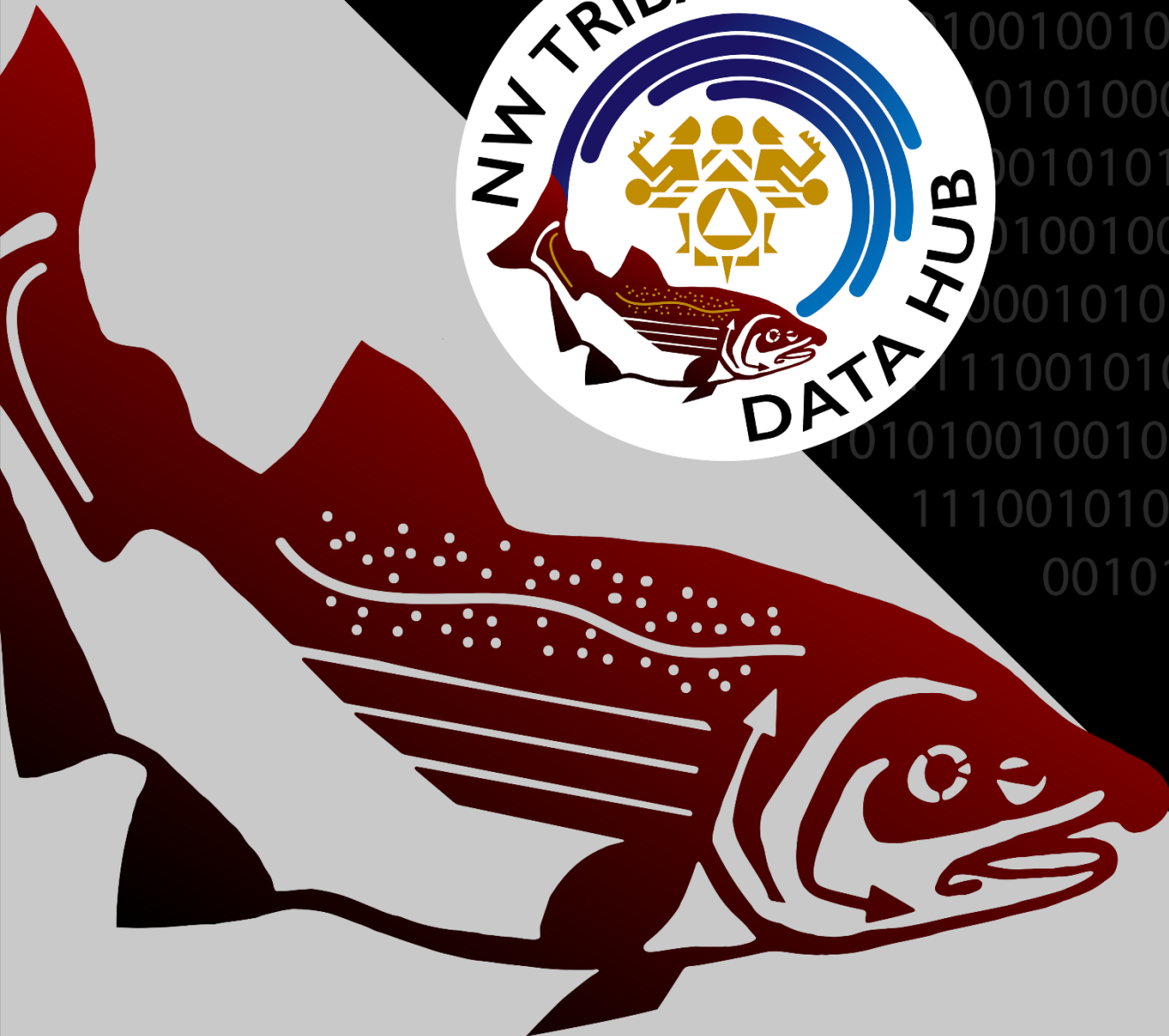
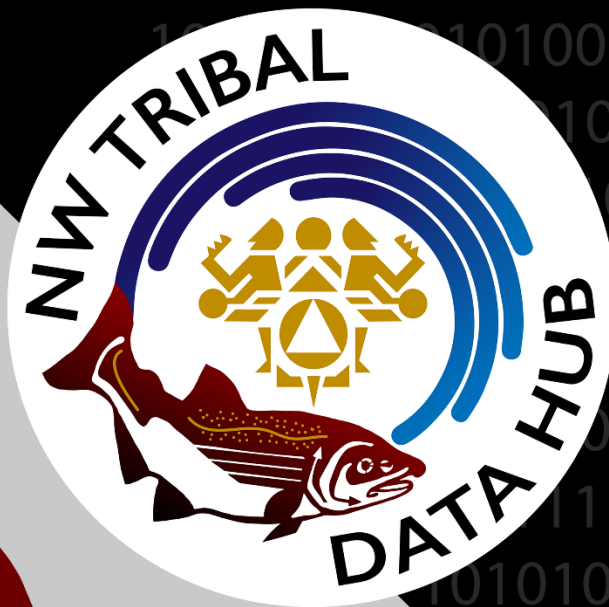




