. $)	76689.2	80963.5	87188.4	94555.9	104849.0	114374.8	122055.9	124172.9
Personal income (mils. $00)	85537.2	88412.1	93198.6	99400.5	109238.7	117219.1	122058.0	121632.5
Wage and salary disbursements	50249.9	52255.8	55845.2	61810.1	69175.4	76185.7	78562.7	76477.8
Other income	35287.3	36156.4	37353.4	37590.4	40063.3	41033.4	43495.2	45154.7
Per capita income ($00)	28620	29102	30225	31578	34052	36076	37162	36535
Consumer price index (1982-84=1.000)	1.478	1.522	1.575	1.630	1.678	1.728	1.792	1.858
Housing permits (thous.)	22.1	20.0	22.6	23.8	27.6	26.0	23.8	22.2
Population (thous.)	2988.6	3038.0	3083.3	3147.5	3207.7	3249.1	3284.4	3329.3
Population, 0-4	221.2	219.5	216.6	215.4	215.0	214.2	214.4	217.3
Population, 5-19	599.7	615.9	632.0	650.2	666.6	677.0	682.8	686.7
Population, 20-64	1850.5	1881.1	1909.9	1953.3	1994.6	2025.6	2053.4	2087.8
Population, 65+	317.2	321.5	324.7	328.6	331.6	332.3	333.9	337.5
Group-quarter population	70.4	71.4	72.2	73.3	74.4	75.1	75.5	76.7
Household population	2918.2	2966.6	3011.1	3074.2	3133.3	3174.0	3208.9	3252.6
Single-family	2245.1	2280.7	2312.7	2358.9	2401.9	2430.9	2455.9	2487.4
Multi-family	673.0	685.9	698.4	715.3	731.4	743.1	753.0	765.2
Households (thous.)	1166.9	1186.7	1205.1	1230.9	1255.1	1271.9	1286.3	1304.6
Single-family	809.3	822.6	834.6	851.6	867.6	878.5	888.0	899.8
Multi-family	357.6	364.1	370.6	379.2	387.5	393.4	398.3	404.8
Household size (number)	2.501	2.500	2.499	2.498	2.497	2.495	2.495	2.493
Single-family	2.774	2.773	2.771	2.770	2.769	2.767	2.766	2.764
Multi-family	1.882	1.884	1.885	1.886	1.888	1.889	1.890	1.890
Annual growth (% change)								
Employment	1.5	1.9	3.4	5.1	4.1	2.4	2.2	-1.0
Personal income (mils. $)	5.1	5.6	7.7	8.5	10.9	9.1	6.7	1.7
Personal income (mils. $00)	2.9	3.4	5.4	6.7	9.9	7.3	4.1	-0.3
Consumer price index	3.4	3.0	3.4	3.5	2.9	3.0	3.7	3.7
Population	1.3	1.7	1.5	2.1	1.9	1.3	1.1	1.4
Households	1.3	1.7	1.6	2.1	2.0	1.3	1.1	1.4

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 1. Puget Sound Region

	2002	2003	2004	2005	2006	2007	2008	2009
Wage and salary employment (thous.)	1659.6	1652.1	1672.5	1720.1	1760.8	1802.3	1846.0	1883.9
Goods producing	285.9	267.6	268.6	278.8	287.2	298.0	309.5	315.3
Natural resources and mining	2.3	2.0	1.8	1.8	1.7	1.7	1.7	1.7
Construction	97.9	96.0	100.5	105.6	109.2	113.2	117.6	122.5
Manufacturing	185.7	169.6	166.2	171.5	176.2	183.1	190.2	191.2
Aerospace products	74.6	64.5	60.4	64.3	69.1	75.5	81.7	81.8
Other durable goods	70.8	66.8	67.8	69.2	69.1	69.4	70.2	70.9
Nondurable goods	40.3	38.3	38.0	38.0	38.0	38.1	38.4	38.5
Service producing	1373.7	1384.5	1404.0	1441.3	1473.6	1504.4	1536.5	1568.6
Wholesale and retail trade	260.3	259.1	261.9	269.2	272.7	276.1	279.9	283.5
Wholesale trade	79.2	78.3	79.9	81.8	82.6	83.5	84.4	85.3
Retail trade	181.1	180.8	181.9	187.5	190.0	192.7	195.5	198.2
Transportation, warehousing, and utilities	60.2	59.9	60.5	62.7	63.7	64.6	65.8	66.9
Transportation and warehousing	57.8	58.0	58.8	61.5	62.4	63.3	64.5	65.5
Utilities	2.3	1.9	1.7	1.3	1.3	1.3	1.3	1.3
Information	78.0	76.6	77.3	79.0	82.0	84.7	87.3	89.5
Telecommunications	23.4	22.1	21.2	20.4	20.8	21.3	21.7	22.2
Other information	54.6	54.5	56.1	58.7	61.1	63.4	65.6	67.3
Financial activities	103.8	107.2	106.8	107.8	109.7	111.3	113.0	115.0
Professional and business services	205.0	204.7	210.9	223.8	234.0	242.5	251.4	260.6
Other services	390.8	398.3	406.4	416.4	426.7	436.7	447.2	457.3
Food services and drinking places	106.6	108.4	110.5	112.7	115.0	117.4	119.8	122.2
Educational services	24.0	24.7	25.5	25.8	26.7	27.6	28.6	29.5
Health services	156.1	158.2	161.0	166.6	171.3	175.8	180.5	185.1
Other	104.1	107.0	109.5	111.2	113.6	115.9	118.3	120.6
Government	275.7	278.7	280.2	282.3	285.0	288.3	291.9	295.8
State and local	227.1	229.2	230.9	232.9	235.4	238.5	241.9	245.6
State education	45.1	45.9	46.4	46.5	47.0	47.7	48.5	49.4
Local education	67.0	67.3	67.6	68.1	68.4	68.8	69.3	69.7
Other state and local	115.0	116.1	116.8	118.2	120.0	121.9	124.1	126.5
Federal, civilian	48.7	49.5	49.3	49.4	49.6	49.8	50.0	50.2
Military employment	53.7	56.1	54.5	54.2	54.2	54.2	54.2	54.2
Unemployment rate (%)	6.9	7.2	5.6	5.0	5.0	4.9	4.8	4.7
Personal income (mils. $)	127291.6	130273.1	141752.7	145809.7	154017.1	163298.8	174163.8	185447.7
Personal income (mils. $00)	122930.3	123474.4	131434.3	133182.1	138436.3	143793.9	150001.9	156190.3
Wage and salary disbursements	75081.8	74903.9	75967.4	80381.3	83500.7	86768.6	90319.9	93662.8
Other income	47848.6	48570.5	55466.9	52800.9	54935.6	57025.4	59682.0	62527.5
Per capita income ($00)	36582	36511	38584	38727	39745	40705	41833	42874
Consumer price index (1982-84=1.000)	1.894	1.925	1.947	1.982	2.011	2.052	2.098	2.148
Housing permits (thous.)	22.3	22.0	24.8	25.5	25.5	26.4	26.8	27.8
Population (thous.)	3360.3	3381.9	3406.0	3438.9	3483.1	3532.5	3585.6	3642.9
Population, 0-4	220.2	222.9	225.7	228.9	231.5	234.8	238.5	242.5
Population, 5-19	687.4	685.7	684.6	685.2	689.2	694.2	699.5	704.7
Population, 20-64	2112.9	2131.4	2150.9	2175.7	2206.9	2239.7	2273.8	2311.3
Population, 65+	339.8	341.9	344.7	349.1	355.4	363.8	373.9	384.3
Group-quarter population	77.5	78.0	78.5	79.0	80.0	81.1	82.4	83.7
Household population	3282.9	3303.9	3327.4	3359.9	3403.0	3451.4	3503.3	3559.2
Single-family	2509.0	2522.9	2538.1	2560.3	2590.0	2623.0	2658.0	2695.4
Multi-family	773.9	781.0	789.3	799.6	813.0	828.4	845.3	863.7
Households (thous.)	1317.6	1327.0	1337.7	1352.0	1371.4	1393.7	1418.1	1444.8
Single-family	908.1	913.7	919.7	928.4	940.4	954.3	969.5	986.0
Multi-family	409.5	413.3	418.0	423.6	430.9	439.4	448.6	458.8
Household size (number)	2.492	2.490	2.487	2.485	2.482	2.476	2.470	2.464
Single-family	2.763	2.761	2.760	2.758	2.754	2.748	2.742	2.734
Multi-family	1.890	1.890	1.888	1.888	1.887	1.885	1.884	1.883
Annual growth (% change)								
Employment	-2.7	-0.4	1.2	2.8	2.4	2.4	2.4	2.1
Personal income (mils. $)	2.5	2.3	8.8	2.9	5.6	6.0	6.7	6.5
Personal income (mils. $00)	1.1	0.4	6.4	1.3	3.9	3.9	4.3	4.1
Consumer price index	1.9	1.7	1.1	1.8	1.5	2.0	2.2	2.4
Population	0.9	0.6	0.7	1.0	1.3	1.4	1.5	1.6
Households	1.0	0.7	0.8	1.1	1.4	1.6	1.8	1.9

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 1. Puget Sound Region

	2010	2011	2012	2013	2014	2015	2016	2017
Wage and salary employment (thous.)	1915.5	1941.8	1965.0	1989.2	2018.9	2053.9	2089.1	2124.6
Goods producing	316.9	316.6	315.9	316.1	318.6	322.9	326.7	331.5
Natural resources and mining	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.5
Construction	126.8	130.0	132.3	134.6	138.0	142.5	147.7	151.9
Manufacturing	188.4	185.0	182.0	180.0	179.1	178.9	177.5	178.1
Aerospace products	78.3	74.6	71.6	69.7	68.6	68.1	66.4	66.8
Other durable goods	71.5	71.7	71.7	71.7	71.8	72.2	72.4	72.5
Nondurable goods	38.6	38.7	38.7	38.6	38.6	38.7	38.7	38.7
Service producing	1598.6	1625.1	1649.1	1673.1	1700.3	1731.0	1762.4	1793.1
Wholesale and retail trade	286.6	288.8	290.4	292.1	294.7	297.9	301.3	304.4
Wholesale trade	86.1	86.7	87.1	87.5	88.2	89.0	89.8	90.6
Retail trade	200.5	202.1	203.3	204.6	206.5	209.0	211.5	213.8
Transportation, warehousing, and utilities	68.0	68.8	69.6	70.3	71.3	72.3	73.3	74.3
Transportation and warehousing	66.6	67.5	68.2	68.9	69.9	70.9	71.9	72.8
Utilities	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Information	91.7	93.7	95.6	97.5	99.6	101.7	103.9	106.0
Telecommunications	22.7	23.1	23.5	24.0	24.4	24.9	25.4	25.9
Other information	69.0	70.6	72.1	73.6	75.1	76.8	78.5	80.1
Financial activities	116.7	118.4	119.8	121.1	122.4	124.0	125.8	127.5
Professional and business services	269.2	276.9	284.0	291.1	299.5	309.6	319.9	330.0
Other services	467.1	476.3	485.0	493.8	503.1	513.0	522.9	532.8
Food services and drinking places	124.4	126.5	128.5	130.5	132.7	135.0	137.3	139.6
Educational services	30.4	31.3	32.1	33.0	33.9	34.9	35.9	36.9
Health services	189.4	193.5	197.4	201.3	205.4	209.8	214.1	218.5
Other	122.8	124.9	127.0	129.0	131.1	133.3	135.6	137.8
Government	299.3	302.2	304.7	307.2	309.7	312.4	315.3	318.2
State and local	248.9	251.6	253.9	256.2	258.5	261.0	263.7	266.4
State education	50.3	51.2	51.9	52.6	53.2	53.9	54.5	55.1
Local education	70.1	70.3	70.5	70.8	71.2	71.7	72.3	72.9
Other state and local	128.5	130.1	131.5	132.8	134.1	135.5	137.0	138.3
Federal, civilian	50.4	50.6	50.8	51.0	51.2	51.4	51.6	51.8
Military employment	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2
Unemployment rate (%)	4.6	4.6	4.6	4.6	4.5	4.4	4.3	4.3
Personal income (mils. $)	197720.7	210565.9	223882.5	237943.0	253425.8	270399.8	288240.1	307142.7
Personal income (mils. $00)	162607.7	168801.8	174768.5	180918.6	187723.6	195103.4	202521.8	210060.7
Wage and salary disbursements	96841.5	99796.4	102554.9	105334.7	108461.6	112022.1	115690.7	119515.5
Other income	65766.2	69005.5	72213.5	75583.9	79262.0	83081.3	86831.2	90545.2
Per capita income ($00)	43999	45104	46153	47237	48455	49764	51022	52281
Consumer price index (1982-84=1.000)	2.204	2.265	2.330	2.395	2.461	2.529	2.600	2.674
Housing permits (thous.)	27.5	26.5	25.6	25.2	25.5	26.3	27.0	26.9
Population (thous.)	3695.6	3742.4	3786.7	3829.9	3874.1	3920.4	3969.2	4017.8
Population, 0-4	246.4	249.8	253.0	255.9	258.7	261.4	264.0	266.4
Population, 5-19	707.9	710.2	713.7	718.2	724.2	731.7	740.6	750.7
Population, 20-64	2347.2	2377.1	2399.7	2420.4	2440.8	2461.1	2482.2	2501.3
Population, 65+	394.1	405.3	420.3	435.4	450.4	466.3	482.4	499.3
Group-quarter population	84.9	86.0	87.0	88.0	89.0	90.1	91.2	92.3
Household population	3610.7	3656.4	3699.7	3742.0	3785.1	3830.4	3878.0	3925.5
Single-family	2729.0	2757.8	2784.2	2809.5	2835.2	2862.1	2890.4	2918.3
Multi-family	881.7	898.7	915.5	932.4	950.0	968.3	987.6	1007.2
Households (thous.)	1470.1	1493.4	1515.9	1538.3	1561.3	1585.4	1610.6	1636.0
Single-family	1001.3	1015.1	1028.3	1041.2	1054.4	1068.1	1082.5	1096.9
Multi-family	468.8	478.2	487.6	497.1	507.0	517.3	528.1	539.1
Household size (number)	2.456	2.448	2.441	2.432	2.424	2.416	2.408	2.400
Single-family	2.725	2.717	2.708	2.698	2.689	2.680	2.670	2.661
Multi-family	1.881	1.879	1.877	1.876	1.874	1.872	1.870	1.868
Annual growth (% change)								
Employment	1.7	1.4	1.2	1.2	1.5	1.7	1.7	1.7
Personal income (mils. $)	6.6	6.5	6.3	6.3	6.5	6.7	6.6	6.6
Personal income (mils. $00)	4.1	3.8	3.5	3.5	3.8	3.9	3.8	3.7
Consumer price index	2.6	2.8	2.8	2.8	2.8	2.8	2.8	2.9
Population	1.4	1.3	1.2	1.1	1.2	1.2	1.2	1.2
Households	1.8	1.6	1.5	1.5	1.5	1.5	1.6	1.6

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 1. Puget Sound Region

	2018	2019	2020	2021	2022	2023	2024	2025
Wage and salary employment (thous.)	2158.7	2189.0	2216.9	2242.9	2268.9	2294.9	2321.6	2350.3
Goods producing	335.5	337.4	338.6	339.4	340.3	341.4	342.7	345.0
Natural resources and mining	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.3
Construction	155.5	158.4	160.8	162.9	165.0	167.4	170.1	173.7
Manufacturing	178.5	177.5	176.4	175.2	173.9	172.6	171.3	170.0
Aerospace products	67.1	66.0	64.9	63.8	62.7	61.6	60.5	59.4
Other durable goods	72.7	72.7	72.8	72.7	72.6	72.5	72.4	72.3
Nondurable goods	38.8	38.7	38.7	38.6	38.6	38.5	38.4	38.4
Service producing	1823.3	1851.6	1878.3	1903.5	1928.6	1953.6	1978.8	2005.3
Wholesale and retail trade	307.2	309.5	311.5	313.2	315.0	316.9	318.9	321.2
Wholesale trade	91.3	91.9	92.4	92.8	93.3	93.8	94.3	94.9
Retail trade	215.9	217.7	219.1	220.4	221.7	223.1	224.6	226.3
Transportation, warehousing, and utilities	75.1	75.9	76.6	77.2	77.9	78.5	79.1	79.7
Transportation and warehousing	73.7	74.4	75.2	75.8	76.4	77.0	77.6	78.3
Utilities	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Information	108.0	110.1	112.2	114.3	116.4	118.6	120.8	123.1
Telecommunications	26.4	26.8	27.3	27.7	28.2	28.7	29.1	29.6
Other information	81.7	83.3	84.9	86.6	88.3	90.0	91.7	93.5
Financial activities	128.9	130.1	131.1	132.0	132.8	133.7	134.5	135.4
Professional and business services	340.5	350.6	360.4	369.8	379.2	388.8	398.5	408.6
Other services	542.7	552.2	561.3	570.0	578.6	587.1	595.5	604.0
Food services and drinking places	141.8	144.0	146.0	148.0	149.9	151.8	153.7	155.6
Educational services	37.9	38.9	39.9	40.8	41.8	42.8	43.7	44.7
Health services	222.9	227.1	231.1	234.9	238.6	242.3	245.9	249.5
Other	140.0	142.2	144.3	146.3	148.3	150.2	152.2	154.2
Government	320.8	323.2	325.1	326.9	328.5	330.1	331.6	333.3
State and local	268.8	271.0	272.7	274.3	275.7	277.1	278.4	279.8
State education	55.8	56.3	56.8	57.3	57.7	58.1	58.5	58.9
Local education	73.6	74.2	74.8	75.3	75.8	76.2	76.6	77.1
Other state and local	139.5	140.4	141.0	141.6	142.2	142.7	143.3	143.9
Federal, civilian	52.0	52.2	52.4	52.6	52.8	53.0	53.2	53.4
Military employment	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2
Unemployment rate (%)	4.3	4.3	4.3	4.3	4.3	4.3	4.4	4.4
Personal income (mils. $)	327081.8	347732.3	369194.8	391437.8	414980.9	439762.8	466010.9	494193.2
Personal income (mils. $00)	217640.8	225110.9	232584.9	239958.1	247526.8	255201.3	263076.6	271409.6
Wage and salary disbursements	123374.4	127113.7	130814.6	134484.6	138205.1	141995.3	145881.9	149994.6
Other income	94266.5	97997.2	101770.3	105473.5	109321.6	113206.0	117194.8	121415.1
Per capita income ($00)	53543	54789	56058	57302	58584	59877	61190	62571
Consumer price index (1982-84=1.000)	2.752	2.831	2.911	2.993	3.076	3.161	3.248	3.337
Housing permits (thous.)	26.5	25.8	24.9	24.1	23.7	23.3	23.3	23.8
Population (thous.)	4064.7	4108.7	4149.0	4187.5	4225.1	4262.1	4299.3	4337.5
Population, 0-4	268.7	270.7	272.4	274.0	275.7	277.3	279.0	280.8
Population, 5-19	761.2	771.1	780.0	786.9	793.8	800.6	807.2	814.1
Population, 20-64	2518.1	2532.2	2543.4	2555.3	2565.9	2575.9	2586.3	2596.9
Population, 65+	516.8	534.7	553.2	571.3	589.7	608.3	626.7	645.8
Group-quarter population	93.4	94.4	95.3	96.2	97.1	97.9	98.8	99.6
Household population	3971.3	4014.3	4053.6	4091.3	4128.1	4164.2	4200.5	4237.9
Single-family	2944.8	2968.8	2990.0	3009.8	3028.6	3046.9	3065.1	3084.0
Multi-family	1026.5	1045.4	1063.6	1081.5	1099.4	1117.3	1135.4	1153.9
Households (thous.)	1660.8	1684.5	1706.9	1728.8	1750.3	1771.7	1793.3	1815.5
Single-family	1110.8	1123.9	1135.9	1147.6	1158.9	1170.1	1181.3	1192.9
Multi-family	550.0	560.7	571.0	581.2	591.4	601.6	612.0	622.6
Household size (number)	2.391	2.383	2.375	2.367	2.358	2.350	2.342	2.334
Single-family	2.651	2.642	2.632	2.623	2.613	2.604	2.595	2.585
Multi-family	1.866	1.865	1.863	1.861	1.859	1.857	1.855	1.853
Annual growth (% change)								
Employment	1.6	1.4	1.3	1.2	1.2	1.1	1.2	1.2
Personal income (mils. $)	6.5	6.3	6.2	6.0	6.0	6.0	6.0	6.0
Personal income (mils. $00)	3.6	3.4	3.3	3.2	3.2	3.1	3.1	3.2
Consumer price index	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.7
Population	1.2	1.1	1.0	0.9	0.9	0.9	0.9	0.9
Households	1.5	1.4	1.3	1.3	1.2	1.2	1.2	1.2

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 1. Puget Sound Region

	2026	2027	2028	2029	2030	2031	2032	2033
Wage and salary employment (thous.)	2381.0	2412.0	2441.0	2469.1	2498.2	2528.5	2557.4	2584.2
Goods producing	347.9	350.8	352.8	354.5	356.9	359.6	361.6	362.8
Natural resources and mining	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1
Construction	177.9	181.7	184.6	187.3	190.5	194.1	197.0	199.3
Manufacturing	168.8	167.8	167.0	166.1	165.2	164.4	163.4	162.4
Aerospace products	58.3	57.5	56.9	56.3	55.7	55.1	54.5	53.9
Other durable goods	72.2	72.1	71.9	71.8	71.6	71.4	71.2	70.9
Nondurable goods	38.3	38.2	38.1	38.0	37.9	37.8	37.7	37.6
Service producing	2033.0	2061.1	2088.2	2114.6	2141.3	2168.9	2195.9	2221.4
Wholesale and retail trade	323.8	326.3	328.3	330.2	332.4	334.6	336.6	338.2
Wholesale trade	95.5	96.2	96.7	97.2	97.7	98.3	98.8	99.2
Retail trade	228.3	230.2	231.7	233.1	234.6	236.4	237.8	239.0
Transportation, warehousing, and utilities	80.4	81.1	81.7	82.3	82.9	83.6	84.1	84.7
Transportation and warehousing	79.0	79.7	80.3	80.9	81.5	82.2	82.8	83.3
Utilities	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
Information	125.4	127.8	130.1	132.4	134.8	137.3	139.8	142.3
Telecommunications	30.1	30.6	31.0	31.5	32.0	32.5	33.0	33.5
Other information	95.4	97.2	99.0	100.9	102.8	104.8	106.8	108.8
Financial activities	136.4	137.3	138.1	138.7	139.2	139.8	140.3	140.6
Professional and business services	419.3	430.5	441.8	453.0	464.4	476.3	488.4	500.3
Other services	612.6	621.1	629.2	637.1	645.0	652.8	660.4	667.5
Food services and drinking places	157.6	159.5	161.4	163.2	165.0	166.8	168.5	170.1
Educational services	45.7	46.7	47.7	48.7	49.6	50.6	51.6	52.5
Health services	253.2	256.8	260.2	263.5	266.8	270.0	273.1	275.9
Other	156.1	158.1	160.0	161.8	163.6	165.5	167.2	168.9
Government	335.1	337.0	338.9	340.8	342.6	344.4	346.2	347.9
State and local	281.4	283.2	284.9	286.5	288.1	289.7	291.3	292.8
State education	59.3	59.8	60.3	60.8	61.2	61.7	62.2	62.7
Local education	77.5	78.0	78.4	78.9	79.3	79.7	80.1	80.5
Other state and local	144.6	145.4	146.1	146.8	147.5	148.3	149.0	149.6
Federal, civilian	53.7	53.9	54.1	54.3	54.5	54.7	54.9	55.1
Military employment	54.2	54.2	54.2	54.2	54.2	54.2	54.2	54.2
Unemployment rate (%)	4.4	4.4	4.4	4.4	4.5	4.5	4.5	4.5
Personal income (mils. $)	524256.5	555994.6	589221.3	624336.5	661536.1	701182.8	742803.1	786276.3
Personal income (mils. $00)	280085.3	288940.5	297832.1	306907.4	316226.8	325838.4	335473.8	345095.1
Wage and salary disbursements	154313.1	158750.3	163155.4	167591.5	172151.7	176904.8	181595.0	186219.2
Other income	125772.2	130190.1	134676.8	139315.9	144075.1	148933.6	153878.8	158876.0
Per capita income ($00)	63977	65376	66754	68154	69584	71044	72484	73908
Consumer price index (1982-84=1.000)	3.429	3.524	3.622	3.723	3.826	3.934	4.045	4.160
Housing permits (thous.)	24.2	24.2	23.7	23.5	23.7	23.7	23.3	23.0
Population (thous.)	4377.9	4419.6	4461.6	4503.1	4544.5	4586.3	4628.2	4669.2
Population, 0-4	282.8	285.0	287.2	289.5	291.9	294.5	297.3	300.0
Population, 5-19	821.0	828.0	834.9	841.4	847.8	854.0	860.1	865.9
Population, 20-64	2609.9	2624.7	2640.5	2656.7	2674.3	2694.9	2716.8	2738.6
Population, 65+	664.2	681.9	699.0	715.4	730.4	742.9	754.0	764.6
Group-quarter population	100.6	101.5	102.5	103.4	104.4	105.4	106.3	107.3
Household population	4277.3	4318.1	4359.1	4399.6	4440.1	4481.0	4521.9	4561.9
Single-family	3104.1	3125.1	3146.1	3166.6	3186.8	3207.3	3227.5	3247.1
Multi-family	1173.2	1193.0	1213.0	1233.1	1253.3	1273.7	1294.3	1314.8
Households (thous.)	1838.6	1862.5	1886.6	1910.6	1934.6	1959.0	1983.5	2007.8
Single-family	1205.0	1217.5	1230.1	1242.6	1255.1	1267.7	1280.3	1292.7
Multi-family	633.6	645.0	656.4	668.0	679.6	691.4	703.2	715.1
Household size (number)	2.326	2.318	2.311	2.303	2.295	2.287	2.280	2.272
Single-family	2.576	2.567	2.558	2.548	2.539	2.530	2.521	2.512
Multi-family	1.852	1.850	1.848	1.846	1.844	1.842	1.841	1.839
Annual growth (% change)								
Employment	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.0
Personal income (mils. $)	6.1	6.1	6.0	6.0	6.0	6.0	5.9	5.9
Personal income (mils. $00)	3.2	3.2	3.1	3.0	3.0	3.0	3.0	2.9
Consumer price index	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Population	0.9	1.0	0.9	0.9	0.9	0.9	0.9	0.9
Households	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 1. Puget Sound Region

