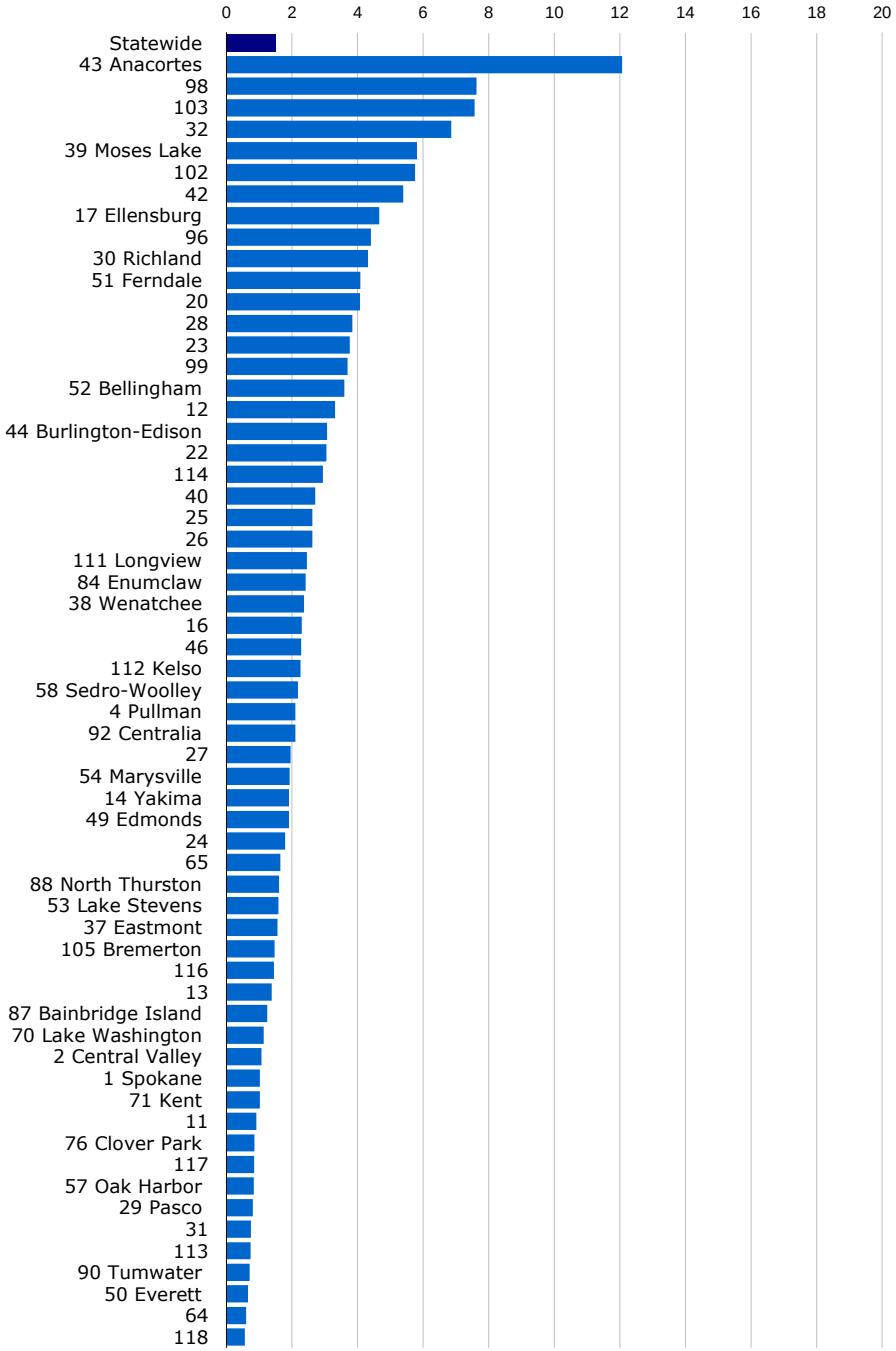
