

PIERCE COUNTY HAZARD IDENTIFICATION & RISK ASSESSMENT

PROFILE

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History

While Native Americans have lived in the Pierce County area for thousands of years, the recorded history of Pierce County dates back to the voyages of British Captain George Vancouver. He explored and mapped Puget Sound in 1792, spending time in Pierce County and naming its main geographic and geologic formation Mt. Rainier after his friend Peter Rainier. The Native American population had various names for the mountain amongst them "Tahoma," "Tacobet," "Tuwouk" and "Tacoba".¹ Later, beginning in 1833 the Hudson Bay Company initially established a fort and trading post near the mouth of the Nisqually River. This first structure was a 15x20 foot storehouse.² In 1843 it was moved to a point on the high ground three miles north of the Nisqually River. A replica of Fort Nisqually, including two of the original buildings, has been reconstructed at Point Defiance Park in Tacoma.

Between the time of Vancouver's voyages and the beginning of the Hudson Bay Company fur-trading operations in the 1830s, the area remained largely unknown. Ft. Nisqually and Ft. Steilacoom were later established to provide protection to settlers. Ft. Steilacoom, established in 1849, was the first military base on Puget Sound and later, in 1854, became the first incorporated town in what later became Washington State. Immigration increased from the late 1840s onward. Agriculture and lumbering grew rapidly and on Dec. 22, 1852, the Territorial Legislature of Oregon created the County of Pierce out of Thurston County. Pierce County was named after the newly elected President Franklin Pierce.

The Medicine Creek Treaty of 1854 took away many of the rights the Indians had to the land located in the Puget Sound Basin. This, combined with other complaints, led to open hostilities beginning in 1855 and lasting into 1856. One of the leaders of the Indian uprising was Chief Leschi. His arrest in 1856 for murder, and later his hanging in 1858 were controversial even at that time. A special historical court exonerated him of the charge in 2004, stating that as a combatant of war he "should not, as a matter of law, have been tried for the crime of murder."³

In 1887, the Northern Pacific Railroad completed the first northern routed transcontinental railroad and located its western terminus at Tacoma. This event stimulated the shipping and manufacturing industries of the Puget Sound area, particularly Tacoma. Tacoma also became the headquarters for the Weyerhaeuser Company and a major Pacific shipping center.

Lumber and farming fueled much of the early economy. The old growth forests of the Pacific Northwest were logged and the trees were either made into lumber used to construct the homes, businesses and much of the early infrastructure of the County, or in many cases, burned for fuel.⁴ Much of the lumber and raw logs were shipped to other cities or later overseas.

Coal seams located in eastern Pierce County were mined beginning in the late 1870s and supported the development of a number of small towns on the outskirts of Mount Rainier. Eventually the cost of mining, combined with the use of oil as a major fuel, brought about the demise of the coal industry in Pierce County.

Farming, while initially for subsistence, eventually moved into the commercial realm. Ranging from small family farms to large scale businesses, they have included vegetables, berries, hops, rhubarb, egg producers and dairy cattle.

Interest in the recreational potential in Pierce County began early. In 1883, James Longmire camped near several soda and iron springs at the base of Mt. Rainier. Longmire, seeing the economic potential, established Mount Rainier's first hotel at that site. Touting the value of the spring water and mineral water baths as a medical cure-all, his advertisements reached far and wide. Many came to be cured and found the peaceful scenery and surroundings just as wonderful. Finally on March 2, 1899, President McKinley signed an act establishing Mount Rainier National Park, the nation's fifth national park.

The development of a substantial military complex has had a significant impact on the economy of Pierce County. Ft. Lewis was established in 1917 and McChord Air Force Base in 1938. Effective February 1st, 2010, these have now been transformed into Joint Base Lewis/McChord. In addition to a substantial active duty military population, many military personnel have returned to the area as permanent residents after completion of their military service.

Towns and cities developed around the local economic structure, whether that was logging, coal, farming, lumber, shipping or the military. Today, much of this is changing. Coal is no longer mined; many farms have given way to industrial warehousing; and, lumber, while still a major contributor to the local economy is no longer the king that it once was.