	2034	2035	2036	2037	2038	2039	2040
Wage and salary employment (thous.)	2611.8	2641.2	2672.4	2705.0	2738.3	2771.5	2804.7
Goods producing	364.5	367.2	370.6	374.3	378.2	382.0	385.6
Natural resources and mining	1.1	1.1	1.0	1.0	1.0	1.0	1.0
Construction	202.1	205.6	209.8	214.4	219.1	223.6	228.1
Manufacturing	161.3	160.5	159.7	158.9	158.2	157.4	156.5
Aerospace products	53.3	52.8	52.4	52.0	51.6	51.2	50.8
Other durable goods	70.6	70.3	70.1	69.8	69.6	69.3	69.0
Nondurable goods	37.4	37.3	37.2	37.1	36.9	36.8	36.7
Service producing	2247.3	2274.1	2301.8	2330.6	2360.1	2389.6	2419.1
Wholesale and retail trade	340.1	342.2	344.5	346.9	349.4	351.7	354.1
Wholesale trade	99.7	100.2	100.8	101.4	102.0	102.6	103.2
Retail trade	240.4	241.9	243.7	245.5	247.3	249.1	250.8
Transportation, warehousing, and utilities	85.2	85.9	86.5	87.2	87.8	88.5	89.2
Transportation and warehousing	83.9	84.5	85.1	85.8	86.5	87.2	87.9
Utilities	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Information	144.8	147.5	150.2	153.0	155.9	158.9	161.9
Telecommunications	34.0	34.5	35.0	35.6	36.1	36.6	37.2
Other information	110.8	113.0	115.2	117.5	119.8	122.2	124.7
Financial activities	140.9	141.2	141.5	142.0	142.3	142.6	142.9
Professional and business services	512.3	524.9	538.0	551.6	565.8	580.4	595.1
Other services	674.4	681.3	688.1	694.9	701.5	707.9	714.0
Food services and drinking places	171.8	173.4	175.0	176.7	178.3	179.8	181.4
Educational services	53.5	54.4	55.3	56.3	57.2	58.1	59.0
Health services	278.6	281.3	284.0	286.6	289.1	291.5	293.7
Other	170.5	172.2	173.8	175.4	177.0	178.5	180.0
Government	349.5	351.2	353.1	355.1	357.3	359.5	361.9
State and local	294.2	295.6	297.3	299.1	301.0	303.1	305.2
State education	63.1	63.6	64.0	64.5	65.1	65.6	66.2
Local education	80.8	81.2	81.7	82.1	82.6	83.2	83.7
Other state and local	150.2	150.8	151.6	152.4	153.3	154.3	155.3
Federal, civilian	55.4	55.6	55.8	56.0	56.2	56.4	56.7
Military employment	54.2	54.2	54.2	54.2	54.2	54.2	54.2
Unemployment rate (%)	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Personal income (mils. $)	832794.6	882639.3	935215.6	991738.1	1051808.5	1115177.8	1182293.1
Personal income (mils. $00)	355163.5	365777.4	376623.0	388106.6	399990.9	412113.6	424577.7
Wage and salary disbursements	190989.4	195996.9	201267.2	206855.9	212645.7	218564.2	224627.4
Other income	164174.1	169780.5	175355.8	181250.7	187345.2	193549.4	199950.3
Per capita income ($00)	75410	76982	78547	80178	81826	83465	85118
Consumer price index (1982-84=1.000)	4.278	4.398	4.522	4.650	4.783	4.920	5.061
Housing permits (thous.)	23.0	23.2	23.7	24.2	24.6	24.9	25.2
Population (thous.)	4709.7	4751.4	4794.8	4840.5	4888.3	4937.5	4988.0
Population, 0-4	302.9	305.8	309.1	312.3	315.6	319.1	322.5
Population, 5-19	871.8	878.1	885.2	892.6	900.7	909.2	918.2
Population, 20-64	2759.3	2779.4	2801.0	2826.3	2854.5	2884.4	2914.5
Population, 65+	775.7	788.0	799.6	809.3	817.5	824.8	832.8
Group-quarter population	108.2	109.1	110.1	111.2	112.3	113.4	114.6
Household population	4601.5	4642.2	4684.6	4729.3	4776.0	4824.0	4873.4
Single-family	3266.2	3285.9	3306.7	3328.9	3352.3	3376.6	3401.7
Multi-family	1335.4	1356.4	1378.0	1400.4	1423.6	1447.4	1471.7
Households (thous.)	2031.9	2056.7	2082.4	2109.2	2137.0	2165.5	2194.8
Single-family	1304.9	1317.6	1330.7	1344.5	1358.8	1373.6	1388.8
Multi-family	727.0	739.2	751.7	764.7	778.1	791.9	806.1
Household size (number)	2.265	2.257	2.250	2.242	2.235	2.228	2.220
Single-family	2.503	2.494	2.485	2.476	2.467	2.458	2.449
Multi-family	1.837	1.835	1.833	1.831	1.830	1.828	1.826
Annual growth (% change)							
Employment	1.1	1.1	1.2	1.2	1.2	1.2	1.2
Personal income (mils. $)	5.9	6.0	6.0	6.0	6.1	6.0	6.0
Personal income (mils. $00)	2.9	3.0	3.0	3.0	3.1	3.0	3.0
Consumer price index	2.8	2.8	2.8	2.8	2.9	2.9	2.9
Population	0.9	0.9	0.9	1.0	1.0	1.0	1.0
Households	1.2	1.2	1.2	1.3	1.3	1.3	1.4

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 2. United States

	1970	1971	1972	1973	1974	1975	1976	1977
Gross Domestic Product (bils. $00)	3771.9	3898.7	4104.9	4341.4	4319.5	4311.2	4540.9	4750.6
Industrial production index (87=1.000)	0.467	0.473	0.519	0.561	0.559	0.509	0.549	0.591
Employment (mils.)	71.0	71.3	73.8	76.9	78.4	77.1	79.5	82.6
Unemployment rate (%)	5.0	5.9	5.6	4.9	5.6	8.5	7.7	7.1
Personal income (bils. $)	838.8	903.5	992.7	1110.8	1222.7	1335.1	1474.8	1633.2
Personal income (bils. $00)	3171.7	3277.0	3480.4	3692.6	3683.6	3714.2	3886.9	4042.4
Wages and salary disbursements	2085.7	2118.0	2239.5	2356.4	2328.2	2266.7	2371.1	2460.4
Other income	1086.0	1159.0	1240.9	1336.2	1355.4	1447.5	1515.8	1582.0
Consumer price index (82-84=1.000)	0.388	0.405	0.418	0.444	0.493	0.538	0.569	0.606
Consumer expenditures deflator (00=1.000)	0.264	0.276	0.285	0.301	0.332	0.359	0.379	0.404
Housing starts (mils.)	1.435	2.036	2.361	2.044	1.332	1.160	1.535	1.962
Population (mils.)	205.4	207.9	210.1	212.1	214.1	216.2	218.3	220.5
Population, 0-4 years	17.2	17.2	17.1	16.8	16.4	16.1	15.6	15.6
Population, 5-19 years	59.8	60.0	60.1	60.1	60.0	59.9	59.7	59.2
Population, 20-64 years	108.3	110.1	111.9	113.7	115.6	117.5	119.6	121.8
Population, 65 years and over	20.2	20.6	21.1	21.6	22.1	22.8	23.4	24.0
Three-month treasury bill rate (%)	6.39	4.33	4.07	7.03	7.83	5.78	4.97	5.27
Conventional mortgage rate (%)	8.41	7.58	7.38	8.04	9.19	9.04	8.86	8.84
Annual growth (% change)								
Gross Domestic Product ($00)	NA	3.4	5.3	5.8	-0.5	-0.2	5.3	4.6
Employment	NA	0.5	3.4	4.2	1.9	-1.7	3.2	3.9
Personal income (bils. $)	NA	7.7	9.9	11.9	10.1	9.2	10.5	10.7
Personal income (bils. $00)	NA	3.3	6.2	6.1	-0.2	0.8	4.7	4.0
Consumer price index	NA	4.2	3.3	6.3	11.0	9.1	5.8	6.5
Population	NA	1.2	1.1	1.0	0.9	1.0	1.0	1.0

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 2. United States

	1978	1979	1980	1981	1982	1983	1984	1985
Gross Domestic Product (bils. $00)	5015.0	5173.5	5161.7	5291.7	5189.3	5423.8	5813.6	6053.8
Industrial production index (87=1.000)	0.624	0.642	0.625	0.634	0.601	0.617	0.673	0.681
Employment (mils.)	86.8	89.9	90.5	91.3	89.7	90.3	94.5	97.5
Unemployment rate (%)	6.1	5.9	7.2	7.6	9.7	9.6	7.5	7.2
Personal income (bils. $)	1837.7	2062.2	2307.9	2591.3	2775.3	2960.7	3289.5	3526.7
Personal income (bils. $00)	4250.3	4382.7	4431.9	4568.5	4637.1	4743.0	5077.3	5269.3
Wages and salary disbursements	2592.6	2669.3	2645.6	2675.3	2662.9	2699.3	2863.0	2981.8
Other income	1657.7	1713.3	1786.2	1893.2	1974.2	2043.6	2214.3	2287.5
Consumer price index (82-84=1.000)	0.652	0.726	0.824	0.909	0.965	0.996	1.039	1.076
Consumer expenditures deflator (00=1.000)	0.432	0.471	0.521	0.567	0.598	0.624	0.648	0.669
Housing starts (mils.)	2.001	1.717	1.300	1.096	1.057	1.705	1.766	1.741
Population (mils.)	222.9	225.4	228.0	230.2	232.4	234.6	236.6	238.7
Population, 0-4 years	15.8	16.1	16.5	16.9	17.3	17.6	17.7	17.9
Population, 5-19 years	58.5	57.6	56.8	55.9	55.1	54.3	53.7	53.2
Population, 20-64 years	124.1	126.5	128.9	131.1	133.2	135.3	137.3	139.2
Population, 65 years and over	24.6	25.2	25.8	26.3	26.9	27.4	27.9	28.5
Three-month treasury bill rate (%)	7.19	10.07	11.43	14.03	10.61	8.61	9.52	7.48
Conventional mortgage rate (%)	9.64	11.19	13.77	16.63	16.08	13.23	13.87	12.42
Annual growth (% change)								
Gross Domestic Product ($00)	5.6	3.2	-0.2	2.5	-1.9	4.5	7.2	4.1
Employment	5.1	3.6	0.7	0.8	-1.8	0.7	4.7	3.2
Personal income (bils. $)	12.5	12.2	11.9	12.3	7.1	6.7	11.1	7.2
Personal income (bils. $00)	5.1	3.1	1.1	3.1	1.5	2.3	7.0	3.8
Consumer price index	7.6	11.3	13.5	10.4	6.2	3.2	4.4	3.5
Population	1.1	1.1	1.1	1.0	1.0	0.9	0.9	0.9

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 2. United States

	1986	1987	1988	1989	1990	1991	1992	1993
Gross Domestic Product (bils. $00)	6263.6	6475.1	6742.7	6981.4	7112.5	7100.5	7336.6	7532.7
Industrial production index (87=1.000)	0.688	0.723	0.759	0.766	0.774	0.762	0.784	0.809
Employment (mils.)	99.5	102.1	105.3	108.0	109.5	108.4	108.7	110.8
Unemployment rate (%)	7.0	6.2	5.5	5.3	5.6	6.9	7.5	6.9
Personal income (bils. $)	3722.4	3947.4	4253.7	4587.8	4878.6	5051.0	5362.0	5558.6
Personal income (bils. $00)	5429.2	5564.5	5768.1	5960.8	6060.5	6055.1	6248.1	6331.0
Wages and salary disbursements	3084.5	3201.0	3326.2	3373.4	3421.2	3384.3	3472.8	3511.1
Other income	2344.6	2363.5	2441.9	2587.4	2639.3	2670.8	2775.3	2819.9
Consumer price index (82-84=1.000)	1.097	1.136	1.183	1.239	1.307	1.362	1.403	1.445
Consumer expenditures deflator (00=1.000)	0.686	0.709	0.737	0.770	0.805	0.834	0.858	0.878
Housing starts (mils.)	1.812	1.631	1.488	1.382	1.203	1.009	1.201	1.292
Population (mils.)	240.9	243.1	245.3	247.7	250.6	253.9	257.4	260.7
Population, 0-4 years	18.0	18.1	18.2	18.6	18.9	19.2	19.6	19.7
Population, 5-19 years	52.9	52.7	52.8	52.9	53.3	53.5	54.1	55.0
Population, 20-64 years	141.0	142.6	144.1	145.5	147.1	149.3	151.2	153.0
Population, 65 years and over	29.1	29.7	30.2	30.8	31.3	31.9	32.4	33.0
Three-month treasury bill rate (%)	5.98	5.78	6.67	8.11	7.50	5.39	3.44	3.00
Conventional mortgage rate (%)	10.18	10.20	10.34	10.32	10.13	9.25	8.40	7.33
Annual growth (% change)								
Gross Domestic Product ($00)	3.5	3.4	4.1	3.5	1.9	-0.2	3.3	2.7
Employment	2.0	2.6	3.2	2.5	1.4	-1.0	0.3	2.0
Personal income (bils. $)	5.5	6.0	7.8	7.9	6.3	3.5	6.2	3.7
Personal income (bils. $00)	3.0	2.5	3.7	3.3	1.7	-0.1	3.2	1.3
Consumer price index	1.9	3.6	4.1	4.8	5.4	4.2	3.0	3.0
Population	0.9	0.9	0.9	1.0	1.2	1.3	1.3	1.3

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 2. United States

	1994	1995	1996	1997	1998	1999	2000	2001
Gross Domestic Product (bils. $00)	7835.5	8031.7	8328.9	8703.5	9066.9	9470.4	9817.0	9890.7
Industrial production index (87=1.000)	0.853	0.894	0.932	1.000	1.058	1.106	1.154	1.113
Employment (mils.)	114.3	117.3	119.7	122.8	125.9	129.0	131.8	131.8
Unemployment rate (%)	6.1	5.6	5.4	4.9	4.5	4.2	4.0	4.7
Personal income (bils. $)	5842.5	6152.3	6520.6	6915.1	7423.0	7802.4	8429.7	8724.1
Personal income (bils. $00)	6517.2	6718.5	6970.7	7269.9	7734.4	7997.1	8430.1	8545.4
Wages and salary disbursements	3605.4	3734.0	3869.4	4076.5	4358.9	4577.7	4829.5	4841.5
Other income	2911.8	2984.5	3101.3	3193.3	3375.5	3419.4	3600.6	3703.9
Consumer price index (82-84=1.000)	1.482	1.524	1.569	1.605	1.630	1.666	1.722	1.770
Consumer expenditures deflator (00=1.000)	0.896	0.916	0.935	0.951	0.960	0.976	1.000	1.021
Housing starts (mils.)	1.446	1.361	1.469	1.475	1.621	1.647	1.573	1.601
Population (mils.)	263.9	267.0	270.1	273.4	276.6	279.7	282.8	285.7
Population, 0-4 years	19.8	19.6	19.4	19.2	19.1	19.1	19.2	19.4
Population, 5-19 years	56.1	57.2	58.4	59.4	60.4	61.1	61.5	61.6
Population, 20-64 years	154.6	156.4	158.1	160.3	162.4	164.7	166.9	169.3
Population, 65 years and over	33.4	33.8	34.2	34.4	34.6	34.8	35.1	35.4
Three-month treasury bill rate (%)	4.23	5.50	5.00	5.06	4.79	4.63	5.81	3.43
Conventional mortgage rate (%)	8.36	7.95	7.80	7.60	6.94	7.43	8.06	6.97
Annual growth (% change)								
Gross Domestic Product ($00)	4.0	2.5	3.7	4.5	4.2	4.4	3.7	0.8
Employment	3.1	2.6	2.0	2.6	2.6	2.4	2.2	0.0
Personal income (bils. $)	5.1	5.3	6.0	6.1	7.3	5.1	8.0	3.5
Personal income (bils. $00)	2.9	3.1	3.8	4.3	6.4	3.4	5.4	1.4
Consumer price index	2.6	2.8	2.9	2.3	1.5	2.2	3.4	2.8
Population	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.0

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 2. United States

	2002	2003	2004	2005	2006	2007	2008	2009
Gross Domestic Product (bils. $00)	10074.8	10381.3	10837.2	11214.0	11564.8	11939.0	12311.7	12721.1
Industrial production index (87=1.000)	1.110	1.109	1.155	1.194	1.227	1.278	1.332	1.386
Employment (mils.)	130.3	130.0	131.5	133.7	135.5	136.9	138.0	139.3
Unemployment rate (%)	5.8	6.0	5.5	5.2	5.2	5.2	5.2	5.2
Personal income (bils. $)	8878.9	9161.8	9659.2	10146.7	10686.4	11270.2	11914.0	12603.2
Personal income (bils. $00)	8575.1	8683.6	8959.7	9268.4	9605.8	9924.7	10261.9	10615.6
Wages and salary disbursements	4806.0	4837.2	4955.7	5150.7	5347.9	5530.9	5698.1	5867.7
Other income	3769.1	3846.5	4004.0	4117.7	4257.9	4393.8	4563.8	4747.8
Consumer price index (82-84=1.000)	1.799	1.840	1.889	1.926	1.957	1.995	2.038	2.083
Consumer expenditures deflator (00=1.000)	1.035	1.055	1.078	1.095	1.112	1.136	1.161	1.187
Housing starts (mils.)	1.710	1.853	1.948	1.837	1.708	1.686	1.665	1.672
Population (mils.)	288.6	291.4	294.1	296.8	299.5	302.1	304.8	307.5
Population, 0-4 years	19.6	19.8	20.1	20.3	20.5	20.7	20.9	21.1
Population, 5-19 years	61.7	61.8	61.8	61.8	61.9	62.1	62.2	62.2
Population, 20-64 years	171.6	173.8	175.9	177.8	179.7	181.4	182.9	184.6
Population, 65 years and over	35.7	36.0	36.4	36.8	37.3	38.0	38.8	39.6
Three-month treasury bill rate (%)	1.61	1.01	1.36	2.96	3.40	3.76	4.12	4.36
Conventional mortgage rate (%)	6.54	5.82	5.84	6.09	6.46	6.76	7.14	7.29
Annual growth (% change)								
Gross Domestic Product ($00)	1.9	3.0	4.4	3.5	3.1	3.2	3.1	3.3
Employment	-1.1	-0.3	1.1	1.7	1.4	1.1	0.8	0.9
Personal income (bils. $)	1.8	3.2	5.4	5.0	5.3	5.5	5.7	5.8
Personal income (bils. $00)	0.3	1.3	3.2	3.4	3.6	3.3	3.4	3.4
Consumer price index	1.6	2.3	2.7	2.0	1.6	2.0	2.1	2.2
Population	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 2. United States

	2010	2011	2012	2013	2014	2015	2016	2017
Gross Domestic Product (bils. $00)	13138.0	13546.5	13933.0	14336.0	14779.6	15249.1	15731.0	16209.1
Industrial production index (87=1.000)	1.440	1.493	1.545	1.598	1.656	1.715	1.777	1.841
Employment (mils.)	140.6	141.7	142.7	143.7	144.9	146.2	147.6	149.1
Unemployment rate (%)	5.1	5.1	5.2	5.2	5.1	5.0	4.9	4.8
Personal income (bils. $)	13372.6	14180.2	15017.6	15893.5	16845.3	17868.3	18941.6	20081.4
Personal income (bils. $00)	10998.6	11368.5	11724.0	12085.4	12479.0	12893.6	13309.6	13735.1
Wages and salary disbursements	6037.9	6196.5	6343.5	6486.4	6642.5	6813.9	6993.6	7186.4
Other income	4960.6	5172.1	5380.4	5599.0	5836.5	6079.7	6316.1	6548.6
Consumer price index (82-84=1.000)	2.134	2.189	2.248	2.308	2.370	2.433	2.499	2.567
Consumer expenditures deflator (00=1.000)	1.216	1.247	1.281	1.315	1.350	1.386	1.423	1.462
Housing starts (mils.)	1.688	1.698	1.666	1.653	1.663	1.693	1.707	1.695
Population (mils.)	310.1	312.8	315.5	318.2	320.9	323.5	326.2	328.9
Population, 0-4 years	21.3	21.5	21.7	21.9	22.1	22.2	22.3	22.5
Population, 5-19 years	62.1	62.1	62.2	62.4	62.7	63.1	63.6	64.3
Population, 20-64 years	186.3	187.9	188.8	189.7	190.5	191.2	191.8	192.3
Population, 65 years and over	40.4	41.4	42.8	44.2	45.6	47.0	48.4	49.9
Three-month treasury bill rate (%)	4.84	4.86	4.87	4.89	4.90	4.91	4.90	4.90
Conventional mortgage rate (%)	7.69	7.74	7.79	7.82	7.84	7.87	7.89	7.93
Annual growth (% change)								
Gross Domestic Product ($00)	3.3	3.1	2.9	2.9	3.1	3.2	3.2	3.0
Employment	0.9	0.8	0.7	0.7	0.8	0.9	1.0	1.0
Personal income (bils. $)	6.1	6.0	5.9	5.8	6.0	6.1	6.0	6.0
Personal income (bils. $00)	3.6	3.4	3.1	3.1	3.3	3.3	3.2	3.2
Consumer price index	2.4	2.6	2.7	2.7	2.7	2.7	2.7	2.7
Population	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 2. United States

	2018	2019	2020	2021	2022	2023	2024	2025
Gross Domestic Product (bils. $00)	16703.1	17204.4	17714.7	18228.7	18759.1	19298.0	19852.0	20427.1
Industrial production index (87=1.000)	1.911	1.983	2.058	2.135	2.216	2.298	2.384	2.473
Employment (mils.)	150.9	152.6	154.3	156.0	157.8	159.6	161.4	163.1
Unemployment rate (%)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Personal income (bils. $)	21303.0	22594.5	23950.7	25369.4	26882.2	28476.8	30161.0	31946.1
Personal income (bils. $00)	14176.1	14628.0	15089.4	15552.8	16035.6	16526.5	17027.8	17545.8
Wages and salary disbursements	7393.2	7607.6	7827.5	8052.8	8286.4	8526.1	8770.3	9019.3
Other income	6782.9	7020.3	7261.9	7500.1	7749.2	8000.5	8257.5	8526.6
Consumer price index (82-84=1.000)	2.638	2.711	2.786	2.862	2.941	3.021	3.105	3.190
Consumer expenditures deflator (00=1.000)	1.503	1.545	1.587	1.631	1.676	1.723	1.771	1.821
Housing starts (mils.)	1.679	1.661	1.639	1.606	1.586	1.567	1.571	1.593
Population (mils.)	331.6	334.3	337.0	339.7	342.4	345.1	347.9	350.6
Population, 0-4 years	22.6	22.7	22.8	22.9	23.0	23.1	23.2	23.4
Population, 5-19 years	64.9	65.6	66.2	66.7	67.2	67.8	68.3	68.8
Population, 20-64 years	192.6	192.9	193.1	193.4	193.8	194.1	194.4	194.7
Population, 65 years and over	51.5	53.1	54.9	56.6	58.4	60.2	61.9	63.8
Three-month treasury bill rate (%)	4.91	4.91	4.91	4.91	4.91	4.91	4.91	4.91
Conventional mortgage rate (%)	7.94	7.96	7.94	7.97	7.95	7.93	7.96	7.95
Annual growth (% change)								
Gross Domestic Product ($00)	3.0	3.0	3.0	2.9	2.9	2.9	2.9	2.9
Employment	1.1	1.2	1.1	1.1	1.1	1.1	1.1	1.1
Personal income (bils. $)	6.1	6.1	6.0	5.9	6.0	5.9	5.9	5.9
Personal income (bils. $00)	3.2	3.2	3.2	3.1	3.1	3.1	3.0	3.0
Consumer price index	2.8	2.8	2.7	2.7	2.7	2.7	2.7	2.7
Population	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 2. United States