NORTHWEST PORTLAND AREA
INDIAN HEALTH BOARD
Indian Leadership for Indian Health

Northwest Tribal Data Hub

Data Analysis Methods





Connecting Northwest Tribal communities with accurate and relevant data, on-demand.

The Northwest Tribal Data Hub
is a project of the Northwest
Tribal Epidemiology Center.

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NW Tribal Data Hub Standard Methods

Data Comparability Disclaimer

Methodological Changes Over Time

The Northwest Tribal Epidemiology Center uses the best available data and methods available at the time of analysis. These data and methods change over time. Therefore, data presented through the Data Hub (particularly rate and rate ratio estimates) should not be compared to estimates in other products developed by the Northwest Tribal Epidemiology Center, primarily due to changes in the population denominators used to calculate rates.

Race Comparability

The data presented on the Northwest Tribal Data Hub dashboards may not be comparable to information published by state and federal agencies due to differences in how the Northwest Tribal Epidemiology Center identifies and counts American Indian/Alaska Native (AI/AN) people. See [Racial Misclassification Correction Measures](#) for more information.

Tribal Area

Tribal Area Definition:

Tribal areas include the county or counties that form the Tribe's Purchased/Referred Care Delivery Area (PRCDA) as defined by the Indian Health Service (IHS). These areas may occasionally change and are listed on the [IHS website](#).

Update Process:

Northwest Tribal Epidemiology Center (NWTEC) staff reference the IHS PRCDA list and periodically scan [Federal Register notices](#) to identify recently approved expansions to Tribal areas that may not yet be reflected in the IHS list.

For our current list of Tribal PRCDA areas, see [Appendix A: Tribal Areas](#).

Historical Note:

The PRCDA was previously known as the Contract Health Service Delivery Area (CHSDA).

Race

Definition of American Indian/Alaska Native (AI/AN):

NWTEC uses a broad definition for identifying American Indian/Alaska Native (AI/AN) status. Death records mentioning any AI/AN status or tribal affiliation, whether alone or in combination with other race(s), are included as AI/AN. AI/AN people with Hispanic and Non-Hispanic ethnicity are both included as well. Finally,



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individuals identified as having AI/AN status through record linkage corrections are included as AI/AN (see [Racial Misclassification Correction Measures](#)).

[Race Data Comparability Disclaimer](#)

Definition of Non-AI/AN:

All other death records besides those classified as AI/AN are identified as Non-AI/AN, including records with race unknown. If a record indicates AI/AN and another race, the record is included in the AI/AN category only.

Racial Misclassification Correction Measures:

AI/AN people are often misclassified as another race in health data. For example, an AI/AN person might be incorrectly listed as “White” in their hospital or medical clinic records – this is considered racial misclassification. Misclassification causes an under-counting of AI/AN people in health data, which leads to inaccurate AI/AN health data, artificially lowered disease rates, and incomplete data for public health decision-making.

With authorization from NPAIHB’s Board of Delegates, NWTEC performs correction measures to address racial misclassification in various health data systems to improve accuracy. Correcting misclassification involves a process called a “record linkage” between health data systems and the [Northwest Tribal Registry \(NTR\)](#). The NTR includes AI/AN individuals in Idaho, Washington, and Oregon who have received services at IHS, tribal, or urban Indian health clinics in the region. Records are corrected to indicate AI/AN status when an individual included in the NTR is classified as another (incorrect) race on their death certificate.

For more information on racial misclassification and NWTEC record linkages, visit <https://www.npaihb.org/idea-nw/>.

For more details on the NTR, see the [Northwest Tribal Registry document](#).

Mortality Rates

Rates are calculated per 100,000 people using population estimates from the [US Census Bureau Population Division](#).