Demographics

Pierce County is the second most populous county in Washington, with twelve percent of the state's population. Pierce County's estimated population on April 1, 2019 was 888,300 based on data from the Washington State Office of Financial Management (OFM) (see Table Profile-1 Pierce County Population Breakdown 2019). This population estimate is used for the allocation of selected State revenues and differs from the U.S. Census population estimate.

For the purpose of hazard mitigation planning, the 2010 U.S. Census population estimate was 795,225 with 428,487 (54%) persons residing in the 24 incorporated cities and 366,738 (46%) residing in the unincorporated communities and areas. From the last update Pierce County's population has grown 9.7% (77,000 people). Gig Harbor is the fastest growing city with a 44.8% increase since 2010.

According to the 2019 Point-In-Time Count for Pierce County, there were approximately 1,486 persons experiencing homelessness. Not all persons experiencing homelessness sleep outside (47 percent were in an emergency shelter, 28 percent were outdoors (tent, street), 11 percent were in transitional housing, 14 percent were in a vehicle, abandoned building, or other).

Table Profile-1 Pierce County Population 2019⁵

Auburn*	9,980
Bonney Lake	21,060
Buckley	4,885
Carbonado	665
DuPont	9,425
Eatonville	2,970
Edgewood	11,390
Enumclaw**	0
Fife	10,140
Fircrest	6,770
Gig Harbor	10,770
Lakewood	59,670
Milton*	6,735
Orting	8,380
Pacific*	35
Puyallup	41,570
Roy	820
Ruston	1,005
South Prairie	480
Steilacoom	6,450
Sumner	10,120
Tacoma	211,400
University Place	33,090
Wilkeson	490
Incorporated City Subtotal	468,300
Unincorporated Pierce County	420,000
Total	888,300
<p><i>*Portions of Pacific, Milton, Auburn and Enumclaw are located in Pierce County, while other sections are in King County. This brings the total number of incorporated cities with at least some property in Pierce County to 24. Populations listed for the individual cities and towns are for Pierce County only and do not include King County populations.</i></p> <p>**Although there are currently no residents of the Town of Enumclaw residing in Pierce County the City does have some park property within the boundaries of Pierce County.</p>	

The 2010 census data show the following age distribution of people in the County:

Table Profile-2 Pierce County Population

Under 20	25%
20-24	10%
25-44	28%
45-64	26%
65 and over	11%

Languages

There are 77 different languages spoken in Pierce County. RCW 43.62.030 states that the Office of Financial Management (OFM) shall annually determine the April 1 populations of all cities and towns of the state.

Department of Homeland Security (DHS) uses “safe harbor” provisions to recommend the threshold at which vital information should be translated for a language group. “Safe harbor” language groups constitute five percent or 1,000 people, whichever is less, of the population of persons eligible to be served or likely to be affected or encountered. Fewer than 50 persons in a language group that reaches the five percent trigger must be provided written notice in the primary language of the LEP group of the right to receive

competent oral interpretation of written public information, free of cost.

A population needs assessment was conducted in 2017. This assessment determined the selected languages and the ranking order of frequency for Pierce County. To make certain that the languages selected were accurate and verifiably representative of the limited English proficient populations in the County, the determination of the selected languages was a collaborative effort vetted by key stakeholders and several County departments that provide services to LEP populations on a regular basis.