	2026	2027	2028	2029	2030	2031	2032	2033
Gross Domestic Product (bils. $00)	21013.9	21602.9	22192.5	22800.9	23435.3	24081.0	24731.0	25390.0
Industrial production index (87=1.000)	2.564	2.658	2.754	2.855	2.960	3.069	3.178	3.289
Employment (mils.)	164.9	166.7	168.5	170.2	172.0	173.8	175.6	177.4
Unemployment rate (%)	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Personal income (bils. $)	33835.3	35827.1	37920.0	40132.9	42472.9	44959.5	47584.6	50334.7
Personal income (bils. $00)	18077.7	18619.9	19168.5	19729.5	20304.1	20893.9	21492.0	22093.1
Wages and salary disbursements	9275.7	9540.0	9806.9	10077.0	10354.3	10642.1	10932.2	11222.4
Other income	8802.0	9079.8	9361.6	9652.5	9949.8	10251.8	10559.8	10870.7
Consumer price index (82-84=1.000)	3.277	3.367	3.459	3.554	3.651	3.753	3.858	3.966
Consumer expenditures deflator (00=1.000)	1.872	1.924	1.978	2.034	2.092	2.152	2.214	2.278
Housing starts (mils.)	1.606	1.591	1.559	1.551	1.563	1.562	1.531	1.514
Population (mils.)	353.4	356.2	359.1	361.9	364.8	367.7	370.5	373.4
Population, 0-4 years	23.5	23.7	23.8	24.0	24.1	24.3	24.5	24.7
Population, 5-19 years	69.3	69.8	70.2	70.7	71.1	71.6	72.0	72.4
Population, 20-64 years	195.1	195.7	196.3	197.0	197.9	199.0	200.3	201.6
Population, 65 years and over	65.5	67.1	68.7	70.2	71.6	72.7	73.7	74.7
Three-month treasury bill rate (%)	4.91	4.91	4.91	4.91	4.91	4.92	4.92	4.92
Conventional mortgage rate (%)	7.93	7.94	7.92	7.92	7.95	7.95	7.94	7.94
Annual growth (% change)								
Gross Domestic Product ($00)	2.9	2.8	2.7	2.7	2.8	2.8	2.7	2.7
Employment	1.1	1.1	1.1	1.0	1.0	1.1	1.1	1.0
Personal income (bils. $)	5.9	5.9	5.8	5.8	5.8	5.9	5.8	5.8
Personal income (bils. $00)	3.0	3.0	2.9	2.9	2.9	2.9	2.9	2.8
Consumer price index	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.8
Population	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8

Puget Sound Economic and Demographic Forecasts, 1970-2040

Table 2. United States

	2034	2035	2036	2037	2038	2039	2040
Gross Domestic Product (bils. $00)	26078.2	26785.1	27499.3	28221.3	28956.8	29689.3	30438.5
Industrial production index (87=1.000)	3.405	3.525	3.648	3.774	3.903	4.034	4.169
Employment (mils.)	179.1	180.7	182.2	183.6	185.1	186.4	187.7
Unemployment rate (%)	4.8	4.8	4.8	4.8	4.8	4.8	4.8
Personal income (bils. $)	53255.3	56341.5	59547.7	62953.0	66540.6	70280.7	74226.6
Personal income (bils. $00)	22713.3	23350.1	23982.2	24637.7	25306.3	25974.0	26657.6
Wages and salary disbursements	11515.0	11809.2	12107.1	12413.4	12725.0	13034.7	13351.2
Other income	11198.3	11540.9	11875.0	12224.3	12581.3	12939.2	13306.4
Consumer price index (82-84=1.000)	4.077	4.191	4.307	4.427	4.550	4.677	4.807
Consumer expenditures deflator (00=1.000)	2.345	2.413	2.483	2.555	2.629	2.706	2.784
Housing starts (mils.)	1.517	1.524	1.535	1.543	1.551	1.559	1.567
Population (mils.)	376.2	379.1	381.9	384.6	387.4	390.2	393.0
Population, 0-4 years	24.9	25.1	25.3	25.6	25.8	26.0	26.2
Population, 5-19 years	72.8	73.2	73.7	74.1	74.6	75.1	75.6
Population, 20-64 years	202.8	203.9	205.0	206.4	207.9	209.5	211.1
Population, 65 years and over	75.7	76.8	77.8	78.6	79.1	79.6	80.2
Three-month treasury bill rate (%)	4.92	4.92	4.92	4.92	4.92	4.92	4.92
Conventional mortgage rate (%)	7.95	7.96	7.95	7.95	7.95	7.95	7.95
Annual growth (% change)							
Gross Domestic Product ($00)	2.7	2.7	2.7	2.6	2.6	2.5	2.5
Employment	0.9	0.9	0.8	0.8	0.8	0.7	0.7
Personal income (bils. $)	5.8	5.8	5.7	5.7	5.7	5.6	5.6
Personal income (bils. $00)	2.8	2.8	2.7	2.7	2.7	2.6	2.6
Consumer price index	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Population	0.8	0.8	0.7	0.7	0.7	0.7	0.7

APPENDIX B

FORECASTING MODEL

FORECASTING MODEL

B-1. DEFINITIONS

Region

King, Kitsap, Pierce, and Snohomish counties constitute the Puget Sound region, which is the jurisdiction of the Puget Sound Regional Council.

Employment

Employment is the annual average number of full and part-time wage and salary employees working in King, Kitsap, Pierce, and Snohomish counties. This employment series is commonly called non-agricultural wage and salary employment, since it excludes workers in agriculture, fishing, and forestry. Employment is measured by place of work. Washington Employment Security Department (ESD) publishes monthly estimates of county employment by industry (see Section B-3 for more detailed information on data sources). The Puget Sound Forecasting Model predicts employment for 30 industrial and government groups. Table B-1 shows their definitions according to the North American Industrial Classification System (NAICS). The monthly employment series are converted into quarterly series and seasonally adjusted for use in the forecasting model.

Unemployment Rate

ESD also reports the monthly unemployment rate for the Puget Sound region and each of its counties. The unemployment rate, which is measured by place of residence, is the percent of the civilian labor force without a job. The monthly unemployment estimates are converted into quarterly series and seasonally adjusted.

Personal Income

Personal income is income earned by people: wage and salary disbursements; proprietors' income; other labor income (e.g., medical benefits); property income (e.g., dividend payments); transfer payments (e.g., welfare payments); and personal contributions to social insurance (e.g., payments to Social Security), which are deducted from the other components of personal income. Since personal income is measured by place of residence while labor income is measured by place of work, there is also a residence adjustment. In the case of Snohomish County, for example, the residence adjustment is positive and large since many Snohomish County residents work in King County. The residence adjustment for the region as a whole is comparatively small. Personal income is valued in both current and 2000 dollars. The 2000-dollar series, also called the constant-dollar series, is a measure of personal income's real purchasing power over time. Following standard conventions, estimates of real income are obtained by deflating current-dollar personal income by the U.S. implicit price deflator for consumption expenditures. The U.S. Bureau of Economic Analysis publishes annual estimates of personal income for each county. The annual series are converted into annualized quarterly series using a multi-step interpolation procedure. There is no need to seasonally adjust the personal income series.

Table B-1

CLASSIFICATION OF INDUSTRIES AND GOVERNMENT

Industry	NAICS Code
Goods producing	11,21,23,31-33
Natural resources and mining	11,21
Construction	23
Manufacturing	31-33
Aerospace	3364
Other durable goods	321,327, other 33
Nondurable goods	31,322-326
Service producing	22,42-81
Wholesale and retail trade	42,44-45
Wholesale trade	42
Retail trade	44-45
Transportation, warehousing, and utilities	22,48-49
Transportation and warehousing	48-49
Utilities	22
Information	51
Telecommunications	517
Other information	Other 51
Financial activities	52-53
Professional and business services	54-56
Other services	61-62,71,72,81
Food services and drinking places	722
Educational services	61
Health services	62
Other	71,721,81
Government	
State and local	
State education	
Local education	
Other state and local	
Federal	

Consumer Price Index

The Seattle consumer price index, which has an average value of one for 1982-84, is a measure of the local prices of consumer goods and services purchased by households in the greater Seattle metropolitan area. Changes in the index are a gauge of the local inflation rate. The index is published every other month by the U.S. Bureau of Labor Statistics. The series is not seasonally adjusted.

Housing Permits

Housing permits are the number of building permits issued for new residential construction. There are two types of housing units: single-family buildings (single units) and multi-family buildings (two or more units). Housing permits are a good but inexact measure of housing construction, since permits are issued in advance of actual building and not every permit leads to construction. The U.S. Bureau of the Census publishes monthly estimates of residential building permits for each county. The monthly series are converted into annualized quarterly series and seasonally adjusted.

Population

Resident population is defined as the number of people living in the Puget Sound region on the first day of July. The source of population estimates is the U.S. Bureau of the Census. The U.S. Bureau of Economic Analysis also reports the annual population estimates in its county personal income tables. The estimates for the years 1970, 1980, 1990, and 2000 differ slightly from the ten-year census figures, since the latter are measured on April 1. The population series also differ somewhat from those reported by the Washington Office of Financial Management (OFM), which makes its own April 1 population estimates for counties between census years. A simple interpolation procedure is used to convert the annual population series into quarterly series.

Households

Households are the number of occupied single-family housing units (single detached homes) and occupied multi-family housing units (apartments and condominiums). Household size is the average number of persons living in households. The U.S. Bureau of the Census estimates the number of households and average household size for each census year. Estimates for the other years are made by interpolation. The fraction of people living in households, the fraction of household population living in single-family households, the average size of single-family households, and the average size of multi-family households are interpolated linearly between the corresponding census-year measurements. The number of single-family households is determined by dividing the estimate of single-family population by the average size of single-family households. The number of multi-family households is determined in a similar manner.

B-2. PUGET SOUND FORECASTING MODEL

General Specification

The economic and demographic forecasts are developed with a regional econometric model that in various forms has been around since 1987. For the past twelve years the model has produced predictions for *The Puget Sound Economic Forecaster*, a quarterly forecast and commentary on the regional economy published by Conway Pedersen Economics, Inc.

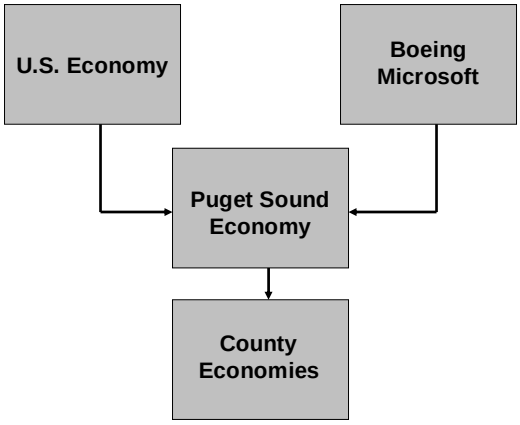
The Puget Sound Forecasting Model depicts the economic behavior of the four-county region within the context of its national economic environment (Figure B-1). The model is a system of simultaneous equations specified to predict 103 endogenous variables (e.g., Puget Sound personal income and Pierce County population) on a quarterly basis over a 35-year period (Table B-2). The model is composed of 62 behavioral equations and 41 accounting identities. The parameters of the behavioral equations are estimated by regression analysis using quarterly data from 1970.1 to 2005.1. The model employs 24 exogenous variables (e.g., U.S. Gross Domestic Product, U.S.

consumer price index, and Boeing employment), most of which portray conditions in the national economy.

The Puget Sound Forecasting Model follows the conceptual framework of the economic base theory of regional growth. This theory distinguishes between the export (basic) and local (nonbasic) demands placed upon the regional economy. The theory postulates that the economic growth of the four-county region, whether measured in terms of output, employment, or income, is related to the growth of its basic sector. Thus, for example, an expansion of exports is expected to trigger a respending (multiplier) process in the regional economy that leads to increased employment and income in the nonbasic sector.

Figure B-1

PUGET SOUND FORECASTING MODEL



While the Puget Sound Forecasting Model has much in common with other types of regional econometric models, it has several noteworthy features:

1. Model specification. Each of the 62 behavioral equations is a fully integrated structural time-series model. Not only does each equation contain both explanatory variables and an ARMA model, but each dependent variable, in accordance with the Box-Jenkins approach to time-series modeling, is made stationary by taking the first difference of the natural logarithm of the variable. Thus, the model predicts, in effect, the growth rate of each variable rather than its level. Moreover, each equation's regression coefficients are the estimated elasticities of the dependent variable with respect to the independent variables. For example, the estimated regression coefficient for real personal income in the Puget Sound wholesale and retail trade employment equation is 0.73. This implies that a one percent change in real personal income, all else being equal, is expected to lead to a 0.73 percent change in wholesale and retail trade employment. In general, combining structural equations with Box-Jenkins components is a strategy to improve both the short-term and long-term forecasting capabilities of the model.

Table B-2

PUGET SOUND FORECASTING MODEL*

Forecast period

2005.2-2040.4

Estimation period

1970.1-2005.1

Model size

103 endogenous variables
62 behavioral equations
41 accounting identities
24 exogenous variables

Selected endogenous variables

Employment
Unemployment rate
Personal income
Consumer price index
Housing permits
Population
Households

Selected exogenous variables

U.S. Gross Domestic Product
U.S. unemployment rate
U.S. personal income
U.S. personal consumption deflator
U.S. housing starts
U.S. population
U.S. mortgage rate
Boeing employment
Microsoft employment
Stock option income

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*The Puget Sound Forecasting Model is composed of regional and county sub-models.

2. Estimation. A rule of thumb in economic modeling is that the estimation period should be at least as long as the forecast period. This condition is satisfied in this case, as both the observation period and forecast period extend 35 years. From a practical standpoint, it is especially important to have long historical data series because of the boom and bust nature of the Puget Sound economy. A smaller data set would make it more difficult to discern the short-term cyclical movements in the economy from the long-term trends. Since economic cycles tend to last about ten years, the historical data currently cover three complete cycles as well as one-half of a fourth cycle.

   The data required to estimate the model come from various government agencies: U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics, U.S. Bureau of the Census, Federal Reserve Board, Washington Employment Security Department, and Washington Office of Financial Management.

   As previously noted, the regional model includes 30 categories of employment, which are reported in accordance with the recently adopted North American Industrial Classification Scheme (NAICS). NAICS, which replaces the Standard Industrial Classification (SIC) system, was designed to better reflect the structure of our modern economy. For example, there is now an information industry, which includes software publishers. A significant amount of time on this project was spent converting historical employment estimates to the new scheme.

3. Exogenous variables. The United States is the largest market for Puget Sound exports and the principal driving force for the regional economy. To ensure that the regional and county forecasts are consistent with economic developments at the national level, the model makes use of long-range projections of the U.S. economy developed by Global Insight, Inc., the nation's leading economic forecasting company.

   The Puget Sound economy is particularly dependent upon Boeing and Microsoft, the region's two largest private employers. Thus, special consideration is given to Boeing aircraft production and employment and Microsoft employment and stock option income. While these forecasts are ultimately made on a judgmental basis, they are backed by considerable analysis (e.g., the Boeing and Microsoft impact studies).

4. Add factors. Add factors are employed to modify unreasonable projections made by one or more equations in an economic forecasting model. The goal of building a model that requires no add factors is rarely achieved, since models are imperfect representations of reality. In the Puget Sound Forecasting Model, add factoring is accomplished by raising or lowering the constants of certain equations. For a forecasting equation expressed in change-in-log form, the constant represents the quarterly growth rate of the dependent variable, all else being equal. Between 2005 and 2015, add factoring has little effect on the projections. For example, Puget Sound total employment is 2,053.9 thousand with add factors and 2,068.8 thousand without add factors, a difference of only 0.7 percent. In other words, operating free of add factors, the model generates reasonable economic

forecasts for the first ten years of the forecast period. Beyond 2015 the only problematic forecasting equation is professional and business services employment, which yields unreasonably high forecasts. Lowering these projections by reducing the constant of the forecasting equation brings the entire set of regional and county forecasts into line. Other add factors are used only for "window dressing" and do not substantially change the long-term outlook for regional or county employment, personal income, and population.

Representative Equations

The Puget Sound Forecasting Model is organized into two submodels: (1) the regional economy; and (2) the county economies. Following are seven representative equations from the forecasting model. Along with explanatory variables, the equations include time-series models, specifically autoregressive moving-average (ARMA) models. The regression equations are estimated in change-of-log form using Ordinary Least Squares (OLS) method. Shown with the regression coefficient estimates are their respective t-values. Also given are the corrected coefficient of determination (adjusted R^2), the standard error of the estimate, and the Durbin-Watson statistic. Dummy variables, which depict one-time disturbances (e.g., labor strikes), are not shown.

Puget Sound Personal Income

Variable	Coefficient	T-Value
DLPYPE		
C	-0.0001	-0.0
DLYP	1.0095	55.4
DLPNR	0.6564	17.9
PDL(DLSCPIR)	0.0935	3.3
MA(1)	0.7368	12.4

R^2=0.914, SEE=0.003, DW=1.681

DLPYPE=log(PYP-PYSTK)-log(PYP(-1)-PYSTK(-1))
DLYP=log(USYP)-log(USYP(-1))
DLPNR=log(PN/USN)-log(PN(-1)/USN(-1))
DLSCPIR=log(SCPI/USCPI)-log(SCPI(-1)/USCPI(-1))

PYP	Puget Sound personal income
PYSTK	Puget Sound stock option income
PN	Puget Sound employment
SCPI	Seattle consumer price index
USYP	U.S. personal income
USN	U.S. employment
USCPI	U.S. consumer price index

Personal income is the single most important equation in the Puget Sound Forecasting Model, since it influences many other variables (e.g., wholesale and retail trade employment). Although the forecast of income is not based on the same causal framework as found in other regional econometric models, it has a logic of its own. Reflecting the region's dependency upon national markets, Puget Sound income is expected to follow national income, all else being equal.

Regional income, however, will tend to grow faster than national income when regional employment outpaces U.S. employment, as indicated by the relative employment growth rate term. Regional income is also affected by local inflation. During periods of high inflation, which are typically associated with rapid expansions, regional wage rates will rise to offset the impact of higher living costs, particularly the higher cost of housing. Note that the relative inflation rate term enters the equation with a lag, as indicated by the PDL notation, which stands for polynomial distributed lag. In this case, personal income is being affected by the relative inflation rate in the current quarter as well as the three prior quarters, according to the estimated equation. Due to add factoring, the constant is predetermined to be -0.0001. This represents a small and statistically insignificant adjustment in the equation, since the original constant was 0.0005 and had a t-value of only 0.8. Finally, the estimated elasticities in the personal income equation are reasonable in size. If the regional economy is diversified and open to national markets, we would expect the U.S. income elasticity to display a value close to one. The current estimate is 1.01. Given that wages and salaries constitute 60 percent of personal income, we would expect the employment elasticity to be around 0.60. The current estimate is 0.66.

Puget Sound Other Durable Manufacturing Employment

Variable	Coefficient	T-Value
DLPNODUR		
C	-0.0120	-0.0
DLPYPW00	0.6190	6.2
DLPUNRT	-0.0607	-3.4
PDL(DLX)	0.1301	6.3

R^2=0.614, SEE=0.012, DW=1.301

DLPNODUR=log(PNODUR)-log(PNODUR(-1))
DLPYPW00=log(PYPW00)-log(PYPW00(-1))
DLPUNRT=log(PUNRT)-log(PUNRT(-1))
DLX=log(USX)-log(USX(-1))
PYPW00=((PYP-PYSTK)+0.4PYSTK)/USPC

PNODUR	Puget Sound other durable manufacturing employment
PYPW00	Puget Sound weighted average personal income ($00)
PUNRT	Puget Sound unemployment rate
USX	U.S. industrial production index
USPC	U.S. personal consumption deflator

Goods produced in other durable manufacturing (wood products, metals, machinery, and transportation equipment) are sold both inside and outside the region. Thus, the predictors in the other durable manufacturing employment equation include Puget Sound personal income and the unemployment rate, which represent the local or nonbasic demand, and the U.S. industrial production index, which represents the national or basic demand. Note that personal income in this equation is expressed in 2000 dollars. Income is also weighted to take into account the special effect of stock option income. With regard to its impact on spending, stock option income is discounted, since it is earned in large chunks and much of it is taxed and saved. Specifically, in terms of its impact on the regional economy through the multiplier process, a dollar of stock option income is considered to be the equivalent of only 40 cents of other personal income.

Puget Sound Construction Employment

Variable	Coefficient	T-Value
DLPNCON		
C	-0.0056	-0.0
PDL(DLPYPW00)	0.2273	6.2
PDL(DLPHS)	0.0374	5.8
AR(1)	0.2638	3.2

R^2=0.381, SEE=0.021, DW=2.034

DLPNCON=log(PNCON)-log(PNCON(-1))
DLPYPW00=log(PYPW00)-log(PYPW00(-1))
DLPHS=log(PHS)-log(PHS(-1))

PNCON	Puget Sound construction employment
PHS	Puget Sound housing permits

Construction is a nonbasic industry, primarily serving local demand. The key independent variables are real income and housing permits. Housing permits capture the variation in construction employment related to residential building cycles. Both the income and housing permit variables have four-quarter lags. The lag on housing permits stems from the fact that the housing permits are issued in advance of actual construction.

Puget Sound Unemployment Rate

Variable	Coefficient	T-Value
DLPUNRT		
C	0.0015	0.0
DLUNRT	0.6105	6.4
DLPNR	-1.8349	-3.3
MA(1)	0.5076	6.7

R^2=0.578, SEE=0.046, DW=1.917

DLPUNRT=log(PUNRT)-log(PUNRT(-1))
DLUNRT=log(USUNRT)-log(USUNRT(-1))
DLPNR=log(PN/USN)-log(PN(-1)/USN(-1))

USUNRT	U.S. unemployment rate

The formulation of the unemployment rate equation is based on labor market equilibrium principles. The first explanatory variable of the equation implies that the supply of labor expands (contracts) in response to increases (decreases) in the number of persons employed such that the region's unemployment rate follows, but does not necessarily equal, the national unemployment rate in the long run. As indicated by the second explanatory variable, the regional unemployment rate in the short run will tend to be low (high) relative to the national unemployment rate when regional employment is growing faster (slower) than national employment.

Puget Sound Population

Variable	Coefficient	T-Value
DLPPOP		
C	0.0005	0.0
DLPOP	0.8311	5.3
PDL(DLPNR)	0.0274	6.1
AR(1)	0.7839	11.6
MA(1)	0.2207	2.2

R^2=0.888, SEE=0.001, DW=1.956

DLPPOP=log(PPOP)-log(PPOP(-1))
DLPOP=log(USPOP)-log(USPOP(-1))
DLPNR=log(PN/USN)-log(PN(-1)/USN(-1))

PPOP	Puget Sound population
USPOP	U.S. population

Rather than adopting the cohort-survival method of forecasting population, population growth is depicted as a response to the change in the demand for labor. A plot of population change against employment change shows that population growth tends to follow employment growth. This fact is also evident in the population forecasting equation, which reveals a strong relationship between the regional and national employment-population ratios (the employment rates). In other words, when regional employment grows, population will increase such that the regional employment rate will tend to follow (though not necessarily equal) the national employment rate in the long run. Short-run deviations in the regional employment rate occur when Puget Sound employment is growing at a faster or slower rate than U.S. employment, as indicated by the relative employment growth rate term in the equation. As evident by the eight-quarter distributed lag on the employment term, population takes about two years to completely adjust to a new employment level. Note that the equation includes a first-order ARMA model.