Purpose of Mortality Rates

Mortality rates, also called death rates, measure the number of deaths in a given population relative to the size of that population, over a specified period of time. Mortality rates provide a standardized metric for comparing the burden of various causes of death across different regions and time periods. For example, 100 deaths for a condition in a county with a population of 2,000 indicates a significantly higher disease burden than 100 deaths in a county with a population of 200,000. While the death count is the same (100) for each county, the



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corresponding (crude) mortality rates are 5,000 per 100,000 population for the first county versus 50 per 100,000 population for the second, which more clearly displays that the burden of that condition is higher in the first county (5,000 vs 50 per 100,000).

Crude Death Rate

A 'crude' death rate is a basic measure that calculates the number of deaths in a population divided by the [total population](#), multiplied by 100,000.

Rates provided by age group (age-specific rates) are presented as crude death rates, since these are specific to each age group and do not require adjustment for age distribution differences. See [Age-Adjusted Rates](#).

Age-Adjusted Rates

Rates by race and sex are age-adjusted using [standardized population estimates](#) and corresponding population weights. This type of adjustment accounts for natural variations in the age distribution of different populations. For example, the AI/AN population tends to be younger compared to the general population. Age-adjustment helps make fair comparisons across populations with different age structures by standardizing the age distribution.

Age Categories

For the present analyses, standard population weights are aggregated into the following 10-year age groups for age-adjustment: 00-09, 10-19, 20-29, 30-39, 40-49, 50-59, 60+, Unknown.

NW Tribal Data Hub Data Sources

Death Records

Analyses are conducted on the combined death certificates from the states of Washington, Oregon, and Idaho, which have been individually corrected for [AI/AN racial misclassification](#) by NWTEC. Data include state resident deaths only; deaths of non-residents that occurred within the state are excluded.

Washington Death Certificates

Dataset composed of death certificate records for residents of Washington State. Data are obtained from the Washington State Department of Health after the establishment of a data sharing agreement.

Oregon Death Certificates

Dataset composed of death certificate records for residents of Oregon State. Data obtained from the Oregon Health Authority after the approval of a records request.



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Idaho Death Certificates

Dataset composed of death certificate records for residents of Idaho State. Data obtained from the Idaho Bureau of Vital Records & Health Statistics after the approval of a research request.

Detailed information on death certification processes can be found in the [Physician's Handbook on Medical Certification of Death](#) by the U.S. Department of Health and Human Services.

Population Estimates

County Characteristics Resident Population Estimates from the U.S. Census Bureau, Population Division are used for calculating rates and other statistics. These estimates include:

[Annual County Resident Population Estimates by Age, Sex, Race, and Hispanic Origin: April 1, 2010 to July 1, 2020. Release date: June 2021.](#)

[Annual County Resident Population Estimates by Age, Sex, Race, and Hispanic Origin: April 1, 2020 to July 1, 2022. Release date: June 2023.](#)

Population Standardization for Age-Adjustment

Age-adjusted rates are calculated using the [U.S. 2000 Standard Million Population estimates](#) from the National Center for Health Statistics (NCHS).

Causes of Death

Causes of death are determined using the underlying and multiple cause- of-death codes derived from death certificates. The current standard for coding is the [International Classification of Disease, 10th Revision \(ICD-10\)](#), as defined by the World Health Organization.



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Dashboard Specific Methods

Drug Overdose Deaths Dashboard

Suggested Citation

Northwest Portland Area Indian Health Board, Northwest Tribal Epidemiology Center. Drug Overdose Deaths Dashboard on the Northwest Tribal Data Hub. Data are from death certificates, 2010-2022, provided by the states of Washington, Oregon, and Idaho, and corrected for AI/AN racial misclassification. Accessed at <link> on <date>.

Definition of Drug Poisoning (Overdose) Deaths

Drug poisoning (overdose) deaths are identified using the ICD-10 underlying cause-of-death (UCD) codes: X40-X44, X60-X64, X85, and Y10-Y14. These codes are defined as follows:

- **X40-X44:** Accidental poisoning by drugs, medicaments, and biological substances
- **X60-X64:** Intentional self-poisoning by drugs, medicaments, and biological substances
- **X85:** Assault by drugs, medicaments, and biological substances
- **Y10-Y14:** Poisoning by drugs, medicaments, and biological substances, undetermined intent

Note: The [underlying cause-of-death](#) is defined by the World Health Organization (WHO) as "the disease or injury which initiated the train of events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury."

Exclusions: Deaths due to alcohol poisoning, fatal injuries involving drugs (e.g., motor vehicle accidents), and other causes mentioning drugs or substances in multiple cause-of-death fields, but not as the underlying cause of death, are excluded from the drug poisoning definition.