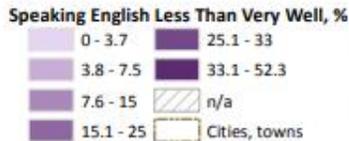
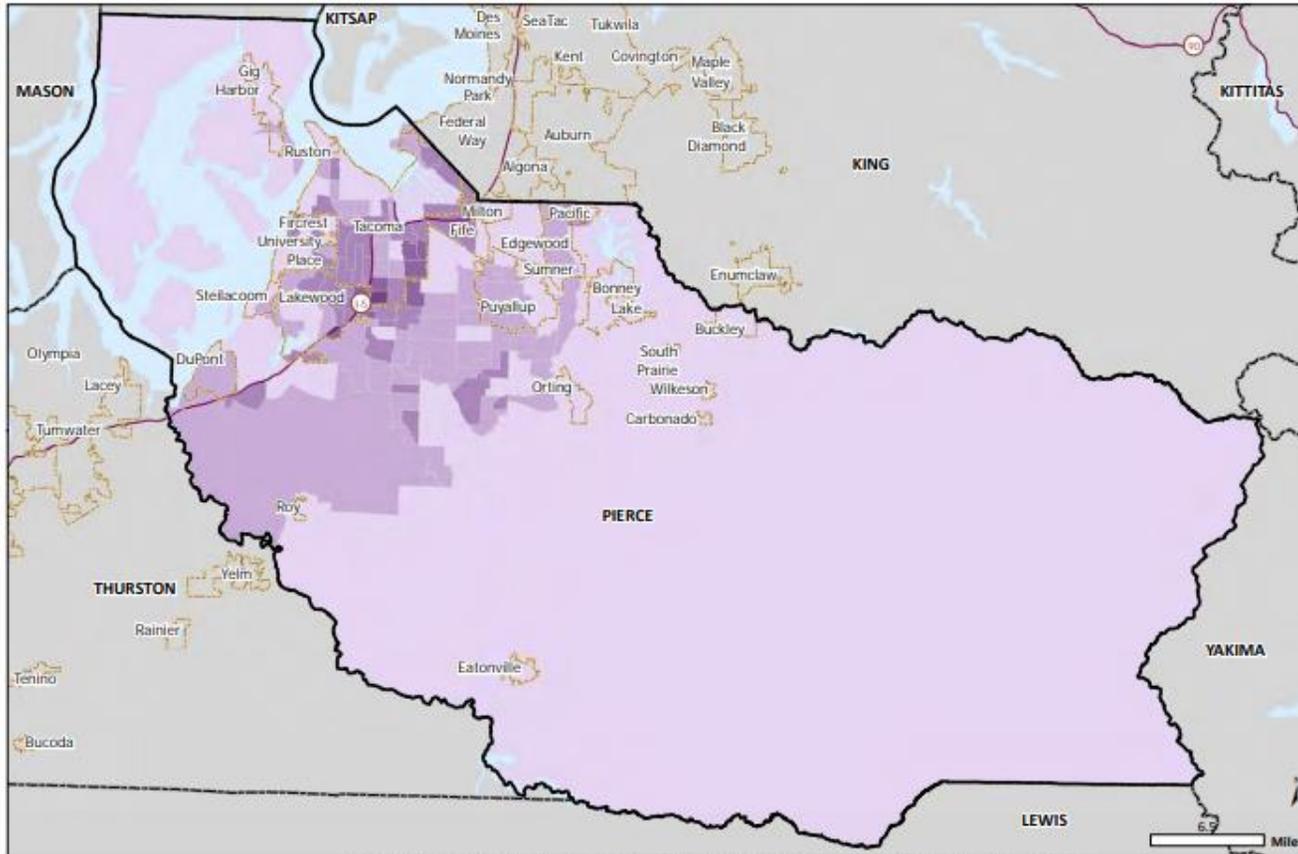
After evaluating the data sets, the selected languages are¹:

- Spanish
- Korean
- Russian
- Vietnamese
- Cambodian (Khmer)
- Samoan
- Tagalog
- Ukrainian
- German; and
- Chinese (traditional and simplified)
- American Sign Language

¹ The determination of the selected languages was a collaborative effort that was vetted by various stakeholders and several County departments including: the Assigned Council, Communications, Community Connections, the Family Justice Center, Human Resources, and the Interpreter Services Office (representing the courts). Input was also given by the City of Tacoma, the Tacoma/Pierce County Health Department, the Washington State Emergency Management Division, and Dynamic Language. Limited English proficiency strategy document published separately.

Map Profile-1 Percent Speaking English Less Than Very Well: Pierce County⁶

Percent Speaking English Less Than Very Well: Pierce County
by Census Tract, 2012



DATA NOTES: Estimated number of persons speaking English less than "Very Well" (persons speaking a language other than English at home and speaking English "Well," "Not well," or "Not at all") as a percentage of all persons ages 5+ years, by Census tract. For definition, see http://www.census.gov/acs/www/Downloads/data_documentation/SubjectDefinitions/2012_ACSsubjectDefinitions.pdf

SOURCES: 2012 American Community Survey, 5-Year Estimates, Summary Files, Table B16004.
Census Tracts and Counties: 2010 Tiger/Line shapefiles. Cities, Roads: WA Dept. of Transportation.