King County Employment

Variable	Coefficient	T-Value
DLKN		
C	0.0004	0.0
DLPN	1.0229	70.7
DLKNAERR	0.0811	5.6

R^2=0.965, SEE=0.002, DW=1.612

DLKN=log(KN)-log(KN(-1))
DLPN=log(PN)-log(PN(-1))
DLKNAERR=log(KNAER/PNAER)-log(KNAER(-1)/PNAER(-1))

KN	King County employment
KNAER	King County aerospace employment
PNAER	Puget Sound aerospace employment

Given the regional forecasts of employment, personal income, the unemployment rate, housing permits, and population, the county submodel in effect predicts each county's share of regional economic activity. The null hypothesis for the King County employment equation is that, because the county economy is an integral part of the regional economy, the county grows along with the region. This is borne out in the estimated equation, as the elasticity of King County's employment growth rate with respect to the Puget Sound employment growth rate is close to one. However, as evident by the aerospace employment term, King County tends to expand faster than the region during Boeing upturns and slower than the region during Boeing downturns. Note that, as a final step in forecasting county employment, the individual county predictions are adjusted such that they sum to the regional total. In general, these adjustments are relatively small in size even as far out as 2040.

Pierce County Population

Variable	Coefficient	T-Value
DLTPOP		
C	-0.0006	0.0
DLPPOP	1.3125	12.1
PDL(DLTNR)	0.0322	2.0
AR(1)	0.7970	12.6
MA(1)	0.2176	2.2

R^2=0.885, SEE=0.001, DW=1.904

DLTPOP=log(TPOP)-log(TPOP(-1))
DLPPOP=log(PPOP)-log(PPOP(-1))
DLTNR=log(TN/PN)-log(TN(-1)/PN(-1))

TPOP	Pierce County population
TN	Pierce County employment

The Pierce County population forecasting equation has the same specification as the Puget Sound population forecasting equation. Thus, for example, relatively rapid employment growth in the county will translate into relatively rapid population growth.

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APPENDIX C

FORECASTING PROCEDURE

FORECASTING PROCEDURE

C-1. INTRODUCTION

Forecasting with the Puget Sound Forecasting Model entails two tasks: (1) updating and revising the data series for the 103 endogenous variables (and 296 supporting variables) and 24 exogenous variables; and (2) estimating the model and producing the forecast. This appendix describes these tasks in greater detail.

C-2. DATA

The data series are organized into eleven blocks. Each block has a corresponding spreadsheet where the data are estimated:

1. Puget Sound employment. Along with the personal income equation, the employment equations represent the core of the Puget Sound Forecasting Model. In general, updating the employment series requires very little work, as virtually all of the required data are reported. As noted in Appendix B, the Washington Employment Security Department (ESD) is the principal source of data. With one minor exception, ESD provides monthly seasonally unadjusted nonagricultural wage and salary employment or covered employment estimates for all sectors identified in the forecasting model (Table B-1) back to 2000.01 on their web site (www.workforceexplorer.com). The one exception is public education employment in Kitsap County. Note that employment data are periodically revised, sometimes as far back as three years. The spreadsheet showing the derivation of the 2000.01-2005.03 employment estimates is Puget Sound Employment.xls.

2. Puget Sound other employment. Because of the conversion of the employment classification scheme from the Standard Industrial Classification (SIC) code to the North American Industrial Classification Scheme (NAICS), there is little in the way of published employment series prior to 2000.01. Thus, virtually all of the series have to be estimated. There are good NAICS-based covered employment estimates for most industries from 1990.01 to 1999.12, which permits reasonable estimates of nonagricultural wage and salary employment estimates for all sectors during that time span. Between 1970.01 and 1989.12, however, we borrow employment estimates from the Puget Sound Economic Forecasting Model (Conway Pedersen Economics, Inc.). Unfortunately, there are only estimates for a more highly aggregated grouping of sectors. For example, while there are trade employment estimates from 1970.01 to 1999.12, there are wholesale trade and retail trade employment estimates from only 1990.01 to 1999.12. The relevant spreadsheet is Puget Sound Other Employment.xls.

3. Puget Sound proprietors. Due to the problems presented by the conversion to NAICS and the general unreliability of the proprietor estimates, there are no historical estimates of proprietors. Instead, using national data from

the U.S. Bureau of Labor Statistics (BLS), proprietor-wage and salary employment ratios are estimated for each industry in 2004. These ratios can be used in conjunction with the Puget Sound wage and salary employment projections to provide forecasts of proprietors. See Puget Sound Proprietors.xls.

4. Puget Sound military employment. The U.S. Bureau of Economic Analysis (BEA) and the Washington State Office of Financial Management (OFM) provide annual estimates of military employment in the region. The annual estimates are converted to quarterly estimates using a so-called spline routine, which is shown in Puget Sound Military Employment.xls

5. Puget Sound labor force. ESD reports monthly seasonally unadjusted estimates of labor force, persons employed, persons unemployed, and the unemployment rate by county. Note that ESD is currently undergoing an extended process to re-estimate labor force from 1990.01 to 1999.12. The regional labor force estimates are built up in Puget Sound Labor Force.xls.

6. Puget Sound housing permits. The U.S. Bureau of the Census publishes monthly seasonally unadjusted housing permit estimates by county. These estimates can be found in Puget Sound Housing Permits.xls.

7. Puget Sound personal income. Personal income and wage and salary disbursement are perhaps the most difficult estimates to make. In part, this is due to the fact that BEA publishes only annual county estimates. Moreover, the agency publishes them two years after the fact. Currently, the data series only go to 2003. Thus, it is necessary to extend the annual estimates to the current year and then to convert them into quarterly estimates. The procedures for doing this are shown in Puget Sound Personal Income.xls. The procedures make use of annual and quarterly estimates of Puget Sound employment and population and U.S. employment, population, personal income, and wage and salary disbursements.

8. Seattle consumer price index. This series is reported bi-monthly by BLS. Converting the published figures into quarterly estimates is straightforward. For example, since the first published number of the year falls in February, the middle month of the first quarter, it is taken to be the estimate for the first quarter. The second quarter estimate is calculated as the average of the April and June figures reported by BLS. The final estimates are shown in Seattle Consumer Price Index.xls.

9. Puget Sound population and households. The Census Bureau reports yearly July 1 population estimates for each county. These estimates are converted into quarterly series using the spline method. As noted in Appendix B, the Census Bureau only estimates households in the census years (e.g., 1990 and 2000). As a consequence, a linear interpolation procedure is used to make annual estimates. The spline method then converts the annual estimates into quarterly series. The derivation of the

population and household estimates is found in Puget Sound Population and Households.xls.

10. Puget Sound population by age. The Census Bureau estimates population by age in the United States for all years, but it reports population by age in the counties for only the census years. Thus, the quarterly estimates of population by age for each county are developed using techniques similar to those employed to estimate households. The procedures are found in Puget Sound Population by Age.xls.

11. U.S. and miscellaneous variables. The U.S. variables are reported by various government agencies, such as BEA, BLS, the Census Bureau, and the Federal Reserve. Historical data and forecasts have been provided by Global Insight, a national forecasting company. Since the Global Insight forecasts extended only to 2035.4, they were extrapolated to 2040.4 for purposes of this project. The miscellaneous variables include a small selection of variables, such as aerospace employment and Microsoft stock option income, that need to be forecast judgmentally. Note that judgment in this case is based in large part on independent studies (e.g., "The Microsoft Economic Impact Study").

C-3. MODEL ESTIMATION AND FORECASTING

The Puget Sound Forecasting Model is maintained and operated using an econometric modeling software called EViews. In addition to the software, the forecasting system is composed of three Excel spreadsheets (psdata.xls, usdata.xls, and dummy.xls), four EViews workfiles (psdatam.wf1, psdataq.wf1, psmodel.wf1, and year.wf1), two E-Views databases (psdata.edb and psforecast.edb), five E-Views programs (psdata.prg, psseasonalize.prg, pstransform.prg, psequations.prg, and psforecast.prg), and the model (psdata), which is contained in psmodel.wf1.

Following is a general description of the model estimation and forecasting procedures from the perspective of the five EViews programs. The programs can be found in Appendix D:

1. psdata.prg. Monthly data, such as the employment and labor force series published by ESD, are entered into the monthly page of psdata.xls. Similarly, quarterly data, such as the interpolated estimates of personal income from BEA, are entered into the quarterly page of psdata.xls. Finally, quarterly data and forecasts for the U.S. and other exogenous variables are entered into usdata.xls. See the two spreadsheets for additional information on the Puget Sound and U.S. data series and how they are stored.

   Once the data are entered into the two Excel spreadsheets, psdata.prg is run in EViews using the following command:

   run psdata 2005.03 2005.1 2005.2 2040.4

   Note that the parameters (so-called wildcards) are specific to the current data set. For example, 2005.03 and 2005.1 are currently the last historical observations for the monthly and quarterly series respectively, while 2005.2 and 2040.4 are the first and last quarters for the forecast period.

The program psdata.prg performs five tasks: (1) it reads 38 monthly data series (1970.01-2005.03) for the region and each of the four counties from psdata.xls and places them in psdatam.wf1 and psdata.edb. (2) it reads 22 quarterly data series for the region and 21 quarterly series for each of the counties (1970.1-2005.1) from psdata.xls and places them in psdataq.wf1 and psdata.edb; (3) it reads 17 U.S. variables and seven other exogenous variables (1970.1-2040.4) from usdata.xls and places them in psdataq.wf1 and psdata.edb; (4) it reads 141 dummy variables (1970.1-2040.4) from dummy.xls and places them in psdataq.wf1 and psdata.edb; and (5) fetches all variables in psdata.edb and stores them in psmodel.wf1. Since psmodel.wf1 is a quarterly workfile, the monthly data series fetched from psdata.edb are automatically transformed into quarterly data series.

2. psseasonalize.prg. Certain variables, such as the quarterly employment series, need to be seasonalized. The seasonally unadjusted variables are designated in psdata.xls with a "U" at the end of the variable name. The command is

   run psseasonalize 2005.1

   This program opens psmodel.wf1 and seasonally adjusts the employment, unemployment rate, and housing permit series. It also performs some "adding-up" tasks, such as creating a seasonally adjusted trade employment series by summing the previously seasonally adjusted wholesale trade and retail trade employment series.

3. pstransform.prg. This program is run with the following command:

   run pstransform 2005.1 2040.4

   The program pstransform.prg opens psmodel.wf1 and prepares the variables for model estimation. Most variables in the model are expressed in change-in-log form. As shown in the program, the change-in-log transformation for Puget Sound employment (pn) is

   dlpn=log(pn)-log(pn(-1))

4. psequations.prg. This program, which works within psmodel.wf1, estimates and saves the 47 behavioral equations in the Puget Sound Forecasting Model. The updated equations replace the existing ones in psmodel, which is the forecasting model stored in psmodel.wf1. To see psmodel, open psmodel.wf1 and use the command "show psmodel." The method of estimation is regression analysis. Note that there are a few behavioral equations in the model that are not estimated with regression analysis. The command is

   run psequations 2005.1

5. psforecast.prg. Once the equations are estimated and the model is updated, psforecast.prg is run:

run psforecast 2005.2 2040.4 2040

The program psforecast.prg opens psmodel.wf1 and solves psmodel, which is a simultaneous equation model, using an iterative solution procedure. The solution to the system of equations constitutes the forecast for the 59 endogenous variables over the 2005.2-2040.4 forecast period. The forecast is stored in psforecast.edb as well as saved in psmodel.wf1. The program psforecast.prg then opens year.wf1, which is an annual workfile, and fetches the forecast from psforecast.edb. The quarterly forecast is automatically transformed into an annual forecast when it enters year.wf1. Lastly, the program calculates annual percentage changes for each forecast variable and produces two temporary forecast tables (abc.xls and def.xls). These tables are used to analyze the forecast for its reasonableness.

APPENDIX D

EViews PROGRAMS

EViews PROGRAMS

D-1. INTRODUCTION

This appendix shows the six EViews programs required to maintain and operate the Puget Sound Forecasting Model. The sixth program (PSMODEL) is the forecasting model. It is contained in PSMODEL.WF1 and run by a SOLVE command in FORECAST.PRG.

Shown with each of the first five programs are the RUN command, the definitions of the "wild cards," and the specific RUN command used with the current version of the model.

D-2. PSDATA.PRG

```
run psdata %0 %1 %2 %3

%0  last historical month
%1  last historical quarter
%2  first forecast quarter
%3  last forecast quarter

run psdata 2005.03 2005.1 2005.2 2040.4

open psdatam.wf1
smpl 1970.01 1989.12
read(c5,t,s=monthly) psdata.xls 38
read(c95,t,s=monthly) psdata.xls 38
read(c185,t,s=monthly) psdata.xls 38
read(c275,t,s=monthly) psdata.xls 38
read(c365,t,s=monthly) psdata.xls 38
smpl 1990.01 %0
read(c50,t,s=monthly) psdata.xls 38
read(c140,t,s=monthly) psdata.xls 38
read(c230,t,s=monthly) psdata.xls 38
read(c320,t,s=monthly) psdata.xls 38
read(c410,t,s=monthly) psdata.xls 38
store(d=psdata) pn* plf* pun* ph* kn* klf* kun* kh* bn* blf* bun* bh*
tn* tlf* tun* th* sn* slf* sun* sh*
save psdatam
close psdatam
open psdataq.wf1
smpl 1970.1 %1
read(c5,t,s=quarterly) psdata.xls 22
read(c34,t,s=quarterly) psdata.xls 21
read(c62,t,s=quarterly) psdata.xls 21
read(c90,t,s=quarterly) psdata.xls 21
read(c118,t,s=quarterly) psdata.xls 21
smpl 1970.1 %1
read(c5,t) usdata.xls 17
read(c53,t) usdata.xls 7
smpl %2 %3
read(c29,t) usdata.xls 17
read(c67,t) usdata.xls 7
smpl 1970.1 %1
```

```
read(c5,t) dummy.xls 141
smpl %2 %3
read(c153,t) dummy.xls 141
store(d=psdata) py* pp* ph* pn* ky* kp* kh* kn* by* bp* bh* bn* ty* tp*
th* tn* sy* sp* sh* sn* scpi* us* dum*
save psdataq.wf1
close psdataq.wf1
open psmodel.wf1
fetch(d=psdata) py* pp* ph* pn* plf* pun* ky* kp* kh* kn* klf* kun* by*
bp* bh* bn* blf* bun* ty* tp* th* tn* tlf* tun* sy* sp* sh* sn* slf*
sun* scpi* us* dum*
save psmodel
close psmodel
```

D-3. PSSEASONALIZE.PRG

```
run psseasonalize %0

%0  last historical quarter

run psseasonalize 2005.1

open psmodel.wf1
smpl 1970.1 1999.4
x11(m) knresu knres
x11(m) knconu kncon
series knaer=knaeru
x11(m) knoduru knodur
x11(m) knnduru knndur
x11(m) kntrdu kntrd
x11(m) kntrnutilu kntrnutil
x11(m) kninfou kninfo
x11(m) knfinu knfin
x11(m) knprofbusu knprofbus
x11(m) knoservu knoserv
x11(m) kngovslu kngovsl
x11(m) kngovfedu kngovfed
x11(m) klfu klf
x11(m) kunrtu kunrt
x11(m) khssnu khssn
x11(m) khsmlu khsml
smpl 1976.1 %0
x11(m) knresu knres
x11(m) knconu kncon
series knaer=knaeru
x11(m) knoduru knodur
x11(m) knnduru knndur
x11(m) kntrdu kntrd
x11(m) kntrnutilu kntrnutil
x11(m) kninfou kninfo
x11(m) knfinu knfin
x11(m) knprofbusu knprofbus
x11(m) knoservu knoserv
x11(m) kngovslu kngovsl
x11(m) kngovfedu kngovfed
x11(m) klfu klf
x11(m) kunrtu kunrt
```

```
x11(m) khssnu khssn
x11(m) khsmlu khsml
smpl 1990.1 %0
x11(m) knwhtrdu knwhtrd
x11(m) knretrdu knretrd
x11(m) kntrnu kntrn
x11(m) knutilu knutil
x11(m) kncomu kncom
x11(m) knoinfou knoinfo
x11(m) kneatu kneat
x11(m) kneducu kneduc
x11(m) knhlthu knhlth
x11(m) knoservxu knoservx
x11(m) kngovseducu kngovseduc
x11(m) kngovleducu kngovleduc
x11(m) kngovoslu kngovosl
series kntrd=knwhtrd+knretrd
series kntrnutil=kntrn+knutil
series kninfo=kncom+knoinfo
series knoserv=kneat+kneduc+knhlth+knoservx
series kngovsl=kngovseduc+kngovleduc+kngovosl
smpl 1970.1 %0
series knmfg=knaer+knodur+knndur
series kngoods=knres+kncon+knmfg
series kngov=kngovsl+kngovfed
series knserv=kntrd+kntrnutil+kninfo+knfin+knprofbus+knoserv+kngov
series kn=kngoods+knserv
series knper=klf*(1-kunrt/100)
series knunper=klf-knper
series khssn=khssn*12
series khsml=khsml*12
series khs=khssn+khsml
d k*u
store(d=psdata) kn* klf* kun* kh*
smpl 1970.1 1999.4
x11(m) bnresu bnres
x11(m) bnconu bncon
series bnaer=bnaeru
x11(m) bnoduru bnodur
x11(m) bnnduru bnndur
x11(m) bntrdu bntrd
x11(m) bntrnutilu bntrnutil
x11(m) bninfou bninfo
x11(m) bnfinu bnfin
x11(m) bnprofbusu bnprofbus
x11(m) bnoservu bnoserv
x11(m) bngovslu bngovsl
x11(m) bngovfedu bngovfed
x11(m) blfu blf
x11(m) bunrtu bunrt
x11(m) bhssnu bhssn
x11(m) bhsmlu bhsml
smpl 1976.1 %0
x11(m) bnresu bnres
x11(m) bnconu bncon
series bnaer=bnaeru
x11(m) bnoduru bnodur
```

```
x11(m) bnnduru bnndur
x11(m) bntrdu bntrd
x11(m) bntrnutilu bntrnutil
x11(m) bninfou bninfo
x11(m) bnfinu bnfin
x11(m) bnprofbusu bnprofbus
x11(m) bnoservu bnoserv
x11(m) bngovslu bngovsl
x11(m) bngovfedu bngovfed
x11(m) blfu blf
x11(m) bunrtu bunrt
x11(m) bhssnu bhssn
x11(m) bhsmlu bhsml
smpl 1990.1 %0
x11(m) bnwhtrdu bnwhtrd
x11(m) bnretrdu bnretrd
x11(m) bntrnu bntrn
x11(m) bnutilu bnutil
x11(m) bncomu bncom
x11(m) bnoinfou bnoinfo
x11(m) bneatu bneat
x11(m) bneducu bneduc
x11(m) bnhlthu bnhlth
x11(m) bnoservxu bnoservx
series bngovseduc=bngovseducu
series bngovleduc=bngovleducu
x11(m) bngovoslu bngovosl
series bntrd=bnwhtrd+bnretrd
series bntrnutil=bntrn+bnutil
series bninfo=bncom+bnoinfo
series bnoserv=bneat+bneduc+bnhlth+bnoservx
series bngovsl=bngovseduc+bngovleduc+bngovosl
smpl 1970.1 %0
series bnmfg=bnaer+bnodur+bnndur
series bngoods=bnres+bncon+bnmfg
series bngov=bngovsl+bngovfed
series bnserv=bntrd+bntrnutil+bninfo+bnfin+bnprofbus+bnoserv+bngov
series bn=bngoods+bnserv
series bnper=blf*(1-bunrt/100)
series bnunper=blf-bnper
series bhssn=bhssn*12
series bhsml=bhsml*12
series bhs=bhssn+bhsml
d b*u
store(d=psdata) bn* blf* bun* bh*
smpl 1970.1 1999.4
x11(m) tnresu tnres
x11(m) tnconu tncon
series tnaer=tnaeru
x11(m) tnoduru tnodur
x11(m) tnnduru tnndur
x11(m) tntrdu tntrd
x11(m) tntrnutilu tntrnutil
x11(m) tninfou tninfo
x11(m) tnfinu tnfin
x11(m) tnprofbusu tnprofbus
x11(m) tnoservu tnoserv
```

```
x11(m) tngovslu tngovsl
x11(m) tngovfedu tngovfed
x11(m) tlfu tlf
x11(m) tunrtu tunrt
x11(m) thssnu thssn
x11(m) thsmlu thsml
smpl 1976.1 %0
x11(m) tnresu tnres
x11(m) tnconu tncon
series tnaer=tnaeru
x11(m) tnoduru tnodur
x11(m) tnnduru tnndur
x11(m) tntrdu tntrd
x11(m) tntrnutilu tntrnutil
x11(m) tninfou tninfo
x11(m) tnfinu tnfin
x11(m) tnprofbusu tnprofbus
x11(m) tnoservu tnoserv
x11(m) tngovslu tngovsl
x11(m) tngovfedu tngovfed
x11(m) tlfu tlf
x11(m) tunrtu tunrt
x11(m) thssnu thssn
x11(m) thsmlu thsml
smpl 1990.1 %0
x11(m) tnwhtrdu tnwhtrd
x11(m) tnretrdu tnretrd
x11(m) tntrnu tntrn
x11(m) tnutilu tnutil
x11(m) tncomu tncom
x11(m) tnoinfou tnoinfo
x11(m) tneatu tneat
x11(m) tneducu tneduc
x11(m) tnhlthu tnhlth
x11(m) tnoservxu tnoservx
x11(m) tngovseducu tngovseduc
x11(m) tngovleducu tngovleduc
x11(m) tngovoslu tngovosl
series tntrd=tnwhtrd+tnretrd
series tntrnutil=tntrn+tnutil
series tninfo=tncom+tnoinfo
series tnoserv=tneat+tneduc+tnhlth+tnoservx
series tngovsl=tngovseduc+tngovleduc+tngovosl
smpl 1970.1 %0
series tnmfg=tnaer+tnodur+tnndur
series tngoods=tnres+tncon+tnmfg
series tngov=tngovsl+tngovfed
series tnserv=tntrd+tntrnutil+tninfo+tnfin+tnprofbus+tnoserv+tngov
series tn=tngoods+tnserv
series tnper=tlf*(1-tunrt/100)
series tnunper=tlf-tnper
series thssn=thssn*12
series thsml=thsml*12
series ths=thssn+thsml
d t*u
store(d=psdata) tn* tlf* tun* th*
smpl 1970.1 1999.4
```

```
x11(m) snresu snres
x11(m) snconu sncon
series snaer=snaeru
x11(m) snoduru snodur
x11(m) snnduru snndur
x11(m) sntrdu sntrd
x11(m) sntrnutilu sntrnutil
x11(m) sninfou sninfo
x11(m) snfinu snfin
x11(m) snprofbusu snprofbus
x11(m) snoservu snoserv
x11(m) sngovslu sngovsl
x11(m) sngovfedu sngovfed
x11(m) slfu slf
x11(m) sunrtu sunrt
x11(m) shssnu shssn
x11(m) shsmlu shsml
smpl 1976.1 %0
x11(m) snresu snres
x11(m) snconu sncon
series snaer=snaeru
x11(m) snoduru snodur
x11(m) snnduru snndur
x11(m) sntrdu sntrd
x11(m) sntrnutilu sntrnutil
x11(m) sninfou sninfo
x11(m) snfinu snfin
x11(m) snprofbusu snprofbus
x11(m) snoservu snoserv
x11(m) sngovslu sngovsl
x11(m) sngovfedu sngovfed
x11(m) slfu slf
x11(m) sunrtu sunrt
x11(m) shssnu shssn
x11(m) shsmlu shsml
smpl 1990.1 %0
x11(m) snwhtrdu snwhtrd
x11(m) snretrdu snretrd
x11(m) sntrnu sntrn
x11(m) snutilu snutil
x11(m) sncomu sncom
x11(m) snoinfou snoinfo
x11(m) sneatu sneat
x11(m) sneducu sneduc
x11(m) snhlthu snhlth
x11(m) snoservxu snoservx
x11(m) sngovseducu sngovseduc
x11(m) sngovleducu sngovleduc
x11(m) sngovoslu sngovosl
series sntrd=snwhtrd+snretrd
series sntrnutil=sntrn+snutil
series sninfo=sncom+snoinfo
series snoserv=sneat+sneduc+snhlth+snoservx
series sngovsl=sngovseduc+sngovleduc+sngovosl
smpl 1970.1 %0
series snmfg=snaer+snodur+snndur
series sngoods=snres+sncon+snmfg
```

```
series sngov=sngovsl+sngovfed
series snserv=sntrd+sntrnutil+sninfo+snfin+snprofbus+snoserv+sngov
series sn=sngoods+snserv
series snper=slf*(1-sunrt/100)
series snunper=slf-snper
series shssn=shssn*12
series shsml=shsml*12
series shs=shssn+shsml
d s*u
store(d=psdata) sn* slf* sun* sh*
series pnres=knres+bnres+tnres+snres
series pncon=kncon+bncon+tncon+sncon
series pnaer=knaer+bnaer+tnaer+snaer
series pnodur=knodur+bnodur+tnodur+snodur
series pnndur=knndur+bnndur+tnndur+snndur
series pntrd=kntrd+bntrd+tntrd+sntrd
series pntrnutil=kntrnutil+bntrnutil+tntrnutil+sntrnutil
series pninfo=kninfo+bninfo+tninfo+sninfo
series pnfin=knfin+bnfin+tnfin+snfin
series pnprofbus=knprofbus+bnprofbus+tnprofbus+snprofbus
series pnoserv=knoserv+bnoserv+tnoserv+snoserv
series pngovsl=kngovsl+bngovsl+tngovsl+sngovsl
series pngovfed=kngovfed+bngovfed+tngovfed+sngovfed
series pnmfg=pnaer+pnodur+pnndur
series pngoods=pnres+pncon+pnmfg
series pngov=pngovsl+pngovfed
series pnserv=pntrd+pntrnutil+pninfo+pnfin+pnprofbus+pnoserv+pngov
series pn=pngoods+pnserv
series plf=klf+blf+tlf+slf
series pnper=knper+bnper+tnper+snper
series pnunper=plf-pnper
series punrt=pnunper/plf*100
series phssn=khssn+bhssn+thssn+shssn
series phsml=khsml+bhsml+thsml+shsml
series phs=phssn+phsml
smpl 1990.1 %0
series pnwhtrd=knwhtrd+bnwhtrd+tnwhtrd+snwhtrd
series pnretrd=knretrd+bnretrd+tnretrd+snretrd
series pntrn=kntrn+bntrn+tntrn+sntrn
series pnutil=knutil+bnutil+tnutil+snutil
series pncom=kncom+bncom+tncom+sncom
series pnoinfo=knoinfo+bnoinfo+tnoinfo+snoinfo
series pneat=kneat+bneat+tneat+sneat
series pneduc=kneduc+bneduc+tneduc+sneduc
series pnhlth=knhlth+bnhlth+tnhlth+snhlth
series pnoservx=knoservx+bnoservx+tnoservx+snoservx
series pngovseduc=kngovseduc+bngovseduc+tngovseduc+sngovseduc
series pngovleduc=kngovleduc+bngovleduc+tngovleduc+sngovleduc
series pngovosl=kngovosl+bngovosl+tngovosl+sngovosl
d p*u
store(d=psdata) pn* plf* pun* ph*
save psmodel
close psmodel
open year.wf1
fetch(d=psdata) pn* plf* pun* ph* kn* klf* kun* kh* bn* blf* bun* bh*
tn* tlf* tun* th* sn* slf* sun* sh*
smpl 2003 2003
```

```
write abc.xls pn pngoods pnres pncon pnmfg pnaer pnodur pnndur pnserv
pntrd pnwhtrd pnretrd pntrnutil pntrn pnutil pninfo pncom pnoinfo pnfin
pnprofbus pnoserv pneat pneduc pnhlth pnoservx pngov pngovsl pngovseduc
pngovleduc pngovosl pngovfed plf pnper pnunper punrt phs phssn phsml kn
kngoods knres kncon knmfg knaer knodur knndur knserv kntrd knwhtrd
knretrd kntrnutil kntrn knutil kninfo kncom knoinfo knfin knprofbus
knoserv kneat kneduc knhlth knoservx kngov kngovsl kngovseduc
kngovleduc kngovosl kngovfed klf knper knunper kunrt khs khssn khsml bn
bngoods bnres bncon bnmfg bnaer bnodur bnndur bnserv bntrd bnwhtrd
bnretrd bntrnutil bntrn bnutil bninfo bncom bnoinfo bnfin bnprofbus
bnoserv bneat bneduc bnhlth bnoservx bngov bngovsl bngovseduc
bngovleduc bngovosl bngovfed blf bnper bnunper bunrt bhs bhssn bhsml tn
tngoods tnres tncon tnmfg tnaer tnodur tnndur tnserv tntrd tnwhtrd
tnretrd tntrnutil tntrn tnutil tninfo tncom tnoinfo tnfin tnprofbus
tnoserv tneat tneduc tnhlth tnoservx tngov tngovsl tngovseduc
tngovleduc tngovosl tngovfed tlf tnper tnunper tunrt ths thssn thsml sn
sngoods snres sncon snmfg snaer snodur snndur snserv sntrd snwhtrd
snretrd sntrnutil sntrn snutil sninfo sncom snoinfo snfin snprofbus
snoserv sneat sneduc snhlth snoservx sngov sngovsl sngovseduc
sngovleduc sngovosl sngovfed slf snper snunper sunrt shs shssn shsml
save year
close year
```