Drug Class and Specific Drug Involvement

Drug overdose deaths can be further categorized using the multiple cause-of-death codes on death certificates. Multiple cause-of-death codes include other contributory causes in the train of events leading to death, such as additional conditions and the immediate cause of death but excludes the underlying (initiating) cause. For drug overdose death analyses, these fields can indicate specific drugs or drug classes involved in the death.



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Drug categories and specific drug involvement are defined as deaths with an underlying cause-of-death code of drug poisoning (X40–X44, X60–X64, X85, Y10–Y14) and multiple cause-of-death codes (MCD) per the below list.

Note: Drug categories are not mutually exclusive. A single overdose death involving multiple drugs can be counted in multiple categories, once for each drug involved.

Drug Class Categories

Opioid

- T40.0 - Opium
- T40.1 - Heroin
- T40.2 - Other Opioids
- T40.3 - Methadone
- T40.4 - Other Synthetic Narcotics
- T40.6 - Other and Unspecified Narcotics

Stimulant

- T40.5 - Cocaine
- T43.6 - Psychostimulants with Abuse Potential

Sedative

- T42.0 - Hydantoin Derivatives
- T42.1 - Iminostilbenes
- T42.2 - Succinimides and Oxazolidinediones
- T42.3 - Barbiturates
- T42.4 - Benzodiazepines
- T42.5 - Mixed Antiepileptics Not Elsewhere Classified
- T42.6 - Other Antiepileptic and Sedative-hypnotic Drugs
- T42.7 - Antiepileptic and Sedative-hypnotic Drugs Unspecified
- T42.8 - Antiparkinsonism Drugs and Other Central Muscle-Tone Depressants

Antidepressant

- T43.0 - Tricyclic and Tetracyclic Antidepressants
- T43.1 - Monoamine-oxidase-inhibitor Antidepressants
- T43.2 - Other and Unspecified Antidepressants

Antipsychotic

- T43.3 - Phenothiazine Antipsychotics and Neuroleptics
- T43.4 - Butyrophenone and Thioxanthene Neuroleptics
- T43.5 - Other and Unspecified Antipsychotics and Neuroleptics

Other Psychotropic

- T43.8 - Other Psychotropic Drugs Not Elsewhere Classified
- T43.9 - Psychotropic Drug Unspecified

Hallucinogen

- T40.7 - Cannabis (Derivatives)
- T40.8 - Lysergide [LSD]
- T40.9 - Other and Unspecified Psychodysleptics [Hallucinogens]

Unknown Drug

- This category applies for drug overdose deaths when:
 - T50.9 “Other and unspecified drugs, medicaments and biological substances” is the sole code from the ICD-10 range T36-T50 provided, or
 - There are no multiple cause-of-death codes specified on the death certificate (ie: there is only an underlying cause-of-death code provided), or
 - There are no drug code(s) from the ICD-10 range T36-T50 “Poisoning by - adverse effect of and underdosing of drugs, medicaments and biological substances” indicated in the multiple cause-of-death fields (ie: there is at least one multiple cause-of-death code specified, but none from the drug code range)

Other Pharmaceutical

- Includes all other codes in the range T36-T50 not listed in the above defined categories. The broad classifications of drugs included in Other Pharmaceutical are:
 - Systemic Antibiotics
 - Other Systemic Anti-infectives and Antiparasitics
 - Hormones and Their Synthetic Substitutes and Antagonists Not Elsewhere Classified
 - Nonopioid Analgesics Antipyretics and Antirheumatics
 - Anaesthetics And Therapeutic Gases
 - Drugs Primarily Affecting the Autonomic Nervous System
 - Primarily Systemic and Haematological Agents Not Elsewhere Classified
 - Agents Primarily Affecting the Cardiovascular System
 - Agents Primarily Affecting the Gastrointestinal System
 - Agents Primarily Acting on Smooth and Skeletal Muscles and the Respiratory System
 - Topical Agents Primarily Affecting Skin and Mucous Membrane and By Ophthalmological Otorhinolaryngological and Dental Drugs
 - Diuretics and Other and Unspecified Drugs Medicaments and Biological Substances Polysubstance (Multidrug) Deaths

For more details on ICD-10 coding and drugs included/excluded from certain codes, visit <https://icd.who.int/browse10/>.