CONTACT: Irina Sharkova, DSHS/RDA/PRES, irina.sharkova@dshs.wa.gov, 360-902-0743.

Washington State
Department of Social
& Health Services

RDA Research & Data
Analysis Division

June 30, 2014

Transportation

About 5 percent of Pierce County households are car-free (as reported by the Puyallup Watershed Initiative Active Transportation using data from the Puget Sound Regional Council).

83 percent of healthcare providers surveyed in Pierce County indicate that transportation to health care appointments is a problem for their patients (2014-15 Pierce County Aging and Disability Resources Area Plan Update, Special Needs Transportation Issue Area). Survey respondents reported transportation as one of the top three needs for older adults (49 percent) and people with disabilities (54 percent).⁷

Six types of disability measured

Using data from the 2016 Behavioral Risk Factor Surveillance System (BRFSS), this is the first CDC report of the percentage of adults across six disability types:

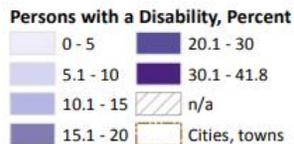
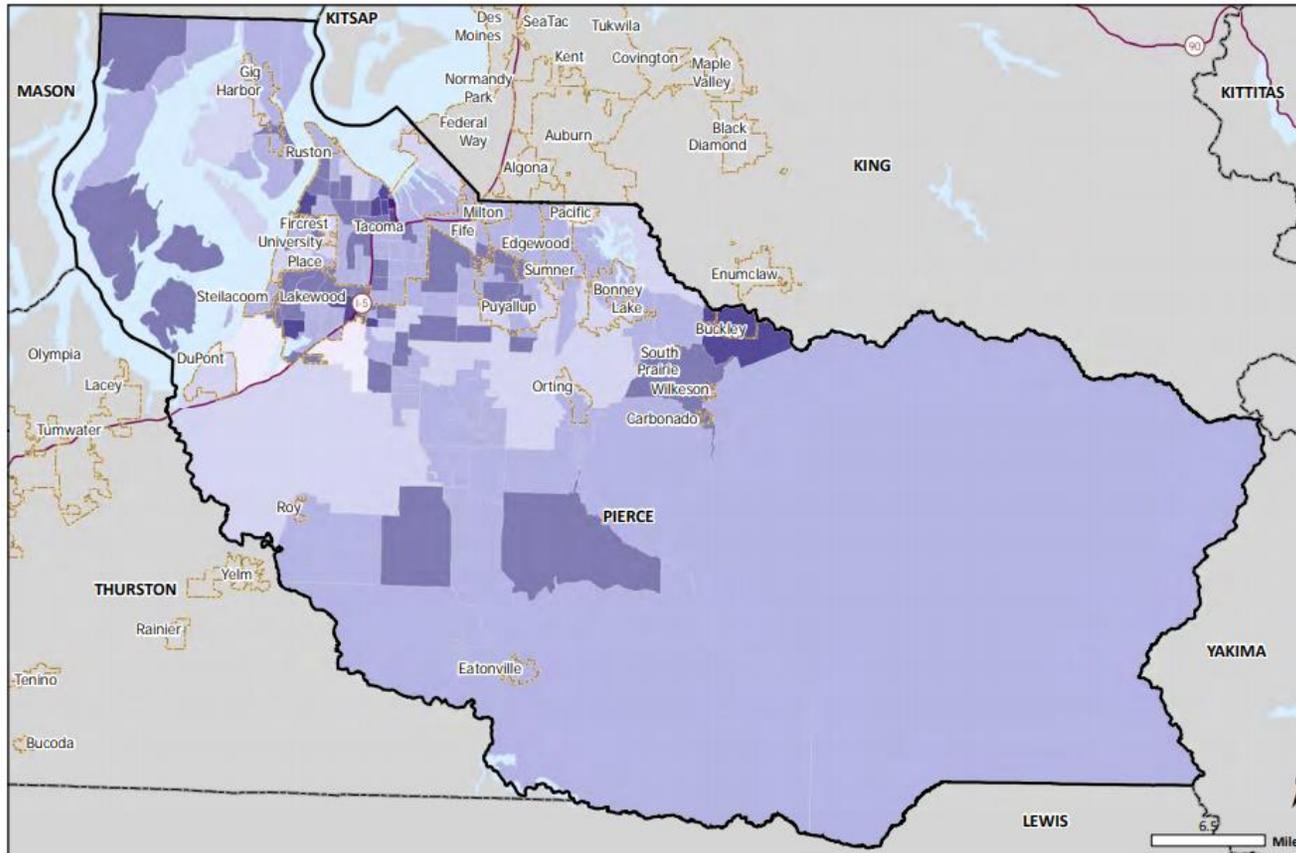
- Mobility (serious difficulty walking or climbing stairs)
- Cognition (serious difficulty concentrating, remembering, or making decisions)
- Hearing (serious difficulty hearing)
- Vision (serious difficulty seeing)
- Independent living (difficulty doing errands alone)
- Self-care (difficulty dressing or bathing)