D-4. PSTRANSFORM.PRG

```
run pstransform %0 %1

%0  last historical quarter
%1  last forecast quarter

run pstransform 2005.1 2040.4

open psmodel.wf1
smpl 1970.1 %0
series dlpyp=log(pyp)-log(pyp(-1))
series pype=pyp-pystk-pydiv
series pype00=pype/uspc
series pyppe=(pype/ppop)*1000
series pyppe00=pyppe/uspc
series dlpype=log(pype)-log(pype(-1))
series pypw=pype+0.4*pystk
series pypw00=pypw/uspc
series dlpypw00=log(pypw00)-log(pypw00(-1))
series pywse00=pyws00-pystk/uspc
series dlpywse00r=log(pywse00/pype00)-log(pywse00(-1)/pype00(-1))
series dlpn=log(pn)-log(pn(-1))
series dlpnr=log(pn/usn)-log(pn(-1)/usn(-1))
series dlpunrt=log(punrt)-log(punrt(-1))
series dlpunrtr=log(punrt/usunrt)-log(punrt(-1)/usunrt(-1))
series dlpnres=log(pnres)-log(pnres(-1))
series dlpncon=log(pncon)-log(pncon(-1))
series dlpnaer=log(pnaer)-log(pnaer(-1))
series dlpnodur=log(pnodur)-log(pnodur(-1))
series dlpnndur=log(pnndur)-log(pnndur(-1))
series pnogoods=pngoods-pnaer
series dlpnogoods=log(pnogoods)-log(pnogoods(-1))
series dlpnserv=log(pnserv)-log(pnserv(-1))
```

```
series dlpntrd=log(pntrd)-log(pntrd(-1))
series dlpntrnutil=log(pntrnutil)-log(pntrnutil(-1))
series pninfoe=pninfo-pnms
series pnoinfoe=pninfoe-pncom
series dlpnoinfoe=log(pnoinfoe)-log(pnoinfoe(-1))
series dlpninfoe=log(pninfoe)-log(pninfoe(-1))
series dlpnfin=log(pnfin)-log(pnfin(-1))
series dlpnprofbus=log(pnprofbus)-log(pnprofbus(-1))
series dlpnoserv=log(pnoserv)-log(pnoserv(-1))
series dlpngovsl=log(pngovsl)-log(pngovsl(-1))
series dlpngovfed=log(pngovfed)-log(pngovfed(-1))
smpl 1990.1 %0
series dlpnwhtrd=log(pnwhtrd)-log(pnwhtrd(-1))
series dlpnretrd=log(pnretrd)-log(pnretrd(-1))
series dlpntrn=log(pntrn)-log(pntrn(-1))
series dlpnutil=log(pnutil)-log(pnutil(-1))
series dlpncom=log(pncom)-log(pncom(-1))
series dlpnoinfo=log(pnoinfo)-log(pnoinfo(-1))
series dlpneat=log(pneat)-log(pneat(-1))
series dlpneduc=log(pneduc)-log(pneduc(-1))
series dlpnhlth=log(pnhlth)-log(pnhlth(-1))
series dlpnoservx=log(pnoservx)-log(pnoservx(-1))
series dlpngovseduc=log(pngovseduc)-log(pngovseduc(-1))
series dlpngovleduc=log(pngovleduc)-log(pngovleduc(-1))
series dlpngovosl=log(pngovosl)-log(pngovosl(-1))
smpl 1970.1 %0
series dlppop=log(ppop)-log(ppop(-1))
series dlppopr=log(ppop/uspop)-log(ppop(-1)/uspop(-1))
series dlppop5=log(ppop5)-log(ppop5(-1))
series dlphs=log(phs)-log(phs(-1))
series phsb=(ushs/uspop)*ppop
series dlphsb=log(phs)-log(phsb)
series lphssnr=log(phssn/phs)
series dlscpi=log(scpi)-log(scpi(-1))
series dlscpir=log(scpi/uscpi)-log(scpi(-1)/uscpi(-1))
series ppophsesnr=ppophsesn/ppophse
series dlppophsesnr=log(ppophsesnr)-log(ppophsesnr(-1))
series dlphseszsn=log(phseszsn)-log(phseszsn(-1))
series dlphseszml=log(phseszml)-log(phseszml(-1))
series kype=kyp-pystk-pydiv
series kype00=kype/uspc
series kyppe00=(kype00/kpop)*1000
series dlkn=log(kn)-log(kn(-1))
series dlknr=log(kn/pn)-log(kn(-1)/pn(-1))
series dlknaerr=log(knaer/pnaer)-log(knaer(-1)/pnaer(-1))
series knogoods=kngoods-knaer
series dlknogoods=log(knogoods)-log(knogoods(-1))
series dlkpop=log(kpop)-log(kpop(-1))
series dlbn=log(bn)-log(bn(-1))
series dlbnr=log(bn/pn)-log(bn(-1)/pn(-1))
series bnogoods=bngoods-bnaer
series dlbnogoods=log(bnogoods)-log(bnogoods(-1))
series dlbpop=log(bpop)-log(bpop(-1))
series dltn=log(tn)-log(tn(-1))
series dltnr=log(tn/pn)-log(tn(-1)/pn(-1))
series tnogoods=tngoods-tnaer
series dltnogoods=log(tnogoods)-log(tnogoods(-1))
```

```
series dltpop=log(tpop)-log(tpop(-1))
series dlsn=log(sn)-log(sn(-1))
series dlsnr=log(sn/pn)-log(sn(-1)/pn(-1))
series dlsnaerr=log(snaer/pnaer)-log(snaer(-1)/pnaer(-1))
series snogoods=sngoods-snaer
series dlsnogoods=log(snogoods)-log(snogoods(-1))
series dlspop=log(spop)-log(spop(-1))
smpl 1970.1 %1
series dlgdp00=log(usgdp00)-log(usgdp00(-1))
series dlx=log(usx)-log(usx(-1))
series dln=log(usn)-log(usn(-1))
series dlunrt=log(usunrt)-log(usunrt(-1))
series dlcpi=log(uscpi)-log(uscpi(-1))
series dlhs=log(ushs)-log(ushs(-1))
series dlpop=log(uspop)-log(uspop(-1))
series dlrmtg=log(usrmtg)-log(usrmtg(-1))
series lrmtg=log(usrmtg)
series dlyp=log(usyp)-log(usyp(-1))
series usyp00=usyp/uspc
series usyws00=usyws/uspc
series dlyws00r=log(usyws00/usyp00)-log(usyws00(-1)/usyp00(-1))
series usypp00=(usyp00/uspop)*1000
series dlny=log((usn/usn(-1))/(usyp00/usyp00(-1)))
save psmodel
close psmodel
```

D-5. PSEQUATIONS.PRG

```
run psequations %0

%0  last historical quarter

run psequations 2005.1

open psmodel.wf1
smpl 1970.1 %0
equation pypeeq.ls dlpype+0.0001 dlyp dlpnr pdl(dlscpir,4,2,3) ma(1)
equation pywse00eq.ls dlpywse00r c dlyws00r dlpnr ar(1)
equation punrteq.ls dlpunrt-0.0015 dlunrt dlpnr dum721 dum751 ma(1)
equation pnreseq.ls dlpnres c dlpncon
equation pnconeq.ls dlpncon+0.0056 pdl(dlpypw00,4,2,3) pdl(dlphs,4,2,3)
ar(1)
equation pnodureq.ls dlpnodur+0.012 dlpypw00 dlpunrt pdl(dlx,4,2,3)
dum741 dum742 dum743 dum752 dum773 dum933 dum951
equation pnndureq.ls dlpnndur+0.007 dlpypw00 dlx
equation pntrdeq.ls dlpntrd+0.0014 dlpypw00 pdl(dlphs,4,2,3) dlny
dum741 dum812 dum821 dum861 dum883 dum972 ar(1)
equation pnwhtrdeq.ls dlpnwhtrd c dlpntrd
equation pnretrdeq.ls dlpnretrd c dlpntrd
equation pntrnutileq.ls dlpntrnutil+0.003 dlpypw00 dlpunrt ar(1)
equation pntrneq.ls dlpntrn c dlpntrnutil
equation pnutileq.ls dlpnutil+0.005 dlpntrnutil
equation pninfoeeq.ls dlpninfoe-0.0025 dlpypw00 dum841 dum881 ar(1)
equation pncomeq.ls dlpncom c dlpninfoe
equation pnoinfoeeq.ls dlpnoinfoe c dlpninfoe
equation pnfineq.ls dlpnfin-0.0055 pdl(dlpncon,4,2,3) dlrmtg(-1) time
smpl 1980.1 %0
```

```
equation pnprofbuseq.ls dlpnprofbus-0.003 pdl(dlpypw00,4,2,3) dlpunrt
pdl(dlny,4,2,3)
smpl 1970.1 %0
equation pnoserveq.ls dlpnoserv-0.0059 dlpypw00  dlny time dum881
dum933 ar(1)
equation pneateq.ls dlpneat c dlpnoserv dlpunrt
equation pneduceq.ls dlpneduc c dlpnoserv
equation pnhltheq.ls dlpnhlth c dlpnoserv
equation pnoservxeq.ls dlpnoservx c dlpnoserv
equation pngovsleq.ls dlpngovsl+0.002 dlppop dum813 dum814 dum843
dum903 dum011
equation pngovseduceq.ls dlpngovseduc c pdl(dlppop,8,2,3)
equation pngovleduceq.ls dlpngovleduc c pdl(dlppop5,4,2,3) ma(1)
equation pngovosleq.ls dlpngovosl-0.001 dlpngovsl
equation pngovfedeq.ls dlpngovfed c dum802 dum002
equation ppopeq.ls dlppop-0.0005 dlpop pdl(dlpnr,8,2,3) ar(1) ma(1)
equation phseq.ls dlphsb c pdl(dlppopr,4,2,3) ar(1)
equation phssneq.ls lphssnr c lrmtg dum883 ar(1) ma(1)
equation scpieq.ls dlscpi+0.0008 dlcpi pdl(dlppopr,8,2,3) dum782 dum791
dum811 dum823
equation ppophsesnreq.ls dlppophsesnr+0.0007 dum911 ar(1) ma(1)
equation phseszsneq.ls dlphseszsn+0.0009 dum801 dum811 ar(1) ar(2)
equation phseszmleq.ls dlphseszml+0.00025 ar(1)
equation kneq.ls dlkn-0.0004 dlpn dlknaerr
equation knogoodseq.ls dlknogoods c dlpnogoods dlknr
equation kpopeq.ls dlkpop c dlppop ar(1) ma(1)
equation bneq.ls dlbn-0.004 dlpn dum723 dum734 dum741 dum753 dum771
dum932 dum981
equation bnogoodseq.ls dlbnogoods-0.0015 dlpnogoods dlbnr
equation bpopeq.ls dlbpop c dlppop ar(1) ma(1)
equation tneq.ls dltn c dlpn dum763 dum774 dum814 dum832 dum863 dum931
equation tnogoodseq.ls dltnogoods c dlpnogoods dltnr
equation tpopeq.ls dltpop+0.0006 dlppop pdl(dltnr,4,2,3) ar(1) ma(1)
equation sneq.ls dlsn+0.000 dlpn dlsnaerr dum702 dum712 dum741 dum792
dum802 dum833 dum834 dum901 dum913 dum954 dum991 dum992
equation snogoodseq.ls dlsnogoods c dlpnogoods dlsnr
equation spopeq.ls dlspop+0.0003 dlppop  ar(1) ma(1)
save psmodel
close psmodel
```

D-6. PSFORECAST.PRG

```
run psforecast %0 %1 %2

%0  first forecast quarter
%1  last forecast quarter
%2  last forecast year

run psforecast 2005.2 2040.4 2040

open psmodel.wf1
smpl %0 %1
solve(c=0.000001,m=1000) psmodel
store(d=psforecast) p* k* s* t* b* u*
save psmodel
close psmodel
open year.wf1
```

```
fetch(d=psforecast) p* k* s* t* b* u*
smpl 1980 %2
series dpyp=((pyp/pyp(-1))-1.0)*100
series dpyp00=((pyp00/pyp00(-1))-1.0)*100
series dpn=((pn/pn(-1))-1.0)*100
series dpunrt=((punrt/punrt(-1))-1.0)*100
series dphs=((phs/phs(-1))-1.0)*100
series dppop=((ppop/ppop(-1))-1.0)*100
series dscpi=((scpi/scpi(-1))-1.0)*100
series dgdp00=((usgdp00/usgdp00(-1))-1.0)*100
series dyp=((usyp/usyp(-1))-1.0)*100
series dyp00=((usyp00/usyp00(-1))-1.0)*100
series dn=((usn/usn(-1))-1.0)*100
series dunrt=((usunrt/usunrt(-1))-1.0)*100
series dhs=((ushs/ushs(-1))-1.0)*100
series dpop=((uspop/uspop(-1))-1.0)*100
series dcpi=((uscpi/uscpi(-1))-1.0)*100
series dpypdif=dpyp-dpn
series dusypdif=dyp-dn
series pnrt=pn/ppop
series usnrt=usn/uspop
series pypp00r=pypp00/usypp00
series dpndif=dpn-dn
series dscpidif=dscpi-dcpi
series phsr=phs/(ushs*1000000)
series dkn=((kn/kn(-1))-1.0)*100
series dbn=((bn/bn(-1))-1.0)*100
series dtn=((tn/tn(-1))-1.0)*100
series dsn=((sn/sn(-1))-1.0)*100
series pnshr=pn/pn
series knshr=kn/pn
series bnshr=bn/pn
series tnshr=tn/pn
series snshr=sn/pn
series dkyp=((kyp/kyp(-1))-1.0)*100
series dbyp=((byp/byp(-1))-1.0)*100
series dtyp=((typ/typ(-1))-1.0)*100
series dsyp=((syp/syp(-1))-1.0)*100
series pypshr=pyp/pyp
series kypshr=kyp/pyp
series bypshr=byp/pyp
series typshr=typ/pyp
series sypshr=syp/pyp
series dkpop=((kpop/kpop(-1))-1.0)*100
series dbpop=((bpop/bpop(-1))-1.0)*100
series dtpop=((tpop/tpop(-1))-1.0)*100
series dspop=((spop/spop(-1))-1.0)*100
series ppopshr=ppop/ppop
series kpopshr=kpop/ppop
series bpopshr=bpop/ppop
series tpopshr=tpop/ppop
series spopshr=spop/ppop
smpl 1990 %2
write(b2) abc.xls pyp dpyp pyp00 dpyp00 pn dpn punrt dpunrt phs dphs
phssn phsml ppop dppop scpi dscpi pn pngoods pnres pncon pnmfg pnaer
pnodur pnndur pnserv pntrd pntrnutil pninfo pnfin pnprofbus pnoserv
pngov pngovsl pngovfed pnmil usgdp00 dgdp00 usyp dyp usyp00 dyp00 usn
```

```
dn usunrt dunrt ushs dhs uspop dpop uscpi dcpi dpypdif dusypdif pnrt
usnrt pypp00r dpndif dscpidif phsr ppop ppopgrqt ppophse ppophsesn
ppophseml phse phsesn phseml phsesz phseszsn phseszml
write(b2) def.xls pn dpn kn dkn bn dbn tn dtn sn dsn pnshr knshr bnshr
tnshr snshr pyp dpyp kyp dkyp byp dbyp typ dtyp syp dsyp pypshr kypshr
bypshr typshr sypshr ppop dppop kpop dkpop bpop dbpop tpop dtpop spop
dspop ppopshr kpopshr bpopshr tpopshr spopshr
save year
close year
```