Polysubstance (Multidrug) Deaths

Many drug overdose deaths involve more than one drug. For the present analysis, overdose deaths are categorized into involving 1, 2, 3, or 4+ drugs, or Unspecified. Deaths are categorized by the number of distinct ICD-10 codes within the range of T36-T50 (Poisoning by, adverse effect of and underdosing of drugs, medicaments and biological substances) that are listed as multiple causes-of-death on the death certificate.

Codes that fall into the category of [Other Pharmaceutical](#) are included once per broad drug classification. For example, if a death involved heroin and two systemic antibiotics, the death would be counted in the two-drug category, whereas if a death involved heroin (an opioid), a benzodiazepine (a sedative), and cocaine (a stimulant), it would be counted in the three-drug category. This is done to ensure the polysubstance information is relevant to drugs of most interest in overdose deaths and not inflated with common medications atypically contributing to deaths.

Deaths with codes outside the selected drug range (T36-T50) or where no drug was identified are classified as “Unspecified” and are excluded for the present polysubstance analysis.

Intent/Manner of Death

Drug poisoning deaths are classified by intent (or manner of death) as recorded on death certificates. These categories include unintentional (accidental), intentional (suicide), homicide, or undetermined intent. Natural manner of death, such as those from disease or age, are not indicated in drug overdose deaths.

Drug Overdose Death Data Limitations

Lack of ICD-10 Drug Coding Specificity

Some ICD-10 codes represent a specific drug (i.e. T40.1 Heroin) and some codes represent multiple drugs (i.e. T40.2 Other Opioids). When the specific drug of interest falls into a non-specific code, it is difficult to analyze trends for that drug. For example, fentanyl, a drug that has more recently become common in fatal overdoses, is included under ICD-10 code T40.4 “Other Synthetic Narcotics.” However, this code also captures other synthetic opioids, such as Tramadol and Demerol, and it is difficult to differentiate which drug the code is referencing.

Additional drug specificity can be found by reviewing the literal (written) cause of death fields on death certificates, which was not performed for the present



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analysis. This type of analysis is particularly helpful for newer emerging drugs that do not have a specific ICD-10 code defined, or for codes that represent multiple drugs.

Death Certificate Quality and Variability

Variability in the completion of death certificates, drug and toxicology testing, medical examiner vs coroner systems, and other factors can lead to a higher percentage of unknown or unspecified drugs for certain regions, which may artificially lower the counts for specific drug categories. For example, if 'unknown' drugs in a region are actually unverified or untested opioids, then the reported number of opioid cases will be lower than true.

Lag in Data Collection and Reporting

There can be significant delays in data collection, processing, and reporting of death certificates. This lag means that the most recent data might not be available, limiting the ability to assess current trends or respond to emerging issues quickly. This can be particularly important for overdose data, where new drugs emerge, and rapidly evolving trends occur.

Racial Misclassification

The effects of racial misclassification on death certificates are largely mitigated by the [correction measures conducted by NWTEC](#), however some AI/AN individuals could still be misclassified.

Drug Overdose Deaths Dashboard Data Sources

Death Records

Death certificates from Washington, Oregon, and Idaho, corrected for AI/AN racial misclassification.

Population Estimates

U.S. Census Bureau Population Division - County Characteristics Resident Population Estimates.

Population Standardization

National Center for Health Statistics (NCHS) - U.S. 2000 Standard Million Population

Causes of Death

The International Classification of Disease, 10th Revision (ICD-10), defined by the World Health Organization