One in four U.S. adults – 61 million Americans – have a disability that impacts major life activities, according to a report in CDC's [*Morbidity and Mortality Weekly Report*](#).

The most common disability type, mobility, affects one in seven adults. With age, disability becomes more common, affecting about 2 in 5 adults age 65 and older.

Map Profile-2 Percent with a Disability: Pierce County

Percent with a Disability: Pierce County by Census Tract, 2012



DATA NOTES: Estimated number of persons with a disability as a percentage of all civilian noninstitutionalized persons by Census tract. For definition of Disability Status, see p. 55-58 of http://www.census.gov/acs/www/Downloads/data_documentation/SubjectDefinitions/2012_ACS/SubjectDefinitions.pdf

SOURCES: 2012 American Community Survey, 5-Year Estimates, Summary Files, Table C18108.
Census Tracts and Counties: 2010 Tiger/Line shapefiles. Cities, Roads: WA Dept. of Transportation.

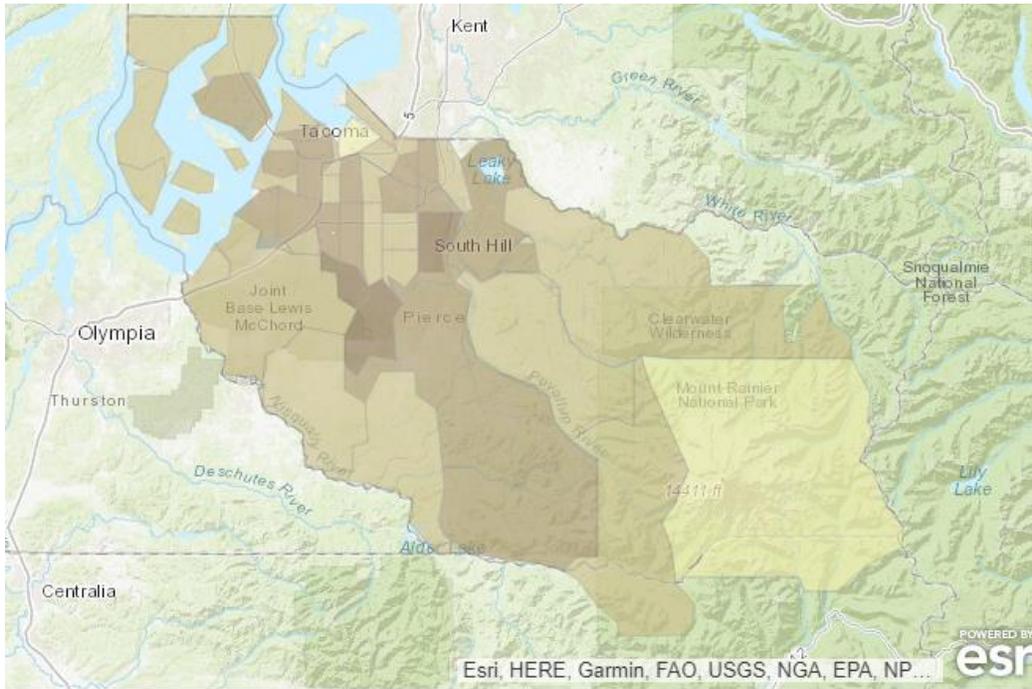
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Map Profile – 3 Electrical Dependencies – Health and Human Services empower Map 3.0⁸