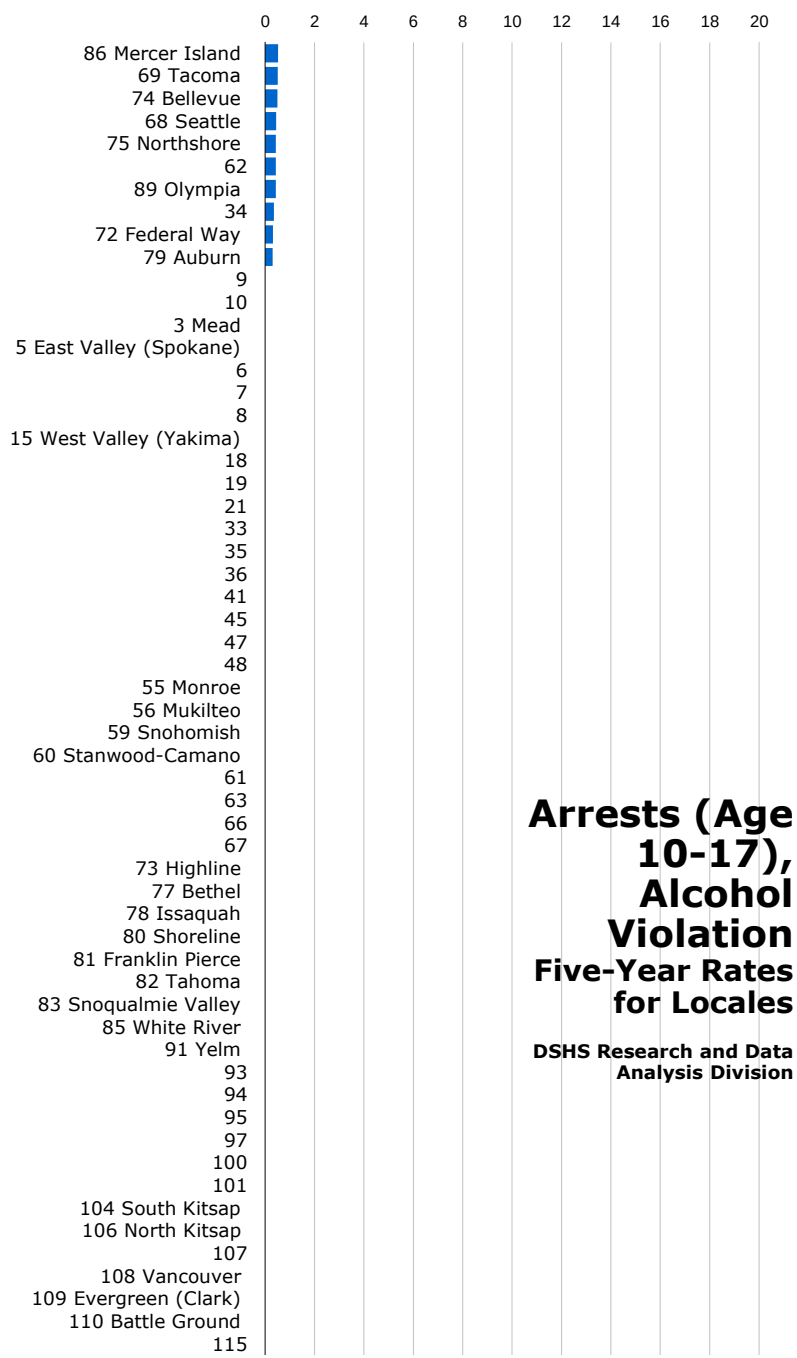