Appendix A: Tribal Areas

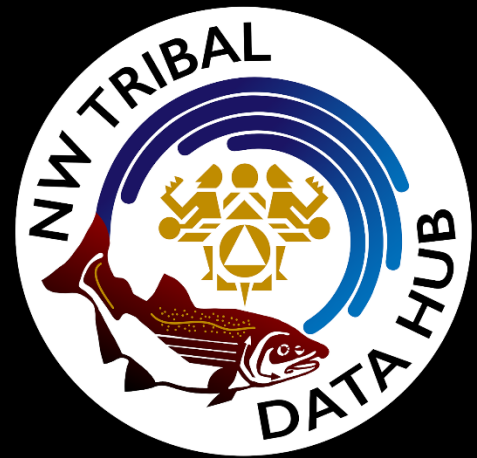
Tribe	Tribal Area (PRCDA Counties)
Burns Paiute Tribe	Harney, OR
Coeur d'Alene Tribe	Benewah, ID; Kootenai, ID; Latah, ID; Spokane, WA; Whitman, WA
Confederated Tribes and Bands of the Yakama Nation	Klickitat, WA; Lewis, WA; Skamania, WA; Yakima, WA
Confederated Tribes of Siletz Indians of Oregon	Benton, OR; Clackamas, OR; Lane, OR; Lincoln, OR; Linn, OR; Marion, OR; Multnomah, OR; Polk, OR; Tillamook, OR; Washington, OR; Yamhill, OR
Confederated Tribes of the Chehalis Reservation	Grays Harbor, WA; Lewis, WA; Thurston, WA
Confederated Tribes of the Colville Reservation	Chelan, WA; Douglas, WA; Ferry, WA; Grant, WA; Lincoln, WA; Okanogan, WA; Stevens, WA
Confederated Tribes of the Coos, Lower Umpqua, and Siuslaw Indians	Coos, OR; Curry, OR; Douglas, OR; Lane, OR; Lincoln, OR
Confederated Tribes of the Grand Ronde Community of Oregon	Clackamas, OR; Marion, OR; Multnomah, OR; Polk, OR; Tillamook, OR; Washington, OR; Yamhill, OR
Confederated Tribes of the Umatilla Indian Reservation	Umatilla, OR; Union, OR
Confederated Tribes of the Warm Springs Reservation of Oregon	Clackamas, OR; Jefferson, OR; Linn, OR; Marion, OR; Wasco, OR
Coquille Indian Tribe	Coos, OR; Curry, OR; Douglas, OR; Jackson, OR; Lane, OR
Cow Creek Band of Umpqua Tribe of Indians	Coos, OR; Deschutes, OR; Douglas, OR; Jackson, OR; Josephine, OR; Klamath, OR; Lane, OR
Cowlitz Indian Tribe	Clark, WA; Cowlitz, OR; King, WA; Lewis, WA; Pierce, WA; Skamania, WA; Thurston, WA; Columbia, OR; Kittitas, WA; Wahkiakum, WA
Hoh Indian Tribe	Jefferson, WA; Clallam, WA
Jamestown S'Klallam Tribe	Clallam, WA; Jefferson, WA
Kalispel Indian Community of the Kalispel Reservation	Pend Oreille, WA; Spokane, WA
Klamath Tribes	Klamath, OR
Kootenai Tribe of Idaho	Boundary, ID
Lower Elwha Tribal Community	Clallam, WA
Lummi Tribe of the Lummi Reservation	Whatcom, WA
Makah Indian Tribe of the Makah Indian Reservation	Clallam, WA

Muckleshoot Indian Tribe	King, WA; Pierce, WA
Nez Perce Tribe	Clearwater, ID; Idaho, ID; Latah, ID; Lewis, ID; Nez Perce, ID
Nisqually Indian Tribe	Pierce, WA; Thurston, WA
Nooksack Indian Tribe	Whatcom, WA
Northwestern Band of Shoshone Nation	Box Elder, UT; Davis, UT; Salt Lake, UT; Weber, UT
Port Gamble S'Klallam Tribe	Kitsap, WA
Puyallup Tribe of the Puyallup Reservation	King, WA; Pierce, WA; Thurston, WA
Quileute Tribe of the Quileute Reservation	Clallam, WA; Jefferson, WA
Quinault Indian Nation	Grays Harbor, WA; Jefferson, WA
Samish Indian Nation	Clallam, WA; Island, WA; Jefferson, WA; King, WA; Kitsap, WA; Pierce, WA; San Juan, WA; Skagit, WA; Snohomish, WA; Whatcom, WA
Sauk-Suiattle Indian Tribe	Snohomish, WA; Skagit, WA
Shoalwater Bay Tribe of the Shoalwater Bay Indian Reservation	Pacific, WA
Shoshone-Bannock Tribes of the Fort Hall Reservation	Bannock, ID; Bingham, ID; Caribou, ID; Lemhi, ID; Power, ID
Skokomish Indian Tribe	Mason, WA
Snoqualmie Indian Tribe	King, WA; Snohomish, WA; Pierce, WA; Island, WA; Mason, WA
Spokane Tribe of the Spokane Reservation	Ferry, WA; Lincoln, WA; Spokane, WA; Stevens, WA; Whitman, WA
Squaxin Island Tribe of the Squaxin Island Reservation	Mason, WA
Stillaguamish Tribe of Indians of Washington	Snohomish, WA
Suquamish Indian Tribe of the Port Madison Reservation	Kitsap, WA
Swinomish Indian Tribal Community	Skagit, WA
Tulalip Tribes of Washington	Snohomish, WA
Upper Skagit Indian Tribe	Skagit, WA



**For Questions or inquiries contact
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