Medicare Data Totals		Electricity-Dependent Scale	
Geographical Area:	Pierce	0 - 0	
Beneficiaries:	135,329	1 - 133	
Electricity-Dependent Beneficiaries:	4,966	134 - 237	
		238 - 396	
		397 - 1,173	

Education

According to the US Census data public and private schools (K-12) account for 136,675 students during the 2014 school year, of which 128,409 are in the public school system and 8,266 enrolled in private schools.⁹ These numbers include two public schools located in Pierce County although the districts reside in other counties (King and Thurston).

Geology

In the western and central area of the county, the upper crustal materials are predominantly glacial deposits (called drift) consisting of sediments laid down during the several cycles of glacial advance and retreat which have occurred during the past millennium. Vashon Age deposits cover the entire western and central areas with the exception of the walls and floors of the major valleys. These consist of isolated mudflow deposits and peat bogs. Bedrock, with a thin mantle of outwash and sand material, predominates within the eastern portion of the county.

The Vashon Drift consists of water laid, stratified, granular material deposited in front of the advancing glacier (advance outwash) overlain by unsorted clay, silt, sand and gravel (till); in turn, overlapped by another blanket of granular stream deposits (recessional outwash).

During the retreat of the glacier, glacial damming formed large temporary lakes. One of these ice-dammed lakes, occupying the Puyallup and White River valleys during the retreat of the Vashon ice, apparently discharged water and material across the plain between Tacoma and Eatonville. Deep channels as much as a mile wide were carved by the torrential discharge streams and a layer of coarse-grained poorly sorted material was laid down in a fan-shaped area from Chambers and Clover Creeks on the north to the Nisqually River and Muck Creek on the south.

Geography/Topography

Pierce County's extremely varied topography ranges from sea level to 14,411 feet at the summit of Mt. Rainier. The county is located in the west central part of the state and has a land area of 1,157,120 acres or 1,808 square miles. There are 118 square miles of water in the county excluding Puget Sound. Puget Sound divides the County, with the portion west of the Sound located on the Kitsap Peninsula. In addition, a number of islands in the southern Sound are incorporated in the county.

The Puyallup and White River valleys are fertile regions comprising one of the most intensively cultivated areas in the state. This is, however, gradually giving away to commercial expansion. The water from all major rivers with headwaters on Mt. Rainier, with the exception of the Cowlitz and its tributaries draining the southeast corner of the mountain, flows into Puget Sound. They are the Puyallup, White, Nisqually, Mowich and Carbon Rivers. Of these, only the Nisqually and Puyallup actually enter Puget Sound. The White, Carbon and Mowich Rivers are all tributaries of the Puyallup and join it before it enters the Sound. The White River borders Pierce County to the north and drains the east side of the mountain. The Nisqually forms the southern border of the County and drains the south side of the mountain. With its tributaries, the Mowich and the Carbon, the Puyallup River contains the runoff from both the north and west sides of Mt. Rainier. It discharges their combined waters into Commencement Bay. There are numerous other rivers and creeks throughout the County.

Commencement Bay, Pierce County's principal port, is an arm of Puget Sound that allows easy access to the sea. The developed portions of the County are located near Puget Sound on gently rolling terrain formed from glacial outwash and till. The eastern portion of the County consists of foothills rising up to the crest of the Cascade Range, includes Mount Rainier National Park and is utilized primarily for timber production and recreation.

The State and Federal governments control four large parcels of land within the County for a total of 436,776 acres or 38% of the total land area. (See Table Profile -1 Federal & State Large land Parcels in Pierce County.) In addition to these four, they also have a number of smaller

parcels, such as the Washington State Soldiers' Home and Colony in Orting, the Veterans Hospital at American Lake, and Mud Mountain Dam under control of the Army Corps of Engineers.