Arrests (Age 10-17), Alcohol Violation

Five-Year Rates for Locales

DSHS Research and Data Analysis Division

Arrests (Age 10-17), Alcohol Violation, Five Year Rates

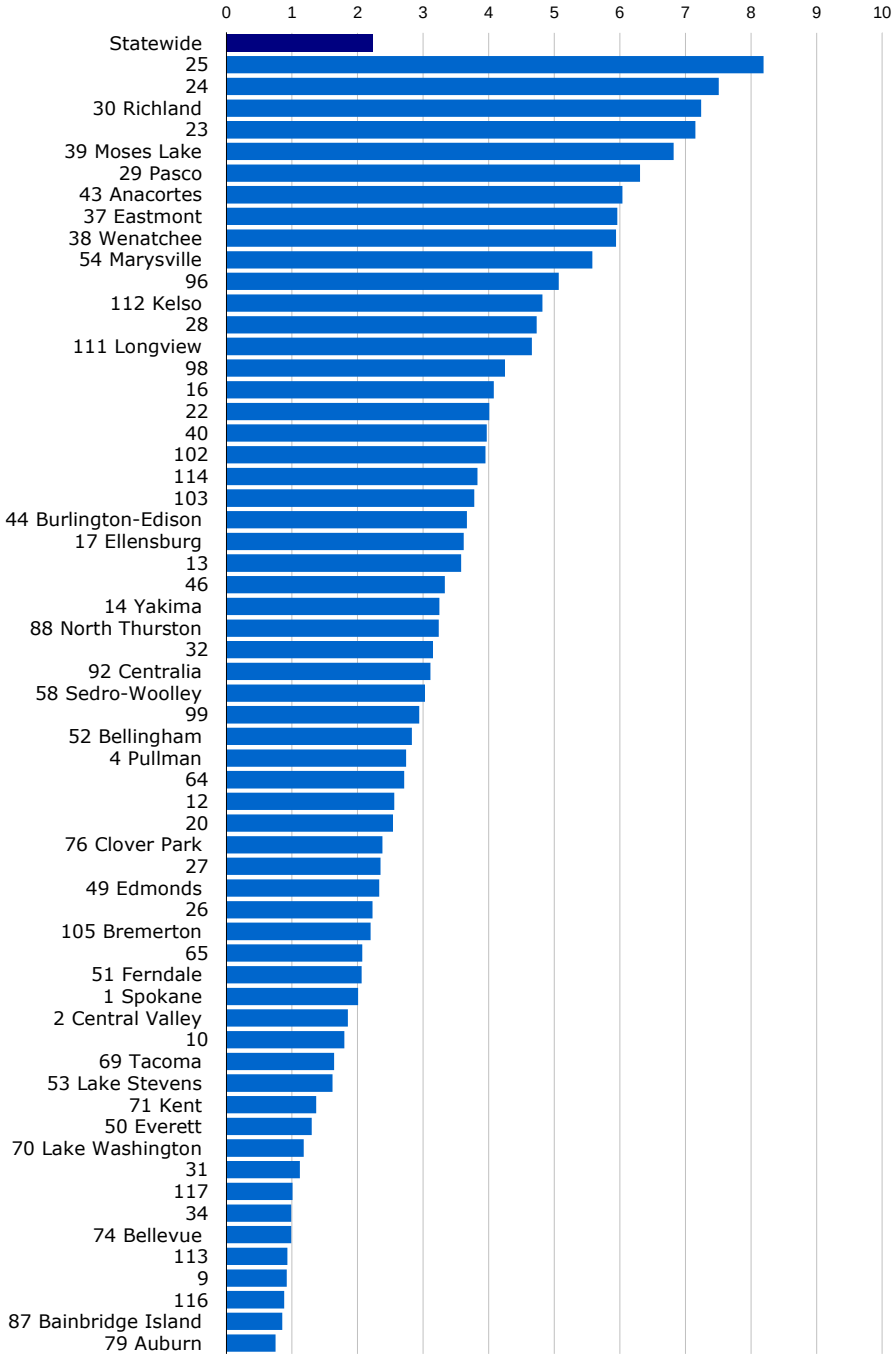
The arrests of adolescents (age 10-17) for alcohol violations, per 1,000 adolescents (age 10-17). Alcohol violations include all crimes involving driving under the influence, liquor law violations, and drunkenness. For adolescents, arrests for liquor law violations are usually arrests for minor in possession.