D-7. PSMODEL

```
:pypeeq
pype=exp(log(pype(-1))+dlpype)
pyp=pype+pystk+pydiv
pyp00=pyp/uspc
pypp00=pyp00/ppop*1000
pype00=pype/uspc
:pywse00eq
pywse00=pype00*exp(log(pywse00(-1)/pype00(-1))+dlpywse00r)
pyws00=pywse00+pystk/uspc
pyoth00=pyp00-pyws00
pypw=pype+0.4*pystk
pypw00=pypw/uspc
dlpypw00=log(pypw00)-log(pypw00(-1))
:punrteq
punrt=exp(log(punrt(-1))+dlpunrt)
dlpunrtr=log(punrt/usunrt)-log(punrt(-1)/usunrt(-1))
pn=pngoods+pnserv
dlpn=log(pn)-log(pn(-1))
dlpnr=log(pn/usn)-log(pn(-1)/usn(-1))
pngoods=pnres+pncon+pnmfg
pnogoods=pngoods-pnaer
dlpnogoods=log(pnogoods)-log(pnogoods(-1))
:pnreseq
pnres=exp(log(pnres(-1))+dlpnres)
:pnconeq
pncon=exp(log(pncon(-1))+dlpncon)
pnmfg=pnaer+pnodur+pnndur
pnaer=pnaer
:pnodureq
pnodur=exp(log(pnodur(-1))+dlpnodur)
:pnndureq
pnndur=exp(log(pnndur(-1))+dlpnndur)
pnserv=pntrd+pntrnutil+pninfo+pnfin+pnprofbus+pnoserv+pngov
:pntrdeq
pntrd=exp(log(pntrd(-1))+dlpntrd)
:pntrnutileq
pntrnutil=exp(log(pntrnutil(-1))+dlpntrnutil)
:pninfoeeq
pninfoe=exp(log(pninfoe(-1))+dlpninfoe)
pninfo=pninfoe+pnms
:pnfineq
pnfin=exp(log(pnfin(-1))+dlpnfin)
:pnprofbuseq
pnprofbus=exp(log(pnprofbus(-1))+dlpnprofbus)
:pnoserveq
```

```
pnoserv=exp(log(pnoserv(-1))+dlpnoserv)
pngov=pngovsl+pngovfed
:pngovsleq
pngovsl=exp(log(pngovsl(-1))+dlpngovsl)
:pngovfedeq
pngovfed=exp(log(pngovfed(-1))+dlpngovfed)
pnmil=pnmil(-1)
:ppopeq
ppop=exp(log(ppop(-1))+dlppop)
dlppopr=log(ppop/uspop)-log(ppop(-1)/uspop(-1))
dppop=ppop-ppop(-1)
ppop0=ppop*(ppop0(-1)/ppop(-1))*((uspop0/uspop)/(uspop0(-1)/uspop(-1)))
ppop5=ppop*(ppop5(-1)/ppop(-1))*((uspop5/uspop)/(uspop5(-1)/uspop(-1)))
ppop20=ppop-ppop0-ppop5-ppop65
ppop65=ppop*(ppop65(-1)/ppop(-1))*((uspop65/uspop)/(uspop65(-1)/uspop(-
1)))
dlppop5=log(ppop5)-log(ppop5(-1))
:phseq
phs=exp(log(ushs/uspop*ppop)+dlphsb)
dlphs=log(phs)-log(phs(-1))
:phssneq
phssn=phs*exp(lphssnr)
phsml=phs-phssn
:scpieq
scpi=exp(log(scpi(-1))+dlscpi)
dlscpir=log(scpi/uscpi)-log(scpi(-1)/uscpi(-1))
ppopgrqt=ppopgrqt(-1)/ppop(-1)*ppop
ppophse=ppop-ppopgrqt
:ppophsesnreq
ppophsesn=ppophse*exp(log(ppophsesn(-1)/ppophse(-1))+dlppophsesnr)
ppophseml=ppophse-ppophsesn
:phseszsneq
phseszsn=exp(log(phseszsn(-1))+dlphseszsn)
:phseszmleq
phseszml=exp(log(phseszml(-1))+dlphseszml)
phsesn=ppophsesn/phseszsn
phseml=ppophseml/phseszml
phse=phsesn+phseml
phsesz=ppophse/phse
pyhsesn00=pypp00*ppophsesn/1000
pyhseml00=pypp00*ppophseml/1000
pyhse00=pyhsesn00+pyhseml00
:pnwhtrdeq
pnwhtrd=exp(log(pnwhtrd(-1))+dlpnwhtrd)
:pnretrdeq
pnretrd=exp(log(pnretrd(-1))+dlpnretrd)
:pntrneq
pntrn=exp(log(pntrn(-1))+dlpntrn)
:pnutileq
pnutil=exp(log(pnutil(-1))+dlpnutil)
:pncomeq
pncom=exp(log(pncom(-1))+dlpncom)
:pnoinfoeeq
pnoinfoe=exp(log(pnoinfoe(-1))+dlpnoinfoe)
:pneateq
pneat=exp(log(pneat(-1))+dlpneat)
:pneduceq
```

```
pneduc=exp(log(pneduc(-1))+dlpneduc)
:pnhltheq
pnhlth=exp(log(pnhlth(-1))+dlpnhlth)
:pnoservxeq
pnoservx=exp(log(pnoservx(-1))+dlpnoservx)
:pngovseduceq
pngovseduc=exp(log(pngovseduc(-1))+dlpngovseduc)
:pngovleduceq
pngovleduc=exp(log(pngovleduc(-1))+dlpngovleduc)
:pngovosleq
pngovosl=exp(log(pngovosl(-1))+dlpngovosl)
adjntrd=pntrd/(pnwhtrd+pnretrd)
pnwhtrd=adjntrd*pnwhtrd
pnretrd=adjntrd*pnretrd
adjntrnutil=pntrnutil/(pntrn+pnutil)
pntrn=adjntrnutil*pntrn
pnutil=adjntrnutil*pnutil
adjninfoe=pninfoe/(pncom+pnoinfoe)
pncom=adjninfoe*pncom
pnoinfoe=adjninfoe*pnoinfoe
adjnoserv=pnoserv/(pneat+pneduc+pnhlth+pnoservx)
pneat=adjnoserv*pneat
pneduc=adjnoserv*pneduc
pnhlth=adjnoserv*pnhlth
pnoservx=adjnoserv*pnoservx
adjngovsl=pngovsl/(pngovseduc+pngovleduc+pngovosl)
pngovseduc=adjngovsl*pngovseduc
pngovleduc=adjngovsl*pngovleduc
pngovosl=adjngovsl*pngovosl
dlknaerr=log(knaer/pnaer)-log(knaer(-1)/pnaer(-1))
:kneq
kn=exp(log(kn(-1))+dlkn)
dlknr=log(kn/pn)-log(kn(-1)/pn(-1))
:knogoodseq
knogoods=exp(log(knogoods(-1))+dlknogoods)
knaer=knaer
kngoods=knaer+knogoods
knserv=kn-kngoods
kyppe00=kyppe00(-1)*(pype00/ppop*1000)/(pype00(-1)/ppop(-1)*1000)
kype00=kyppe00*kpop/1000
kyp00=kype00+pystk/uspc+pydiv/uspc
kypp00=kyp00/kpop*1000
kyp=kyp00*uspc
:kpopeq
kpop=exp(log(kpop(-1))+dlkpop)
dlkpopr=log(kpop/ppop)-log(kpop(-1)/ppop(-1))
kpopgrqt=kpop*(kpopgrqt(-1)/kpop(-1))
kpophse=kpop-kpopgrqt
kpophsesn=kpophse*(kpophsesn(-1)/kpophse(-
1))*((ppophsesn/ppophse)/(ppophsesn(-1)/ppophse(-1)))
kpophseml=kpophse-kpophsesn
khseszsn=khseszsn(-1)*(phseszsn/phseszsn(-1))
khseszml=khseszml(-1)*(phseszml/phseszml(-1))
khsesn=kpophsesn/khseszsn
khseml=kpophseml/khseszml
khse=khsesn+khseml
:bneq
```

```
bn=exp(log(bn(-1))+dlbn)
dlbnr=log(bn/pn)-log(bn(-1)/pn(-1))
:bnogoodseq
bnogoods=exp(log(bnogoods(-1))+dlbnogoods)
bnaer=0.0001
bngoods=bnaer+bnogoods
bnserv=bn-bngoods
bypp00=bypp00(-1)*(pype00/ppop*1000)/(pype00(-1)/ppop(-1)*1000)
byp00=bypp00*bpop/1000
byp=byp00*uspc
:bpopeq
bpop=exp(log(bpop(-1))+dlbpop)
dlbpopr=log(bpop/ppop)-log(bpop(-1)/ppop(-1))
bpopgrqt=bpop*(bpopgrqt(-1)/bpop(-1))
bpophse=bpop-bpopgrqt
bpophsesn=bpophse*(bpophsesn(-1)/bpophse(-
1))*((ppophsesn/ppophse)/(ppophsesn(-1)/ppophse(-1)))
bpophseml=bpophse-bpophsesn
bhseszsn=bhseszsn(-1)*(phseszsn/phseszsn(-1))
bhseszml=bhseszml(-1)*(phseszml/phseszml(-1))
bhsesn=bpophsesn/bhseszsn
bhseml=bpophseml/bhseszml
bhse=bhsesn+bhseml
:tneq
tn=exp(log(tn(-1))+dltn)
dltnr=log(tn/pn)-log(tn(-1)/pn(-1))
:tnogoodseq
tnogoods=exp(log(tnogoods(-1))+dltnogoods)
tnaer=tnaer
tngoods=tnaer+tnogoods
tnserv=tn-tngoods
typp00=typp00(-1)*(pype00/ppop*1000)/(pype00(-1)/ppop(-1)*1000)
typ00=typp00*tpop/1000
typ=typ00*uspc
:tpopeq
tpop=exp(log(tpop(-1))+dltpop)
dltpopr=log(tpop/ppop)-log(tpop(-1)/ppop(-1))
tpopgrqt=tpop*(tpopgrqt(-1)/tpop(-1))
tpophse=tpop-tpopgrqt
tpophsesn=tpophse*(tpophsesn(-1)/tpophse(-
1))*((ppophsesn/ppophse)/(ppophsesn(-1)/ppophse(-1)))
tpophseml=tpophse-tpophsesn
thseszsn=thseszsn(-1)*(phseszsn/phseszsn(-1))
thseszml=thseszml(-1)*(phseszml/phseszml(-1))
thsesn=tpophsesn/thseszsn
thseml=tpophseml/thseszml
thse=thsesn+thseml
dlsnaerr=log(snaer/pnaer)-log(snaer(-1)/pnaer(-1))
:sneq
sn=exp(log(sn(-1))+dlsn)
dlsnr=log(sn/pn)-log(sn(-1)/pn(-1))
:snogoodseq
snogoods=exp(log(snogoods(-1))+dlsnogoods)
snaer=snaer
sngoods=snaer+snogoods
snserv=sn-sngoods
sypp00=sypp00(-1)*(pype00/ppop*1000)/(pype00(-1)/ppop(-1)*1000)
```

```
syp00=sypp00*spop/1000
syp=syp00*uspc
:spopeq
spop=exp(log(spop(-1))+dlspop)
dlspopr=log(spop/ppop)-log(spop(-1)/ppop(-1))
spopgrqt=spop*(spopgrqt(-1)/spop(-1))
spophse=spop-spopgrqt
spophsesn=spophse*(spophsesn(-1)/spophse(-
1))*((ppophsesn/ppophse)/(ppophsesn(-1)/ppophse(-1)))
spophseml=spophse-spophsesn
shseszsn=shseszsn(-1)*(phseszsn/phseszsn(-1))
shseszml=shseszml(-1)*(phseszml/phseszml(-1))
shsesn=spophsesn/shseszsn
shseml=spophseml/shseszml
shse=shsesn+shseml
adjn=pn/(kn+sn+tn+bn)
kn=adjn*kn
bn=adjn*bn
tn=adjn*tn
sn=adjn*sn
adjnogoods=pnogoods/(knogoods+bnogoods+tnogoods+snogoods)
knogoods=adjnogoods*knogoods
bnogoods=adjnogoods*bnogoods
tnogoods=adjnogoods*tnogoods
snogoods=adjnogoods*snogoods
kngoods=knaer+knogoods
bngoods=bnaer+bnogoods
tngoods=tnaer+tnogoods
sngoods=snaer+snogoods
knserv=kn-kngoods
bnserv=bn-bngoods
tnserv=tn-tngoods
snserv=sn-sngoods
adjype=pype00/(kype00+syp00+typ00+byp00)
kype00=adjype*kype00
kyp00=kype00+pystk/uspc+pydiv/uspc
byp00=adjype*byp00
typ00=adjype*typ00
syp00=adjype*syp00
kyp=kyp00*uspc
byp=byp00*uspc
typ=typ00*uspc
syp=syp00*uspc
kypp00=kyp00/kpop*1000
bypp00=byp00/bpop*1000
typp00=typ00/tpop*1000
sypp00=syp00/spop*1000
adjpop=ppop/(kpop+spop+tpop+bpop)
kpop=adjpop*kpop
bpop=adjpop*bpop
tpop=adjpop*tpop
spop=adjpop*spop
adjhsesn=phsesn/(khsesn+bhsesn+thsesn+shsesn)
khsesn=adjhsesn*khsesn
bhsesn=adjhsesn*bhsesn
thsesn=adjhsesn*thsesn
shsesn=adjhsesn*shsesn
```

```
adjhseml=phseml/(khseml+bhseml+thseml+shseml)
khseml=adjhseml*khseml
bhseml=adjhseml*bhseml
thseml=adjhseml*thseml
shseml=adjhseml*shseml
khse=khsesn+khseml
bhse=bhsesn+bhseml
thse=thsesn+thseml
shse=shsesn+shseml
```

Appendix E
County-Level Projections

County-Level Projections

E-1. INTRODUCTION

Historically, the Regional Council has developed regional forecasts in two parts, by first preparing forecasts for the region as a whole, using a macroeconomic modeling approach. Then, once those forecasts are finalized, they serve as the "control totals" for a second suite of models that allocate future year estimates of population, households, and jobs to a regional zone system. Ultimately, final county forecasts are derived by summing all the zone-level forecast results for each county. The final product is referred to as the Small Area Forecasts.

Prior to 2005 the Regional Council had used the STEP model. With the replacement of STEP with the Puget Sound Economic Forecaster model, the current forecast includes for the first time projections of county employment, income, population, and households. Given the structure of the PSEF model, however, it is recognized that the county-level results do not take into account particular plans or programs designed to influence job and population growth within the region.

As such, the Regional Council has continued to rely on the Small Area Forecasts procedure to develop its "official" county-level forecasts of population, households and employment. County-level projections from the PSEF model were used to inform and review the results of the Small Area Forecasts. As such, readers wanting to know what the current Regional Council forecasts are for each county should refer to the current Small Area Forecast results and report, available on the agency website at www.psrc.org or by contacting the agency directly at 206-464-7532.

E-2. RESULTS

The central Puget Sound region consists of King, Kitsap, Pierce, and Snohomish counties. In 2004, the region had 3,406,000 residents and 1,672,500 wage and salary jobs, about the same as Oregon.

Though composed of four counties, the region is a single integrated economy. Many businesses have regionwide markets, while many workers commute across county lines. Based on the high degree of economic interdependence, one would expect that the counties would tend to grow at similar rates. This was certainly the case in the 1990s, as measured by the ten-year employment growth rates: King County 2.4 percent; Kitsap County 1.3 percent; Pierce County 2.3 percent; and Snohomish County 2.5 percent.

Despite the strong ties that bound them together, the 2001-02 recession, caused by the dot-com bust and back-to-back aerospace downturns, sent the counties down quite different paths. Since King County had three-fifths of the aerospace employment in the region and virtually all of the high-tech jobs, it bore the brunt of the recession.

The Puget Sound region is now five years down the road from its last employment peak and has the recouped all of the jobs lost during the recession. Moreover, the county growth rates are converging again, according to the latest job numbers.

In the long run, however, as the region expands economically, it will continue to spread out geographically (Tables E-1 and E-2). As a consequence, Kitsap, Pierce, and Snohomish counties are expected to grow faster than King County. For example, between 2004 and 2040, the projected employment growth rates for Kitsap, Pierce, and Snohomish counties are 2.0 percent, 1.7 percent, and 1.8 percent, respectively, all above the projected 1.3 percent rate for King County. In spite of a lower growth rate, King County will remain the region's job center, capturing more than one-half of the new jobs over the forecast period.

Population will undergo a similar pattern of growth. Between 2004 and 2040, population will grow at a slower pace in King County (0.8 percent) than in Kitsap County (1.3 percent), Pierce County (1.2 percent), or Snohomish County (1.5 percent). Nevertheless, King County will account for nearly two-fifths of the new residents in the Puget Sound region over the period.

Table E-1

COUNTY FORECASTS

	1990	2000	2010	2020	2030	2040
KING COUNTY						
Employment (thous.)	937.4	1,187.2	1,268.9	1,444.9	1,602.5	1,768.7
Population (thous.)	1,517.2	1,738.9	1,888.8	2,016.4	2,217.2	2,366.1
KITSAP COUNTY						
Employment (thous.)	65.0	73.7	95.4	116.8	140.8	169.3
Population (thous.)	191.9	232.4	266.4	309.0	342.2	380.1
PIERCE COUNTY						
Employment (thous.)	194.7	244.4	291.2	343.7	398.8	461.8
Population (thous.)	590.5	704.0	813.6	924.6	1,019.8	1,127.6
SNOHOMISH COUNTY						
Employment (thous.)	169.4	216.5	260.0	311.5	356.1	405.0
Population (thous.)	471.1	609.2	726.7	853.9	965.4	1,094.2

Table E-2

COUNTY GROWTH RATES

Average Annual Percent Change

	1990-00	2000-10	2010-20	2020-30	2030-40
KING COUNTY					
Employment (thous.)	2.4	0.7	1.3	1.0	1.0
Population (thous.)	1.4	0.8	0.9	0.7	0.7
KITSAP COUNTY					
Employment (thous.)	1.3	2.6	2.0	1.9	1.9
Population (thous.)	1.9	1.4	1.5	1.0	1.1
PIERCE COUNTY					
Employment (thous.)	2.3	1.8	1.7	1.5	1.5
Population (thous.)	1.8	1.5	1.3	1.0	1.0
SNOHOMISH COUNTY					
Employment (thous.)	2.5	1.8	1.8	1.3	1.3
Population (thous.)	2.6	1.8	1.6	1.2	1.3

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-3. King County

	1970	1971	1972	1973	1974	1975	1976	1977
Employment (thous.)	445.4	427.5	445.2	473.1	492.6	501.5	517.2	553.1
Goods producing	117.9	100.5	106.0	118.4	124.8	120.9	118.5	128.1
Aerospace	43.6	31.4	35.2	43.8	46.6	43.0	38.0	39.1
Other goods producing	74.4	69.1	70.8	74.6	78.2	77.8	80.5	89.0
Service producting	327.4	327.0	339.2	354.7	367.8	380.7	398.7	425.0
Personal income (mils. $)	5617.0	5724.4	6119.5	6804.9	7673.1	8678.6	9666.1	10806.3
Personal income (mils. $00)	21242.9	20763.1	21451.3	22617.2	23108.1	24138.9	25468.7	26739.5
Per capita personal income ($00)	18364	18061	18835	19858	20041	20794	21807	22608
Population (thous.)	1156.8	1149.6	1138.9	1138.9	1153.0	1160.8	1167.9	1182.7
Households	392.7	395.8	397.7	403.4	414.2	423.0	431.7	443.5
Single-family	288.9	289.3	288.8	291.1	297.0	301.5	305.8	312.4
Multi-family	103.8	106.5	108.9	112.4	117.2	121.5	125.9	131.1
Annual growth (% change)								
Employment	NA	-4.0	4.1	6.3	4.1	1.8	3.1	6.9
Personal income (mils. $)	NA	1.9	6.9	11.2	12.8	13.1	11.4	11.8
Personal income (mils. $00)	NA	-2.3	3.3	5.4	2.2	4.5	5.5	5.0
Population	NA	-0.6	-0.9	0.0	1.2	0.7	0.6	1.3
Households	NA	0.8	0.5	1.4	2.7	2.1	2.1	2.7

Table E-4. Kitsap County

	1970	1971	1972	1973	1974	1975	1976	1977
Employment (thous.)	29.1	28.8	28.9	29.4	32.6	34.2	36.3	40.2
Goods producing	1.7	1.8	2.0	2.1	2.2	2.5	3.5	4.5
Aerospace	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4
Other goods producing	1.7	1.8	2.0	2.1	2.2	2.5	3.3	4.1
Service producting	27.4	27.0	26.9	27.3	30.4	31.8	32.8	35.7
Personal income (mils. $)	422.4	438.2	475.3	543.6	645.0	749.0	846.2	978.2
Personal income (mils. $00)	1597.2	1589.5	1666.1	1806.4	1941.8	2083.0	2229.4	2420.2
Per capita personal income ($00)	15721	15643	16296	16090	17341	17486	18426	19221
Population (thous.)	101.6	101.6	102.2	112.3	112.0	119.1	121.0	125.9
Households	32.8	33.1	33.7	37.4	37.6	40.4	41.5	43.6
Single-family	27.4	27.6	27.9	30.8	31.0	33.1	33.9	35.5
Multi-family	5.4	5.6	5.8	6.5	6.7	7.3	7.6	8.1
Annual growth (% change)								
Employment	NA	-1.1	0.4	1.8	10.8	5.1	6.1	10.6
Personal income (mils. $)	NA	3.8	8.5	14.4	18.6	16.1	13.0	15.6
Personal income (mils. $00)	NA	-0.5	4.8	8.4	7.5	7.3	7.0	8.6
Population	NA	0.0	0.6	9.8	-0.3	6.4	1.6	4.1
Households	NA	1.0	1.6	10.9	0.8	7.5	2.6	5.1

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-3. King County

	1978	1979	1980	1981	1982	1983	1984	1985
Employment (thous.)	610.7	659.2	679.0	680.8	668.0	672.1	710.5	739.5
Goods producing	151.1	169.5	169.9	165.8	157.6	149.6	157.2	164.8
Aerospace	49.7	56.3	60.9	61.2	59.6	53.3	55.1	62.8
Other goods producing	101.4	113.3	109.0	104.7	98.0	96.3	102.1	102.0
Service producting	459.6	489.7	509.1	514.9	510.4	522.6	553.3	574.6
Personal income (mils. $)	12648.9	14673.1	16792.3	18922.7	20226.0	21185.6	23045.0	24987.7
Personal income (mils. $00)	29239.4	31172.9	32237.9	33355.8	33794.7	33936.1	35566.2	37329.7
Per capita personal income ($00)	24241	25228	25259	25650	25771	25780	26780	27595
Population (thous.)	1206.1	1235.6	1276.3	1300.4	1311.4	1316.3	1328.0	1352.7
Households	458.8	476.8	499.7	511.5	518.1	522.4	529.4	541.5
Single-family	321.3	332.1	346.2	352.0	354.3	354.9	357.3	363.1
Multi-family	137.5	144.7	153.5	159.5	163.9	167.6	172.1	178.4
Annual growth (% change)								
Employment	10.4	8.0	3.0	0.3	-1.9	0.6	5.7	4.1
Personal income (mils. $)	17.1	16.0	14.4	12.7	6.9	4.7	8.8	8.4
Personal income (mils. $00)	9.3	6.6	3.4	3.5	1.3	0.4	4.8	5.0
Population	2.0	2.4	3.3	1.9	0.8	0.4	0.9	1.9
Households	3.4	3.9	4.8	2.4	1.3	0.8	1.3	2.3

Table E-4. Kitsap County

	1978	1979	1980	1981	1982	1983	1984	1985
Employment (thous.)	42.2	44.6	46.0	46.6	47.3	49.1	51.3	52.9
Goods producing	4.9	4.8	4.4	4.0	3.6	3.8	4.2	4.2
Aerospace	0.4	0.4	0.5	0.4	0.4	0.4	0.4	0.4
Other goods producing	4.5	4.4	3.9	3.6	3.2	3.4	3.8	3.8
Service producting	37.3	39.8	41.6	42.7	43.7	45.3	47.1	48.7
Personal income (mils. $)	1114.7	1287.0	1457.9	1623.3	1805.7	2010.4	2136.3	2256.7
Personal income (mils. $00)	2577.1	2734.4	2799.0	2861.6	3016.1	3220.2	3297.4	3371.6
Per capita personal income ($00)	19428	19432	18812	18473	19450	20061	20387	20616
Population (thous.)	132.6	140.7	148.8	154.9	155.1	160.5	161.7	163.5
Households	46.4	49.8	53.2	55.5	55.7	57.7	58.3	59.1
Single-family	37.6	40.2	42.8	44.6	44.8	46.4	46.8	47.4
Multi-family	8.8	9.6	10.4	10.9	10.9	11.3	11.5	11.6
Annual growth (% change)								
Employment	5.1	5.7	3.1	1.3	1.5	3.8	4.4	3.0
Personal income (mils. $)	14.0	15.5	13.3	11.3	11.2	11.3	6.3	5.6
Personal income (mils. $00)	6.5	6.1	2.4	2.2	5.4	6.8	2.4	2.3
Population	5.4	6.1	5.7	4.1	0.1	3.5	0.8	1.1
Households	6.4	7.2	6.8	4.3	0.3	3.7	1.0	1.3

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-3. King County

	1986	1987	1988	1989	1990	1991	1992	1993
Employment (thous.)	772.0	808.7	849.3	898.7	937.4	941.8	950.7	947.9
Goods producing	173.9	182.4	192.6	208.0	213.3	208.9	205.8	188.2
Aerospace	69.1	74.7	77.7	83.8	85.7	86.2	82.1	67.6
Other goods producing	104.8	107.7	114.9	124.2	127.6	122.8	123.7	120.6
Service producting	598.1	626.3	656.7	690.7	724.1	732.8	744.9	759.7
Personal income (mils. $)	26902.5	28875.6	31721.7	35100.4	38619.6	40918.5	43853.5	45055.6
Personal income (mils. $00)	39235.8	40699.1	43005.7	45598.4	47971.1	49049.1	51098.6	51312.1
Per capita personal income ($00)	28484	28938	29857	30885	31618	31818	32516	32149
Population (thous.)	1377.5	1406.4	1440.3	1476.3	1517.2	1541.5	1571.5	1596.0
Households	553.8	567.7	583.8	600.8	619.8	629.9	642.3	652.4
Single-family	369.0	375.9	384.1	392.8	402.8	408.4	415.6	421.2
Multi-family	184.8	191.8	199.7	207.9	217.0	221.4	226.7	231.2
Annual growth (% change)								
Employment	4.4	4.8	5.0	5.8	4.3	0.5	0.9	-0.3
Personal income (mils. $)	7.7	7.3	9.9	10.7	10.0	6.0	7.2	2.7
Personal income (mils. $00)	5.1	3.7	5.7	6.0	5.2	2.2	4.2	0.4
Population	1.8	2.1	2.4	2.5	2.8	1.6	1.9	1.6
Households	2.3	2.5	2.8	2.9	3.2	1.6	2.0	1.6

Table E-4. Kitsap County

	1986	1987	1988	1989	1990	1991	1992	1993
Employment (thous.)	52.8	55.3	58.7	61.0	65.0	66.8	67.8	67.9
Goods producing	4.2	4.3	4.1	4.2	4.8	4.6	4.9	4.9
Aerospace	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0
Other goods producing	3.9	4.0	3.8	3.9	4.8	4.6	4.9	4.9
Service producting	48.6	51.0	54.5	56.7	60.2	62.1	62.9	63.1
Personal income (mils. $)	2322.1	2501.0	2762.8	3013.3	3619.5	3979.4	4301.0	4505.3
Personal income (mils. $00)	3386.9	3524.8	3745.9	3914.4	4493.9	4770.3	5011.2	5131.1
Per capita personal income ($00)	20616	20761	20935	21452	23410	23901	23907	24283
Population (thous.)	164.3	169.8	178.9	182.5	191.9	199.6	209.6	211.3
Households	59.5	61.6	65.0	66.5	70.1	73.0	76.8	77.6
Single-family	47.7	49.4	52.2	53.3	56.1	58.5	61.6	62.2
Multi-family	11.7	12.2	12.9	13.2	13.9	14.5	15.2	15.4
Annual growth (% change)								
Employment	-0.2	4.7	6.1	3.9	6.6	2.8	1.4	0.3
Personal income (mils. $)	2.9	7.7	10.5	9.1	20.1	9.9	8.1	4.8
Personal income (mils. $00)	0.5	4.1	6.3	4.5	14.8	6.1	5.1	2.4
Population	0.5	3.3	5.4	2.0	5.2	4.0	5.0	0.8
Households	0.7	3.5	5.6	2.2	5.4	4.2	5.2	1.0