Table Profile-1 Federal & State Large Land Parcels in Pierce County

Joint Base Lewis/McChord	91,616 Acres
Snoqualmie National Forest (Pierce County Portion)	144,749 Acres
Mt. Rainier National Park (Pierce County Portion)	196,168 Acres
McNeil Island	4,243 Acres

Included within the boundaries of Pierce County are 361 lakes greater than one acre in size. One hundred and sixty-two of these are above 2,500 feet in elevation. National forests, 225 miles of saltwater shoreline, the abundance of lakes and other recreational opportunities contribute to an excellent quality of life in Pierce County.

Anderson Island, McNeil Island and Fox Island are the three major islands within the county and lie west of Tacoma and Steilacoom. Anderson and McNeil Islands can be reached only by ferry

or boat. There is a connecting bridge to Fox Island. Anderson Island has a resident population of only a few hundred people, but during the summer months, this population can swell to several thousand people. There are no medical facilities on either Anderson or Fox Islands. However, emergency medical technicians and paramedics are available through the resident fire service. McNeil Island is a state correctional facility.

Climate

The climate of Pierce County is generally mild. The Cascade Mountains to the east block cold winter air and the Willapa Hills and the Olympic Mountains to the west remove much of the moisture from many Pacific storms before they reach the lowland areas of the County.

Definite seasons are evident, with the rainy season generally from October through April. Precipitation on the western and central portions of the County is usually in the form of rain, with occasional snow during the winter, while the eastern portion of the County is subject to a very heavy winter snowpack. This snowpack melts each spring with the exception of the upper slopes of Mt. Rainier, where snow remains year-round, locked up in an extensive glacier system.

Tacoma's average rainfall is approximately 37 inches per year, most of which falls between October and April. Average daily high temperatures range between 46.6 degrees in December and 76.6 degrees in August.¹⁰ Precipitation in the mountainous areas of the eastern part of the county is well over 100 inches per year. See Climate Change chapter for more information.

Economy

Tacoma, the county seat, is the third largest city in the state, Pierce County's principal center for urban concentration and functions as the primary center for industry and trade. It is served by three major transcontinental railroads, federal and state highways and a deep-water port. Pierce County is well situated for industrial, commercial and residential growth.

The primary industries in the Pierce County economy are aerospace, government, healthcare, manufacturing, military, transportation and logistics. The lumbering and wood products industry has become more sophisticated with plywood and paper production increasing in importance. Military support activity has fluctuated in the past. The newly created Joint Base Lewis/McChord points to continued strength in this sector. The impact of the military, state and local government, the school system and the health services system can be seen in Table Profile-3 Pierce County Top 20 Employers – 2018. These few areas make up the top twenty employers in the County. As in the rest of the country, the service sector has grown over the past few decades.

Much effort has been expended in recent years in developing a more broadly based economy. The Port of Tacoma has attracted many new industries, as well as major shipping firms. However, the ship and boat building industry waned somewhat during the final decade of the 20th century.

Shipping, general commerce, and agriculture, with its heavy seasonal employment in the berry and bulb crops, are important contributors to the economy. However, as our local economy continues to shift from an agricultural to a manufacturing and service economy, the ratios will change.

Pierce County has long been the home of the University of Puget Sound and Pacific Lutheran University. The Evergreen State College Tacoma Campus, Tacoma Community College, Pierce College and the University of Washington-Tacoma provide additional educational opportunities, as do several private business colleges and vocational technical schools.

Table Profile-3 Pierce County Top 20 Employers – 2018¹¹

Rank	Organization	Employees	Industry
1	Joint Base Lewis McChord	53,000	Military
2	MultiCare Health System	7,705	Healthcare
3	State of Washington	7,621	Government
4	CHI Franciscan Health System	6,786	Healthcare
5	City of Tacoma and Tacoma Public Utilities	3,591	Government and Utility Services
6	Tacoma Public Schools	3,333	Education
7	Puyallup Tribe and Emerald Queen Casino	3,312	Government and Gaming
8	Pierce County Government	3,089	Government
9	Puyallup School District	2,190	Education
10	Bethel School District	2,028	Education
11	State Farm	1,637	Insurance
12	Boeing	1,550	Aerospace Manufacturing
13	Clover Park School District	1,446	Education
14	United States Postal Service	1,336	Government
15	DaVita	1,184	Healthcare
16	Milgard Manufacturing	990	Manufacturing
17	Kaiser Permanente	755	Healthcare
18	Columbia Bank	704	Banking
19	Regence	565	Healthcare
20	Toray Composite Materials, America	565	Retail

Source: Tacoma Pierce County Economic Development Board

The continued expansion of the wood products industry, manufacturing, food processing, industrial development, and service industries combined with the expansion of the Port of Tacoma, are expected to cause substantial future population growth in Pierce County.

U.S. Census 2017 estimate figures show that the median Pierce County household income was \$63,881, which was \$2,293 lower than the median for Washington State. Low income also shows 10.2 percent of Pierce County household residents were below the poverty level. This is .1 percent below the State average.¹²

Resource Directory

Local

- **Economic Development Board for Tacoma-Pierce County**
<http://www.edbtacomapierce.org/Default.aspx>
- **Pierce County**
<http://www.co.pierce.wa.us/index.aspx?NID=27>
- **Tacoma-Pierce County Chamber of Commerce**
<http://www.tacomachamber.org/index.aspx>

Regional/State

- **Office of Financial Management**
<http://www.ofm.wa.gov/default.asp>
- **Puget Sound Regional Council**
<https://www.psrc.org/sites/default/files/trend-population-201808.pdf>
- **Washington Tracking Network**
<https://fortress.wa.gov/doh/wtnibl/WTNIBL/>

National

- **DATA USA**
<https://datausa.io/profile/geo/pierce-county-wa/>
- **Health and Human Services**
<https://empowermap.hhs.gov/>
- **National Agricultural Statistics Service**
<https://quickstats.nass.usda.gov/>
- **National Climatic Data Center**
<http://www.ncdc.noaa.gov/>
- **U.S. Census Bureau**
<http://www.census.gov>

Endnotes

¹ How Mount Tacoma became (sic) Mount Rainier, Rob Carson, The News Tribune, originally published 1999, online 10/25/07, updated 02/16/2009, <http://www.thenewstribune.com/2007/10/08/174144/how-mount-tacoma-became-mount.html>

² Fort Nisqually Living History Museum, Metro Parks Tacoma, <http://www.metroparkstacoma.org/page.php?id=825>

³ Nisqually Chief Leschi is hanged on February 19, 1858, HistoryLink.org Essay 5145, at http://www.historylink.org/index.cfm?DisplayPage=output.cfm&file_id=5145

⁴ Pierce County – Thumbnail History, HistoryLink.org Essay 8001, http://www.historylink.org/index.cfm?DisplayPage=output.cfm&file_id=8001

⁵ Forecasting & Research Division Office of Financial Management. (November 2014). *State of Washington 2014 Population Trends*. Retrieved March 14, 2015 from <http://www.ofm.wa.gov/pop/april1/poptrends.pdf> Population determinations contained in this document are developed by the Office of Financial Management (OFM) and represent the state's official population figures.

⁶ Figure was provided by Washington Department of Health and Social Services.

⁷ 2015 Pierce County Aging and Disability Resources Survey.

⁸ Health and Human Services. HHS empower Map 3.0. Accessed April 28, 2020 from www.empowermap.hhs.gov

⁹ Office of the Superintendent of Public Instruction (OSPI) 2014 student enrollment, October Enrollment Report <http://www.k12.wa.us/DataAdmin/default.aspx>

¹⁰ Average Annual Weather for Tacoma & Pierce County, Washington, by The Tacoma Regional Convention & Visitor Bureau, at <http://www.traveltacoma.com/static/index.cfm?contentID=311>

¹¹ Pierce County Major Employers modified to reflect the change in Joint Base Lewis/McCord and the loss of the Russell Investment Firm to King County, Economic Development Board for Tacoma-Pierce County, <http://www.edbtacomapierce.org/Default.aspx>

¹² Source U.S. Census Bureau: *State and County QuickFacts*. Data derived from Population Estimates, American Community Survey, Census of Population and Housing, State and County Housing Unit Estimates, County Business Patterns, Non employer Statistics, Economic Census, Survey of Business Owners, Building Permits. Last Revised: Thursday, 05-Feb-2015 13:17:49 EST Retrieved March 13, 2015 from <http://quickfacts.census.gov/qfd/states/53/53053.html>

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