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-3. King County

	1994	1995	1996	1997	1998	1999	2000	2001
Employment (thous.)	960.3	980.0	1018.0	1072.5	1119.6	1155.2	1187.2	1169.5
Goods producing	178.9	176.8	182.4	200.3	211.3	208.3	205.1	197.8
Aerospace	58.2	51.0	53.3	63.4	67.1	59.5	53.0	54.0
Other goods producing	120.7	125.9	129.1	136.9	144.2	148.8	152.1	143.9
Service producting	781.5	803.1	835.7	872.2	908.3	947.0	982.1	971.6
Personal income (mils. $)	47342.8	49980.7	53941.6	57707.2	65485.1	72997.2	77271.6	76883.0
Personal income (mils. $00)	52805.6	54578.4	57660.2	60664.8	68223.4	74814.3	77272.7	75313.0
Per capita personal income ($00)	32759	33444	34840	36005	39835	43267	44438	42948
Population (thous.)	1611.9	1631.9	1654.9	1684.8	1712.4	1729.1	1738.9	1753.7
Households	659.0	667.3	676.9	689.2	700.6	707.6	711.7	718.3
Single-family	424.6	429.0	434.2	441.2	447.6	451.0	452.7	455.7
Multi-family	234.4	238.3	242.6	248.0	253.0	256.5	259.0	262.5
Annual growth (% change)								
Employment	1.3	2.0	3.9	5.4	4.4	3.2	2.8	-1.5
Personal income (mils. $)	5.1	5.6	7.9	7.0	13.5	11.5	5.9	-0.5
Personal income (mils. $00)	2.9	3.4	5.6	5.2	12.5	9.7	3.3	-2.5
Population	1.0	1.2	1.4	1.8	1.6	1.0	0.6	0.8
Households	1.0	1.3	1.4	1.8	1.7	1.0	0.6	0.9

Table E-4. Kitsap County

	1994	1995	1996	1997	1998	1999	2000	2001
Employment (thous.)	68.7	69.1	70.3	71.3	71.0	73.3	73.7	74.9
Goods producing	5.1	5.1	5.2	5.3	5.4	6.2	5.9	6.3
Aerospace	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other goods producing	5.1	5.1	5.2	5.3	5.4	6.2	5.9	6.3
Service producting	63.6	64.0	65.0	66.1	65.5	67.2	67.8	68.6
Personal income (mils. $)	4714.6	4948.6	5193.6	5635.0	5914.6	6230.1	6852.9	7172.1
Personal income (mils. $00)	5258.6	5403.9	5551.9	5923.6	6162.7	6384.8	6852.8	7025.1
Per capita personal income ($00)	24527	24190	24501	25821	26923	27832	29491	29961
Population (thous.)	214.4	223.4	226.6	229.4	228.9	229.4	232.4	234.5
Households	78.9	82.4	83.7	84.9	84.9	85.3	86.6	87.5
Single-family	63.3	66.1	67.2	68.2	68.2	68.5	69.6	70.3
Multi-family	15.6	16.3	16.5	16.7	16.7	16.8	17.0	17.2
Annual growth (% change)								
Employment	1.1	0.6	1.7	1.5	-0.5	3.3	0.6	1.5
Personal income (mils. $)	4.6	5.0	5.0	8.5	5.0	5.3	10.0	4.7
Personal income (mils. $00)	2.5	2.8	2.7	6.7	4.0	3.6	7.3	2.5
Population	1.5	4.2	1.4	1.2	-0.2	0.2	1.3	0.9
Households	1.7	4.4	1.6	1.4	0.0	0.4	1.6	1.0

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-3. King County

	2002	2003	2004	2005	2006	2007	2008	2009
Employment (thous.)	1126.0	1111.7	1118.8	1146.5	1172.0	1198.4	1226.4	1250.0
Goods producing	178.8	164.2	163.6	166.1	170.0	175.5	181.6	184.2
Aerospace	47.2	39.9	37.3	38.6	40.8	44.0	47.1	46.5
Other goods producing	131.7	124.3	126.3	127.5	129.2	131.6	134.5	137.6
Service producting	947.1	947.5	955.2	980.4	1002.0	1022.9	1044.7	1065.9
Personal income (mils. $)	78400.6	80002.6	88260.0	88399.9	92919.7	97983.8	103946.7	110055.5
Personal income (mils. $00)	75712.0	75828.7	81820.8	80744.6	83520.4	86281.1	89526.9	92693.3
Per capita personal income ($00)	43055	42969	46031	45068	46162	47190	48433	49579
Population (thous.)	1758.5	1764.8	1777.1	1791.6	1809.1	1828.1	1848.2	1869.2
Households	720.9	724.1	729.9	736.5	745.0	754.5	764.8	775.8
Single-family	456.1	456.9	459.3	462.4	467.0	472.1	477.6	483.4
Multi-family	264.8	267.1	270.6	274.1	278.0	282.4	287.2	292.4
Annual growth (% change)								
Employment	-3.7	-1.3	0.6	2.5	2.2	2.2	2.3	1.9
Personal income (mils. $)	2.0	2.0	10.3	0.2	5.1	5.4	6.1	5.9
Personal income (mils. $00)	0.5	0.2	7.9	-1.3	3.4	3.3	3.8	3.5
Population	0.3	0.4	0.7	0.8	1.0	1.1	1.1	1.1
Households	0.4	0.4	0.8	0.9	1.1	1.3	1.4	1.4

Table E-4. Kitsap County

	2002	2003	2004	2005	2006	2007	2008	2009
Employment (thous.)	77.7	79.8	82.6	84.8	86.9	89.1	91.3	93.4
Goods producing	6.3	6.2	6.6	7.1	7.3	7.5	7.8	8.1
Aerospace	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other goods producing	6.3	6.2	6.6	7.1	7.3	7.5	7.8	8.1
Service producting	71.3	73.6	75.9	77.7	79.6	81.5	83.5	85.3
Personal income (mils. $)	7492.9	7705.5	8191.1	8753.8	9322.4	9982.7	10753.9	11573.1
Personal income (mils. $00)	7236.4	7303.2	7597.1	7995.6	8379.2	8790.2	9261.8	9747.1
Per capita personal income ($00)	30349	30462	31768	33202	34214	35187	36290	37323
Population (thous.)	238.4	239.8	239.1	240.8	244.9	249.8	255.2	261.1
Households	89.1	89.8	89.7	90.5	92.2	94.2	96.5	99.1
Single-family	71.7	72.2	72.2	72.8	74.0	75.5	77.2	79.1
Multi-family	17.5	17.6	17.6	17.7	18.2	18.7	19.3	20.0
Annual growth (% change)								
Employment	3.7	2.8	3.5	2.7	2.5	2.5	2.5	2.3
Personal income (mils. $)	4.5	2.8	6.3	6.9	6.5	7.1	7.7	7.6
Personal income (mils. $00)	3.0	0.9	4.0	5.2	4.8	4.9	5.4	5.2
Population	1.7	0.5	-0.3	0.7	1.7	2.0	2.2	2.3
Households	1.9	0.7	-0.1	0.9	1.8	2.2	2.4	2.6

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-3. King County

	2010	2011	2012	2013	2014	2015	2016	2017
Employment (thous.)	1268.9	1283.8	1296.6	1309.9	1327.0	1347.8	1369.0	1390.6
Goods producing	184.0	182.8	181.2	180.1	180.5	182.0	183.5	185.6
Aerospace	43.8	41.0	38.7	37.0	35.7	34.8	33.6	33.5
Other goods producing	140.2	141.7	142.5	143.2	144.8	147.2	149.9	152.1
Service producting	1084.8	1101.1	1115.4	1129.8	1146.5	1165.8	1185.6	1205.1
Personal income (mils. $)	116781.9	123904.8	131320.5	139180.0	147822.0	157260.0	167112.5	177523.7
Personal income (mils. $00)	96043.4	99330.0	102512.8	105825.3	109498.9	113469.6	117416.6	121412.6
Per capita personal income ($00)	50837	52087	53283	54534	55940	57453	58905	60358
Population (thous.)	1888.8	1906.6	1923.5	1940.1	1957.0	1974.6	1992.9	2011.1
Households	786.4	796.4	806.1	815.9	825.8	836.1	846.9	857.6
Single-family	488.9	494.0	498.9	503.7	508.6	513.6	518.9	524.1
Multi-family	297.5	302.4	307.2	312.2	317.2	322.5	328.0	333.6
Annual growth (% change)								
Employment	1.5	1.2	1.0	1.0	1.3	1.6	1.6	1.6
Personal income (mils. $)	6.1	6.1	6.0	6.0	6.2	6.4	6.3	6.2
Personal income (mils. $00)	3.6	3.4	3.2	3.2	3.5	3.6	3.5	3.4
Population	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Households	1.4	1.3	1.2	1.2	1.2	1.3	1.3	1.3

Table E-4. Kitsap County

	2010	2011	2012	2013	2014	2015	2016	2017
Employment (thous.)	95.4	97.3	99.2	101.1	103.2	105.5	107.8	110.1
Goods producing	8.4	8.6	8.8	9.0	9.3	9.6	9.9	10.2
Aerospace	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other goods producing	8.4	8.6	8.8	9.0	9.3	9.6	9.9	10.2
Service producting	87.1	88.7	90.4	92.1	94.0	95.9	97.9	99.9
Personal income (mils. $)	12443.9	13333.7	14246.4	15203.2	16260.4	17429.8	18674.2	19996.0
Personal income (mils. $00)	10233.8	10688.9	11121.0	11559.6	12044.7	12576.1	13120.6	13675.5
Per capita personal income ($00)	38405	39446	40423	41416	42527	43723	44877	46035
Population (thous.)	266.4	270.9	275.1	279.0	283.2	287.6	292.3	297.0
Households	101.4	103.5	105.4	107.3	109.3	111.4	113.6	115.9
Single-family	80.7	82.2	83.5	84.8	86.1	87.6	89.1	90.6
Multi-family	20.7	21.3	21.9	22.5	23.1	23.8	24.6	25.3
Annual growth (% change)								
Employment	2.2	2.0	1.9	1.9	2.1	2.2	2.2	2.1
Personal income (mils. $)	7.5	7.2	6.8	6.7	7.0	7.2	7.1	7.1
Personal income (mils. $00)	5.0	4.4	4.0	3.9	4.2	4.4	4.3	4.2
Population	2.0	1.7	1.5	1.5	1.5	1.6	1.6	1.6
Households	2.4	2.0	1.9	1.8	1.8	1.9	2.0	2.0

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-3. King County

	2018	2019	2020	2021	2022	2023	2024	2025
Employment (thous.)	1411.1	1428.9	1444.9	1459.5	1474.1	1488.6	1503.5	1519.7
Goods producing	187.1	187.6	187.6	187.3	187.1	187.0	187.0	187.7
Aerospace	33.4	32.6	31.8	31.0	30.2	29.4	28.6	27.9
Other goods producing	153.8	155.0	155.8	156.3	156.9	157.6	158.4	159.8
Service producting	1224.0	1241.3	1257.4	1272.3	1287.0	1301.6	1316.4	1332.1
Personal income (mils. $)	188508.7	199906.2	211797.3	224134.0	237198.6	250949.4	265492.7	281069.5
Personal income (mils. $00)	125434.8	129413.6	133428.4	137398.5	141484.2	145630.4	149878.8	154363.2
Per capita personal income ($00)	61813	63249	64712	66148	67626	69118	70634	72229
Population (thous.)	2028.8	2045.6	2061.4	2076.7	2091.7	2106.5	2121.5	2136.7
Households	868.2	878.5	888.4	898.1	907.7	917.3	926.9	936.8
Single-family	529.1	534.0	538.6	543.0	547.4	551.8	556.1	560.6
Multi-family	339.1	344.5	349.8	355.0	360.3	365.5	370.8	376.2
Annual growth (% change)								
Employment	1.5	1.3	1.1	1.0	1.0	1.0	1.0	1.1
Personal income (mils. $)	6.2	6.0	5.9	5.8	5.8	5.8	5.8	5.9
Personal income (mils. $00)	3.3	3.2	3.1	3.0	3.0	2.9	2.9	3.0
Population	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.7
Households	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1

Table E-4. Kitsap County

	2018	2019	2020	2021	2022	2023	2024	2025
Employment (thous.)	112.4	114.6	116.8	119.0	121.2	123.4	125.7	128.1
Goods producing	10.4	10.7	10.9	11.2	11.4	11.6	11.9	12.2
Aerospace	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other goods producing	10.4	10.7	10.9	11.2	11.4	11.6	11.9	12.2
Service producting	101.9	103.9	105.9	107.8	109.8	111.8	113.8	115.9
Personal income (mils. $)	21386.3	22815.0	24282.3	25794.2	27388.2	29062.3	30836.8	32749.1
Personal income (mils. $00)	14230.4	14769.6	15297.3	15812.2	16336.4	16865.3	17408.2	17985.7
Per capita personal income ($00)	47194	48336	49493	50625	51789	52962	54154	55408
Population (thous.)	301.5	305.5	309.0	312.3	315.4	318.4	321.4	324.5
Households	118.1	120.1	121.9	123.7	125.4	127.0	128.7	130.4
Single-family	92.0	93.4	94.5	95.6	96.6	97.6	98.6	99.7
Multi-family	26.0	26.7	27.4	28.1	28.7	29.4	30.1	30.7
Annual growth (% change)								
Employment	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9
Personal income (mils. $)	7.0	6.7	6.4	6.2	6.2	6.1	6.1	6.2
Personal income (mils. $00)	4.1	3.8	3.6	3.4	3.3	3.2	3.2	3.3
Population	1.5	1.3	1.2	1.1	1.0	1.0	0.9	1.0
Households	1.9	1.7	1.5	1.4	1.4	1.3	1.3	1.3

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-3. King County

	2026	2027	2028	2029	2030	2031	2032	2033
Employment (thous.)	1537.2	1554.8	1571.0	1586.4	1602.5	1619.2	1635.0	1649.2
Goods producing	188.6	189.6	189.9	190.1	190.6	191.4	191.7	191.5
Aerospace	27.1	26.5	26.0	25.5	25.0	24.6	24.1	23.6
Other goods producing	161.5	163.0	163.9	164.6	165.6	166.8	167.6	167.9
Service producting	1348.5	1365.2	1381.1	1396.3	1411.8	1427.8	1443.3	1457.7
Personal income (mils. $)	297612.3	315006.0	333170.9	352350.5	372645.1	394238.5	416869.9	440497.5
Personal income (mils. $00)	159000.7	163703.7	168407.7	173206.9	178132.2	183202.7	188272.6	193334.2
Per capita personal income ($00)	73852	75468	77058	78674	80324	82010	83672	85315
Population (thous.)	2152.5	2168.7	2185.0	2201.1	2217.2	2233.4	2249.6	2265.6
Households	947.0	957.4	967.8	978.3	988.8	999.4	1010.0	1020.6
Single-family	565.2	569.9	574.6	579.3	583.9	588.7	593.4	598.0
Multi-family	381.8	387.5	393.3	399.0	404.9	410.7	416.7	422.6
Annual growth (% change)								
Employment	1.1	1.1	1.0	1.0	1.0	1.0	1.0	0.9
Personal income (mils. $)	5.9	5.8	5.8	5.8	5.8	5.8	5.7	5.7
Personal income (mils. $00)	3.0	3.0	2.9	2.8	2.8	2.8	2.8	2.7
Population	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7
Households	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0

Table E-4. Kitsap County

	2026	2027	2028	2029	2030	2031	2032	2033
Employment (thous.)	130.6	133.1	135.7	138.2	140.8	143.4	146.1	148.7
Goods producing	12.5	12.9	13.2	13.5	13.8	14.1	14.4	14.7
Aerospace	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other goods producing	12.5	12.9	13.2	13.5	13.8	14.1	14.4	14.7
Service producting	118.1	120.3	122.5	124.7	127.0	129.3	131.6	134.0
Personal income (mils. $)	34805.0	36988.4	39278.1	41694.8	44254.8	46987.7	49858.1	52848.0
Personal income (mils. $00)	18594.6	19222.1	19853.7	20496.0	21154.5	21835.0	22517.4	23194.8
Per capita personal income ($00)	56686	57963	59223	60503	61810	63146	64464	65767
Population (thous.)	328.0	331.6	335.2	338.7	342.2	345.7	349.2	352.6
Households	132.3	134.2	136.2	138.1	140.0	142.0	143.9	145.8
Single-family	100.8	102.0	103.2	104.3	105.5	106.7	107.8	108.9
Multi-family	31.5	32.2	33.0	33.7	34.5	35.3	36.1	36.9
Annual growth (% change)								
Employment	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8
Personal income (mils. $)	6.3	6.3	6.2	6.2	6.1	6.2	6.1	6.0
Personal income (mils. $00)	3.4	3.4	3.3	3.2	3.2	3.2	3.1	3.0
Population	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0
Households	1.4	1.5	1.5	1.4	1.4	1.4	1.4	1.3

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-3. King County

	2034	2035	2036	2037	2038	2039	2040
Employment (thous.)	1663.9	1679.7	1696.7	1714.5	1732.7	1750.7	1768.7
Goods producing	191.7	192.3	193.3	194.6	195.9	197.1	198.2
Aerospace	23.1	22.7	22.3	21.9	21.6	21.2	20.8
Other goods producing	168.5	169.6	171.0	172.7	174.4	175.9	177.4
Service producting	1472.2	1487.4	1503.3	1519.9	1536.8	1553.6	1570.4
Personal income (mils. $)	465777.2	492798.6	521184.5	551562.1	583692.1	617441.8	653044.0
Personal income (mils. $00)	198641.6	204223.1	209888.4	215849.2	221972.6	228176.6	234518.3
Per capita personal income ($00)	87048	88864	90671	92554	94457	96351	98260
Population (thous.)	2281.5	2297.6	2314.3	2331.6	2349.4	2367.6	2386.1
Households	1031.2	1041.9	1053.0	1064.4	1076.1	1088.0	1100.1
Single-family	602.7	607.4	612.3	617.3	622.5	627.8	633.1
Multi-family	428.5	434.5	440.7	447.1	453.6	460.2	467.0
Annual growth (% change)							
Employment	0.9	1.0	1.0	1.1	1.1	1.0	1.0
Personal income (mils. $)	5.7	5.8	5.8	5.8	5.8	5.8	5.8
Personal income (mils. $00)	2.7	2.8	2.8	2.8	2.8	2.8	2.8
Population	0.7	0.7	0.7	0.7	0.8	0.8	0.8
Households	1.0	1.0	1.1	1.1	1.1	1.1	1.1

Table E-4. Kitsap County

	2034	2035	2036	2037	2038	2039	2040
Employment (thous.)	151.4	154.2	157.1	160.1	163.1	166.2	169.3
Goods producing	15.0	15.4	15.8	16.2	16.7	17.1	17.6
Aerospace	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other goods producing	15.0	15.4	15.8	16.2	16.7	17.1	17.6
Service producting	136.4	138.8	141.3	143.8	146.4	149.1	151.7
Personal income (mils. $)	56040.9	59474.0	63117.5	67064.4	71289.3	75771.4	80542.5
Personal income (mils. $00)	23899.8	24646.7	25418.1	26244.8	27110.4	28001.1	28923.7
Per capita personal income ($00)	67139	68576	70010	71507	73025	74539	76069
Population (thous.)	355.9	359.3	363.0	366.9	371.2	375.6	380.1
Households	147.7	149.6	151.7	153.9	156.2	158.6	161.1
Single-family	110.0	111.2	112.4	113.7	115.1	116.6	118.1
Multi-family	37.7	38.5	39.3	40.2	41.1	42.1	43.0
Annual growth (% change)							
Employment	1.8	1.8	1.9	1.9	1.9	1.9	1.9
Personal income (mils. $)	6.0	6.1	6.1	6.3	6.3	6.3	6.3
Personal income (mils. $00)	3.0	3.1	3.1	3.3	3.3	3.3	3.3
Population	0.9	1.0	1.0	1.1	1.2	1.2	1.2
Households	1.3	1.3	1.4	1.4	1.5	1.5	1.6

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-5. Pierce County

	1970	1971	1972	1973	1974	1975	1976	1977
Employment (thous.)	105.9	104.9	107.2	111.1	113.4	116.1	120.4	125.5
Goods producing	23.3	22.1	23.3	24.7	24.4	24.5	24.6	25.4
Aerospace	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other goods producing	23.3	22.1	23.3	24.7	24.4	24.5	24.6	25.4
Service producting	82.6	82.8	84.0	86.3	89.0	91.6	95.8	100.1
Personal income (mils. $)	1652.0	1728.5	1763.4	1984.0	2277.8	2576.0	2896.9	3180.4
Personal income (mils. $00)	6246.4	6269.6	6182.4	6591.4	6860.7	7164.3	7633.3	7870.3
Per capita personal income ($00)	15136	15013	15284	16644	16529	16584	17381	17605
Population (thous.)	412.7	417.6	404.5	396.0	415.1	432.0	439.2	447.0
Households	123.9	127.6	125.8	125.4	133.8	141.8	146.7	152.0
Single-family	100.0	102.3	100.2	99.1	105.0	110.5	113.6	116.9
Multi-family	23.9	25.3	25.7	26.3	28.8	31.2	33.1	35.1
Annual growth (% change)								
Employment	NA	-1.0	2.3	3.6	2.1	2.4	3.7	4.2
Personal income (mils. $)	NA	4.6	2.0	12.5	14.8	13.1	12.5	9.8
Personal income (mils. $00)	NA	0.4	-1.4	6.6	4.1	4.4	6.5	3.1
Population	NA	1.2	-3.1	-2.1	4.8	4.1	1.7	1.8
Households	NA	3.0	-1.4	-0.4	6.7	5.9	3.5	3.6

Table E-6. Snohomish County

	1970	1971	1972	1973	1974	1975	1976	1977
Employment (thous.)	71.0	62.3	61.2	64.3	66.3	67.3	70.7	75.9
Goods producing	34.0	25.3	23.2	25.2	26.0	26.0	26.9	28.9
Aerospace	16.2	8.1	5.1	5.5	6.4	6.2	5.9	5.5
Other goods producing	17.8	17.2	18.1	19.7	19.6	19.8	21.0	23.4
Service producting	37.0	37.0	38.0	39.1	40.3	41.3	43.8	47.0
Personal income (mils. $)	1041.9	1044.4	1105.9	1245.5	1414.7	1637.1	1866.5	2124.5
Personal income (mils. $00)	3941.0	3788.1	3876.3	4139.6	4259.5	4553.0	4917.6	5256.3
Per capita personal income ($00)	14851	14138	14759	15557	16019	16647	17608	18314
Population (thous.)	265.4	267.9	262.6	266.1	265.9	273.5	279.2	287.0
Households	81.6	83.6	83.2	85.5	86.8	90.6	93.9	98.0
Single-family	70.0	71.3	70.5	72.0	72.6	75.4	77.7	80.6
Multi-family	11.6	12.3	12.7	13.5	14.1	15.2	16.2	17.4
Annual growth (% change)								
Employment	NA	-12.3	-1.8	5.1	3.0	1.6	4.9	7.4
Personal income (mils. $)	NA	0.2	5.9	12.6	13.6	15.7	14.0	13.8
Personal income (mils. $00)	NA	-3.9	2.3	6.8	2.9	6.9	8.0	6.9
Population	NA	1.0	-2.0	1.3	-0.1	2.9	2.1	2.8
Households	NA	2.5	-0.5	2.8	1.4	4.4	3.7	4.3

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-5. Pierce County

	1978	1979	1980	1981	1982	1983	1984	1985
Employment (thous.)	134.7	140.1	141.8	141.4	140.8	144.4	151.9	157.8
Goods producing	27.7	28.9	27.6	27.5	27.0	25.4	26.9	27.5
Aerospace	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other goods producing	27.7	28.9	27.6	27.5	27.0	25.4	26.9	27.5
Service producting	107.0	111.2	114.2	113.9	113.8	119.1	125.0	130.2
Personal income (mils. $)	3657.2	4139.8	4736.1	5343.1	5779.0	6101.4	6601.2	7048.3
Personal income (mils. $00)	8454.5	8796.6	9091.1	9418.4	9655.3	9773.6	10188.0	10530.1
Per capita personal income ($00)	18309	18590	18598	18831	18933	19095	19597	19933
Population (thous.)	461.7	473.2	488.8	500.1	510.0	511.8	519.9	528.3
Households	159.9	166.8	175.4	179.8	183.8	184.8	188.1	191.5
Single-family	122.2	126.6	132.3	135.5	138.3	138.9	141.3	143.7
Multi-family	37.7	40.2	43.1	44.3	45.5	45.9	46.8	47.8
Annual growth (% change)								
Employment	7.3	4.0	1.2	-0.3	-0.4	2.6	5.1	3.9
Personal income (mils. $)	15.0	13.2	14.4	12.8	8.2	5.6	8.2	6.8
Personal income (mils. $00)	7.4	4.0	3.3	3.6	2.5	1.2	4.2	3.4
Population	3.3	2.5	3.3	2.3	2.0	0.4	1.6	1.6
Households	5.1	4.3	5.2	2.5	2.2	0.6	1.8	1.8

Table E-6. Snohomish County

	1978	1979	1980	1981	1982	1983	1984	1985
Employment (thous.)	87.2	100.9	103.7	102.9	97.9	97.8	103.6	109.3
Goods producing	34.8	43.0	42.7	40.2	36.5	33.9	35.6	38.0
Aerospace	8.5	14.2	16.4	15.5	13.4	10.1	9.7	11.2
Other goods producing	26.3	28.9	26.3	24.7	23.1	23.8	25.9	26.9
Service producting	52.5	57.9	61.0	62.7	61.4	63.9	68.0	71.3
Personal income (mils. $)	2585.0	3204.3	3721.2	4155.0	4388.8	4596.8	5011.5	5469.7
Personal income (mils. $00)	5974.0	6804.5	7143.5	7325.0	7332.5	7363.4	7734.4	8171.4
Per capita personal income ($00)	19686	21039	20980	20859	20564	20458	21011	21668
Population (thous.)	303.4	323.4	340.5	351.2	356.6	359.9	368.1	377.1
Households	105.2	113.9	121.8	126.0	128.4	130.0	133.3	137.0
Single-family	86.1	92.7	98.6	101.3	102.4	102.9	104.8	106.9
Multi-family	19.1	21.2	23.2	24.7	26.0	27.0	28.5	30.1
Annual growth (% change)								
Employment	15.0	15.7	2.7	-0.7	-4.9	-0.1	6.0	5.5
Personal income (mils. $)	21.7	24.0	16.1	11.7	5.6	4.7	9.0	9.1
Personal income (mils. $00)	13.7	13.9	5.0	2.5	0.1	0.4	5.0	5.6
Population	5.7	6.6	5.3	3.1	1.5	0.9	2.3	2.4
Households	7.3	8.3	7.0	3.5	1.9	1.3	2.6	2.8

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-5. Pierce County

	1986	1987	1988	1989	1990	1991	1992	1993
Employment (thous.)	162.8	170.4	178.1	185.9	194.7	196.2	200.4	206.6
Goods producing	27.8	27.6	29.4	30.8	31.6	29.4	29.1	30.5
Aerospace	0.0	0.0	0.0	0.0	0.0	0.4	0.5	1.1
Other goods producing	27.8	27.6	29.4	30.8	31.6	29.0	28.6	29.4
Service producting	135.0	142.9	148.6	155.1	163.1	166.8	171.3	176.2
Personal income (mils. $)	7447.3	7865.2	8453.4	9223.5	10576.8	11026.2	11899.1	12458.2
Personal income (mils. $00)	10861.9	11086.2	11461.8	11982.6	13134.3	13219.0	13863.2	14189.1
Per capita personal income ($00)	20318	20340	20434	21001	22239	21859	22390	22512
Population (thous.)	534.6	545.0	560.9	570.6	590.5	604.8	619.1	630.3
Households	194.2	198.4	204.6	208.5	216.2	221.8	227.4	231.9
Single-family	145.6	148.5	153.0	155.8	161.4	165.8	170.3	174.0
Multi-family	48.7	49.9	51.6	52.7	54.8	56.0	57.1	58.0
Annual growth (% change)								
Employment	3.2	4.7	4.5	4.4	4.8	0.8	2.1	3.1
Personal income (mils. $)	5.7	5.6	7.5	9.1	14.7	4.2	7.9	4.7
Personal income (mils. $00)	3.2	2.1	3.4	4.5	9.6	0.6	4.9	2.4
Population	1.2	1.9	2.9	1.7	3.5	2.4	2.4	1.8
Households	1.4	2.2	3.1	1.9	3.7	2.6	2.5	2.0

Table E-6. Snohomish County

	1986	1987	1988	1989	1990	1991	1992	1993
Employment (thous.)	118.0	129.0	143.1	157.9	169.4	171.0	175.9	183.6
Goods producing	41.5	46.1	53.7	62.6	63.7	61.7	62.5	66.5
Aerospace	13.5	15.5	20.2	26.4	26.6	26.4	27.0	31.7
Other goods producing	28.0	30.6	33.5	36.2	37.1	35.3	35.5	34.9
Service producting	76.5	82.8	89.4	95.3	105.8	109.3	113.4	117.1
Personal income (mils. $)	5991.8	6491.3	7230.0	8244.4	9072.5	9692.3	10498.9	10978.0
Personal income (mils. $00)	8738.4	9149.0	9801.7	10709.4	11270.7	11617.3	12233.3	12502.6
Per capita personal income ($00)	22464	22596	23051	23992	23927	23975	24452	24323
Population (thous.)	389.0	404.9	425.2	446.3	471.1	484.5	500.3	514.0
Households	141.8	148.0	155.9	164.1	173.7	178.8	184.7	189.9
Single-family	109.8	113.8	119.0	124.4	130.7	134.2	138.5	142.1
Multi-family	31.9	34.2	36.9	39.7	43.0	44.5	46.3	47.8
Annual growth (% change)								
Employment	8.0	9.3	10.9	10.4	7.3	0.9	2.8	4.4
Personal income (mils. $)	9.5	8.3	11.4	14.0	10.0	6.8	8.3	4.6
Personal income (mils. $00)	6.9	4.7	7.1	9.3	5.2	3.1	5.3	2.2
Population	3.1	4.1	5.0	5.0	5.6	2.8	3.3	2.7
Households	3.5	4.4	5.3	5.3	5.9	2.9	3.3	2.8

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-5. Pierce County

	1994	1995	1996	1997	1998	1999	2000	2001
Employment (thous.)	212.4	217.2	221.5	229.4	235.4	239.4	244.4	244.0
Goods producing	31.3	32.7	35.8	38.0	39.2	38.9	38.8	38.4
Aerospace	1.2	1.1	1.3	1.8	1.8	1.7	1.5	1.5
Other goods producing	30.1	31.7	34.5	36.2	37.3	37.2	37.3	36.9
Service producting	181.1	184.4	185.7	191.4	196.2	200.5	205.6	205.6
Personal income (mils. $)	12995.4	13743.3	14626.1	16055.8	17184.2	18058.6	19416.7	20702.1
Personal income (mils. $00)	14494.6	15007.6	15634.8	16878.1	17904.9	18507.1	19417.5	20276.9
Per capita personal income ($00)	22704	23131	23826	25374	26370	26716	27581	28224
Population (thous.)	638.4	648.8	656.2	665.1	679.0	692.7	704.0	718.4
Households	235.3	239.5	242.6	246.3	251.9	257.4	262.0	267.5
Single-family	176.8	180.2	182.9	185.9	190.4	194.9	198.7	203.3
Multi-family	58.5	59.3	59.8	60.4	61.4	62.4	63.3	64.3
Annual growth (% change)								
Employment	2.8	2.3	2.0	3.5	2.6	1.7	2.1	-0.2
Personal income (mils. $)	4.3	5.8	6.4	9.8	7.0	5.1	7.5	6.6
Personal income (mils. $00)	2.2	3.5	4.2	8.0	6.1	3.4	4.9	4.4
Population	1.3	1.6	1.1	1.4	2.1	2.0	1.6	2.0
Households	1.4	1.8	1.3	1.5	2.3	2.2	1.8	2.1

Table E-6. Snohomish County

	1994	1995	1996	1997	1998	1999	2000	2001
Employment (thous.)	185.3	187.5	194.0	207.8	220.0	217.1	216.5	216.6
Goods producing	64.1	61.8	66.7	77.6	82.4	76.7	72.3	70.4
Aerospace	30.6	27.3	30.7	38.7	41.4	35.7	30.0	30.0
Other goods producing	33.5	34.4	36.0	38.9	41.0	40.9	42.3	40.4
Service producting	121.2	125.7	127.3	130.2	137.6	140.4	144.3	146.2
Personal income (mils. $)	11636.4	12290.9	13427.0	15157.9	16265.1	17088.9	18514.6	19415.7
Personal income (mils. $00)	12978.4	13422.2	14351.7	15934.1	16947.6	17512.9	18515.0	19017.6
Per capita personal income ($00)	24771	25141	26300	28037	28853	29288	30393	30535
Population (thous.)	523.9	533.9	545.6	568.2	587.4	597.9	609.2	622.8
Households	193.7	197.5	201.9	210.4	217.7	221.7	226.0	231.3
Single-family	144.6	147.2	150.3	156.3	161.4	164.0	166.9	170.5
Multi-family	49.0	50.3	51.7	54.1	56.3	57.7	59.1	60.8
Annual growth (% change)								
Employment	0.9	1.2	3.5	7.1	5.8	-1.3	-0.3	0.0
Personal income (mils. $)	6.0	5.6	9.2	12.9	7.3	5.1	8.3	4.9
Personal income (mils. $00)	3.8	3.4	6.9	11.0	6.4	3.3	5.7	2.7
Population	1.9	1.9	2.2	4.1	3.4	1.8	1.9	2.2
Households	2.0	2.0	2.3	4.2	3.4	1.9	1.9	2.3

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-5. Pierce County

	2002	2003	2004	2005	2006	2007	2008	2009
Employment (thous.)	243.6	248.2	254.8	262.9	268.6	274.4	280.4	286.0
Goods producing	36.8	36.9	38.6	40.3	40.8	41.5	42.3	43.3
Aerospace	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Other goods producing	35.3	35.4	37.1	38.8	39.3	40.0	40.8	41.8
Service producting	206.8	211.3	216.2	222.6	227.8	232.9	238.1	242.7
Personal income (mils. $)	21504.9	22206.0	23642.5	25290.6	26831.6	28600.8	30657.8	32820.2
Personal income (mils. $00)	20769.3	21046.4	21928.2	23100.2	24117.1	25184.4	26404.3	27642.0
Per capita personal income ($00)	28400	28423	29417	30708	31644	32544	33564	34519
Population (thous.)	731.3	740.5	745.4	752.2	762.1	773.7	786.5	800.6
Households	272.6	276.2	278.2	281.0	285.2	290.2	295.7	301.9
Single-family	207.4	210.5	212.4	214.6	217.4	220.9	224.7	228.9
Multi-family	65.2	65.7	65.8	66.4	67.7	69.3	71.1	73.1
Annual growth (% change)								
Employment	-0.1	1.9	2.7	3.2	2.2	2.2	2.2	2.0
Personal income (mils. $)	3.9	3.3	6.5	7.0	6.1	6.6	7.2	7.1
Personal income (mils. $00)	2.4	1.3	4.2	5.3	4.4	4.4	4.8	4.7
Population	1.8	1.2	0.7	0.9	1.3	1.5	1.7	1.8
Households	1.9	1.3	0.7	1.0	1.5	1.8	1.9	2.1

Table E-6. Snohomish County

	2002	2003	2004	2005	2006	2007	2008	2009
Employment (thous.)	212.4	212.4	216.4	225.9	233.2	240.5	247.9	254.5
Goods producing	63.9	60.3	59.7	65.3	69.0	73.4	77.7	79.8
Aerospace	25.9	23.0	21.7	24.2	26.9	30.1	33.1	33.7
Other goods producing	38.0	37.3	38.1	41.1	42.2	43.3	44.7	46.1
Service producting	148.4	152.2	156.6	160.6	164.2	167.1	170.2	174.7
Personal income (mils. $)	19893.2	20359.0	21659.1	23365.5	24943.3	26731.5	28805.5	30998.9
Personal income (mils. $00)	19212.7	19296.1	20088.3	21341.7	22419.6	23538.2	24808.8	26107.8
Per capita personal income ($00)	30396	30295	31178	32615	33610	34565	35649	36663
Population (thous.)	632.1	636.9	644.3	654.3	667.0	680.9	695.8	711.9
Households	235.0	237.0	239.9	244.0	249.1	254.8	261.1	268.0
Single-family	172.9	174.1	175.9	178.5	182.0	185.9	190.1	194.6
Multi-family	62.1	62.9	64.0	65.4	67.1	69.0	71.0	73.3
Annual growth (% change)								
Employment	-2.0	0.0	1.8	4.4	3.2	3.1	3.1	2.6
Personal income (mils. $)	2.5	2.3	6.4	7.9	6.8	7.2	7.8	7.6
Personal income (mils. $00)	1.0	0.4	4.1	6.2	5.1	5.0	5.4	5.2
Population	1.5	0.8	1.2	1.6	1.9	2.1	2.2	2.3
Households	1.6	0.9	1.2	1.7	2.1	2.3	2.5	2.6

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-5. Pierce County

	2010	2011	2012	2013	2014	2015	2016	2017
Employment (thous.)	291.2	295.9	300.5	305.1	310.3	316.0	321.7	327.5
Goods producing	44.2	44.9	45.4	45.9	46.6	47.5	48.5	49.3
Aerospace	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Other goods producing	42.7	43.4	43.9	44.4	45.1	46.0	47.0	47.8
Service producting	247.0	251.0	255.0	259.2	263.7	268.5	273.2	278.2
Personal income (mils. $)	35149.5	37562.4	40055.0	42673.8	45556.0	48717.6	52053.0	55595.3
Personal income (mils. $00)	28907.2	30112.0	31267.8	32446.6	33745.2	35151.3	36573.1	38022.5
Per capita personal income ($00)	35520	36483	37386	38305	39333	40439	41506	42577
Population (thous.)	813.6	825.2	836.1	846.9	857.7	869.1	880.9	892.8
Households	307.8	313.2	318.5	323.7	329.0	334.6	340.4	346.2
Single-family	232.8	236.3	239.7	243.0	246.4	249.9	253.5	257.2
Multi-family	75.0	76.9	78.8	80.7	82.7	84.7	86.9	89.1
Annual growth (% change)								
Employment	1.8	1.6	1.5	1.6	1.7	1.8	1.8	1.8
Personal income (mils. $)	7.1	6.9	6.6	6.5	6.8	6.9	6.8	6.8
Personal income (mils. $00)	4.6	4.2	3.8	3.8	4.0	4.2	4.0	4.0
Population	1.6	1.4	1.3	1.3	1.3	1.3	1.4	1.3
Households	2.0	1.8	1.7	1.6	1.6	1.7	1.7	1.7

Table E-6. Snohomish County

	2010	2011	2012	2013	2014	2015	2016	2017
Employment (thous.)	260.0	264.7	268.8	273.1	278.3	284.6	290.6	296.5
Goods producing	80.2	80.4	80.5	81.1	82.2	83.9	84.9	86.5
Aerospace	32.9	32.1	31.4	31.2	31.4	31.7	31.3	31.8
Other goods producing	47.3	48.3	49.1	49.8	50.9	52.2	53.5	54.7
Service producting	179.7	184.3	188.3	192.0	196.1	200.7	205.7	210.0
Personal income (mils. $)	33345.4	35765.0	38260.6	40886.0	43787.3	46992.5	50400.3	54027.8
Personal income (mils. $00)	27423.2	28670.9	29866.8	31087.1	32434.8	33906.4	35411.6	36950.2
Per capita personal income ($00)	37726	38749	39709	40684	41776	42950	44084	45221
Population (thous.)	726.7	739.7	752.0	763.9	776.2	789.2	803.1	816.9
Households	274.4	280.3	285.9	291.5	297.2	303.3	309.7	316.2
Single-family	198.9	202.6	206.2	209.7	213.2	217.0	221.0	225.0
Multi-family	75.6	77.7	79.7	81.8	83.9	86.2	88.7	91.2
Annual growth (% change)								
Employment	2.2	1.8	1.6	1.6	1.9	2.3	2.1	2.0
Personal income (mils. $)	7.6	7.3	7.0	6.9	7.1	7.3	7.3	7.2
Personal income (mils. $00)	5.0	4.5	4.2	4.1	4.3	4.5	4.4	4.3
Population	2.1	1.8	1.7	1.6	1.6	1.7	1.8	1.7
Households	2.4	2.1	2.0	1.9	2.0	2.0	2.1	2.1

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-5. Pierce County

	2018	2019	2020	2021	2022	2023	2024	2025
Employment (thous.)	333.1	338.5	343.7	348.8	353.9	359.1	364.4	370.0
Goods producing	49.9	50.5	51.1	51.5	52.0	52.5	53.1	53.8
Aerospace	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Other goods producing	48.4	49.0	49.6	50.0	50.5	51.0	51.6	52.3
Service producting	283.2	287.9	292.7	297.3	302.0	306.7	311.4	316.2
Personal income (mils. $)	59327.9	63191.0	67196.2	71344.6	75734.6	80354.0	85251.1	90515.5
Personal income (mils. $00)	39476.7	40907.7	42332.0	43735.4	45173.9	46630.6	48126.6	49710.7
Per capita personal income ($00)	43649	44705	45776	46823	47899	48984	50086	51246
Population (thous.)	904.2	914.9	924.6	933.9	942.9	951.7	960.7	969.8
Households	351.9	357.4	362.5	367.4	372.3	377.2	382.1	387.1
Single-family	260.7	264.0	267.0	269.9	272.7	275.5	278.3	281.2
Multi-family	91.3	93.4	95.5	97.5	99.6	101.7	103.8	105.9
Annual growth (% change)								
Employment	1.7	1.6	1.5	1.5	1.5	1.5	1.5	1.5
Personal income (mils. $)	6.7	6.5	6.3	6.2	6.2	6.1	6.1	6.2
Personal income (mils. $00)	3.8	3.6	3.5	3.3	3.3	3.2	3.2	3.3
Population	1.3	1.2	1.1	1.0	1.0	0.9	0.9	1.0
Households	1.6	1.5	1.4	1.4	1.3	1.3	1.3	1.3

Table E-6. Snohomish County

	2018	2019	2020	2021	2022	2023	2024	2025
Employment (thous.)	302.1	307.0	311.5	315.6	319.6	323.7	327.9	332.5
Goods producing	88.0	88.6	89.1	89.4	89.8	90.3	90.7	91.4
Aerospace	32.2	31.9	31.6	31.3	31.0	30.7	30.4	30.0
Other goods producing	55.7	56.7	57.4	58.1	58.8	59.6	60.4	61.4
Service producting	214.2	218.4	222.4	226.1	229.8	233.5	237.2	241.1
Personal income (mils. $)	57858.9	61820.1	65918.9	70165.0	74659.4	79397.1	84430.4	89859.1
Personal income (mils. $00)	38499.0	40020.0	41527.2	43012.0	44532.3	46075.1	47663.1	49350.0
Per capita personal income ($00)	46360	47482	48619	49731	50874	52027	53197	54429
Population (thous.)	830.2	842.7	853.9	864.7	875.1	885.4	895.8	906.5
Households	322.5	328.6	334.2	339.6	344.9	350.2	355.6	361.1
Single-family	228.9	232.5	235.9	239.0	242.1	245.2	248.3	251.4
Multi-family	93.6	96.0	98.3	100.5	102.8	105.1	107.3	109.7
Annual growth (% change)								
Employment	1.9	1.6	1.5	1.3	1.3	1.3	1.3	1.4
Personal income (mils. $)	7.1	6.8	6.6	6.4	6.4	6.3	6.3	6.4
Personal income (mils. $00)	4.2	4.0	3.8	3.6	3.5	3.5	3.4	3.5
Population	1.6	1.5	1.3	1.3	1.2	1.2	1.2	1.2
Households	2.0	1.9	1.7	1.6	1.6	1.5	1.5	1.6

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-5. Pierce County

	2026	2027	2028	2029	2030	2031	2032	2033
Employment (thous.)	375.7	381.6	387.3	393.0	398.8	404.8	410.8	416.6
Goods producing	54.6	55.3	55.9	56.5	57.1	57.9	58.5	58.9
Aerospace	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Other goods producing	53.1	53.8	54.4	55.0	55.6	56.4	57.0	57.4
Service producting	321.2	326.3	331.4	336.5	341.7	347.0	352.3	357.6
Personal income (mils. $)	96145.7	102105.2	108357.1	114972.5	121985.2	129463.8	137322.9	145539.6
Personal income (mils. $00)	51365.9	53062.1	54770.8	56517.3	58311.1	60161.4	62019.3	63876.9
Per capita personal income ($00)	52428	53609	54774	55958	57167	58403	59621	60827
Population (thous.)	979.5	989.6	999.7	1009.8	1019.8	1029.9	1040.0	1049.9
Households	392.4	397.8	403.3	408.8	414.4	419.9	425.5	431.1
Single-family	284.2	287.4	290.5	293.7	296.8	300.0	303.2	306.3
Multi-family	108.1	110.4	112.8	115.1	117.5	119.9	122.4	124.8
Annual growth (% change)								
Employment	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.4
Personal income (mils. $)	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.0
Personal income (mils. $00)	3.3	3.3	3.2	3.2	3.2	3.2	3.1	3.0
Population	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Households	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3

Table E-6. Snohomish County

	2026	2027	2028	2029	2030	2031	2032	2033
Employment (thous.)	337.4	342.4	347.1	351.5	356.1	361.0	365.6	369.7
Goods producing	92.2	93.0	93.8	94.5	95.4	96.3	97.0	97.6
Aerospace	29.7	29.5	29.4	29.3	29.2	29.1	28.9	28.8
Other goods producing	62.5	63.6	64.4	65.2	66.2	67.2	68.1	68.8
Service producting	245.3	249.4	253.3	257.0	260.8	264.7	268.6	272.1
Personal income (mils. $)	95693.5	101895.0	108415.2	115318.7	122651.0	130492.8	138752.3	147391.3
Personal income (mils. $00)	51124.0	52952.6	54799.9	56687.2	58629.0	60639.3	62664.5	64689.2
Per capita personal income ($00)	55685	56939	58176	59434	60718	62030	63325	64605
Population (thous.)	917.9	929.8	941.7	953.6	965.4	977.4	989.3	1001.1
Households	367.0	373.1	379.2	385.3	391.5	397.7	404.0	410.2
Single-family	254.8	258.3	261.8	265.3	268.8	272.3	275.9	279.4
Multi-family	112.2	114.8	117.4	120.0	122.7	125.4	128.1	130.9
Annual growth (% change)								
Employment	1.5	1.5	1.4	1.3	1.3	1.4	1.3	1.1
Personal income (mils. $)	6.5	6.5	6.4	6.4	6.4	6.4	6.3	6.2
Personal income (mils. $00)	3.6	3.6	3.5	3.4	3.4	3.4	3.3	3.2
Population	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2
Households	1.6	1.7	1.6	1.6	1.6	1.6	1.6	1.5

Puget Sound Economic and Demographic Projections, 1970-2040

Table E-5. Pierce County

	2034	2035	2036	2037	2038	2039	2040
Employment (thous.)	422.5	428.6	435.0	441.5	448.2	455.0	461.8
Goods producing	59.5	60.2	61.0	61.9	62.8	63.7	64.6
Aerospace	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Other goods producing	58.0	58.7	59.5	60.4	61.3	62.2	63.1
Service producting	363.0	368.4	373.9	379.6	385.4	391.2	397.2
Personal income (mils. $)	154333.8	163767.8	173741.3	184493.0	195955.1	208082.0	220962.2
Personal income (mils. $00)	65818.9	67867.4	69967.6	72199.2	74519.3	76896.3	79350.3
Per capita personal income ($00)	62096	63425	64751	66136	67539	68940	70355
Population (thous.)	1059.7	1069.8	1080.3	1091.4	1103.1	1115.1	1127.6
Households	436.6	442.3	448.2	454.4	460.8	467.4	474.3
Single-family	309.4	312.6	315.9	319.3	323.0	326.8	330.6
Multi-family	127.3	129.8	132.3	135.0	137.8	140.7	143.6
Annual growth (% change)							
Employment	1.4	1.5	1.5	1.5	1.5	1.5	1.5
Personal income (mils. $)	6.0	6.1	6.1	6.2	6.2	6.2	6.2
Personal income (mils. $00)	3.0	3.1	3.1	3.2	3.2	3.2	3.2
Population	0.9	1.0	1.0	1.0	1.1	1.1	1.1
Households	1.3	1.3	1.3	1.4	1.4	1.4	1.5

Table E-6. Snohomish County

	2034	2035	2036	2037	2038	2039	2040
Employment (thous.)	374.0	378.7	383.7	388.9	394.3	399.7	405.0
Goods producing	98.3	99.3	100.4	101.6	102.8	104.0	105.2
Aerospace	28.7	28.6	28.6	28.6	28.6	28.6	28.5
Other goods producing	69.6	70.6	71.7	73.0	74.2	75.5	76.7
Service producting	275.7	279.4	283.3	287.3	291.5	295.6	299.8
Personal income (mils. $)	156642.7	166598.9	177172.3	188618.6	200871.9	213882.6	227744.5
Personal income (mils. $00)	66803.2	69040.2	71348.9	73813.3	76388.6	79039.5	81785.4
Per capita personal income ($00)	65953	67365	68773	70244	71734	73222	74725
Population (thous.)	1012.7	1024.6	1037.2	1050.6	1064.6	1079.2	1094.2
Households	416.4	422.8	429.5	436.5	443.9	451.5	459.3
Single-family	282.8	286.4	290.1	294.1	298.2	302.5	307.0
Multi-family	133.6	136.4	139.4	142.4	145.6	149.0	152.4
Annual growth (% change)							
Employment	1.2	1.2	1.3	1.4	1.4	1.4	1.3
Personal income (mils. $)	6.3	6.4	6.3	6.5	6.5	6.5	6.5
Personal income (mils. $00)	3.3	3.3	3.3	3.5	3.5	3.5	3.5
Population	1.2	1.2	1.2	1.3	1.3	1.4	1.4
Households	1.5	1.5	1.6	1.6	1.7	1.7	1.7