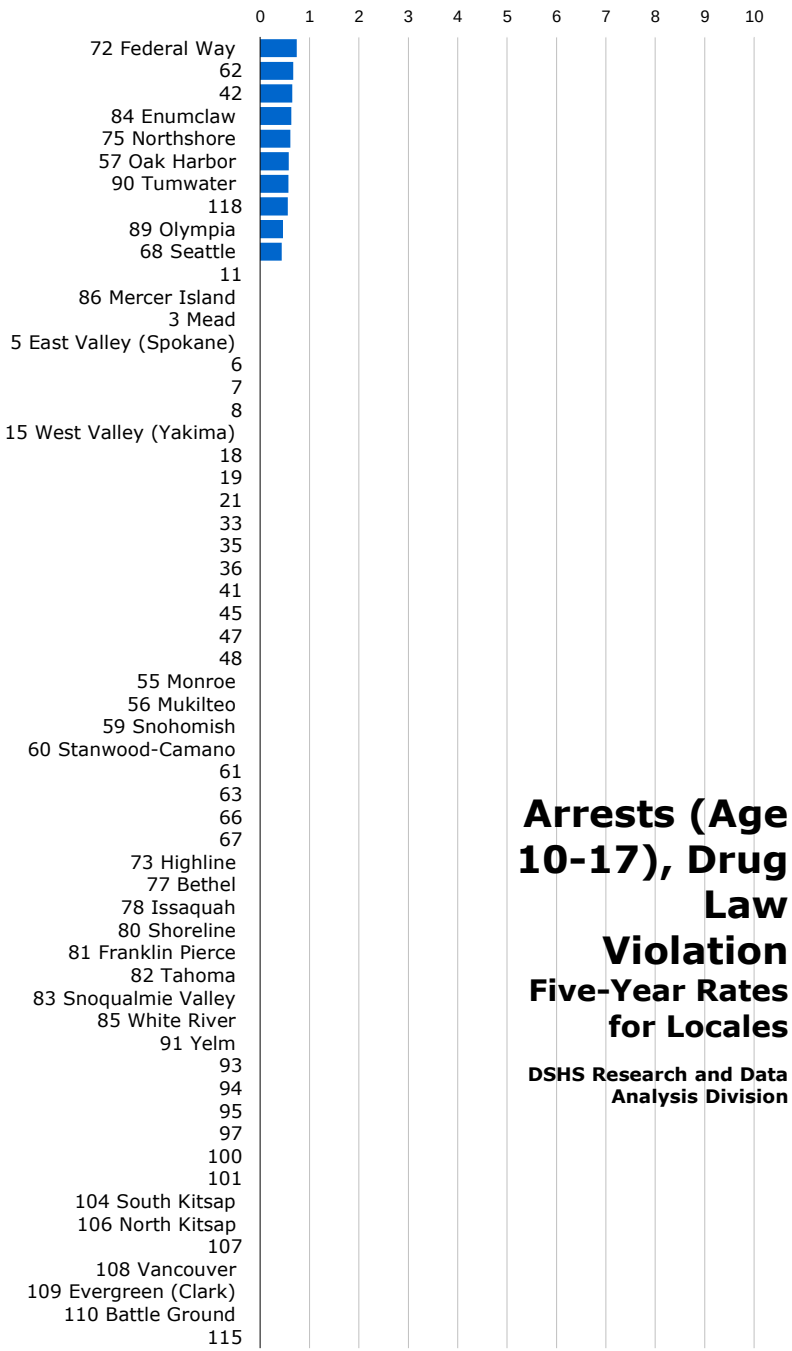
Statewide 1.52

Locale	Rate	Locale	Rate	Locale	Rate	Locale	Rate
1 Spokane	1.02	31	0.75	61	UN	91 Yelm	UN
2 Central Valley	1.07	32	6.86	62	0.43	92 Centralia	2.10
3 Mead	UN	33	UN	63	UN	93	UN
4 Pullman	2.10	34	0.35	64	0.60	94	UN
5 East Valley (Spokane)	UN	35	UN	65	1.64	95	UN
6	UN	36	UN	66	UN	96	4.41
7	UN	37 Eastmont	1.56	67	UN	97	UN
8	UN	38 Wenatchee	2.37	68 Seattle	0.45	98	7.63
9	0.00	39 Moses Lake	5.81	69 Tacoma	0.51	99	3.69
10	0.00	40	2.71	70 Lake Washington	1.14	100	UN
11	0.91	41	UN	71 Kent	1.02	101	UN
12	3.31	42	5.39	72 Federal Way	0.32	102	5.75
13	1.38	43 Anacortes	12.07	73 Highline	NR	103	7.57
14 Yakima	1.91	44 Burlington-Edison	3.07	74 Bellevue	0.50	104 South Kitsap	UN
15 West Valley (Yakima)	UN	45	UN	75 Northshore	0.44	105 Bremerton	1.47
16	2.30	46	2.28	76 Clover Park	0.85	106 North Kitsap	UN
17 Ellensburg	4.66	47	UN	77 Bethel	UN	107	UN
18	UN	48	UN	78 Issaquah	NR	108 Vancouver	UN
19	UN	49 Edmonds	1.91	79 Auburn	0.31	109 Evergreen (Clark)	UN
20	4.07	50 Everett	0.66	80 Shoreline	NR	110 Battle Ground	UN
21	UN	51 Ferndale	4.08	81 Franklin Pierce	UN	111 Longview	2.45
22	3.05	52 Bellingham	3.60	82 Tahoma	UN	112 Kelso	2.26
23	3.76	53 Lake Stevens	1.59	83 Snoqualmie Valley	NR	113	0.74
24	1.79	54 Marysville	1.93	84 Enumclaw	2.42	114	2.94
25	2.62	55 Monroe	UN	85 White River	UN	115	UN
26	2.62	56 Mukilteo	UN	86 Mercer Island	0.53	116	1.45
27	1.96	57 Oak Harbor	0.83	87 Bainbridge Island	1.24	117	0.84
28	3.84	58 Sedro-Woolley	2.18	88 North Thurston	1.61	118	0.56
29 Pasco	0.80	59 Snohomish	UN	89 Olympia	0.43	**Updated:**	9/16/2019
30 Richland	4.32	60 Stanwood-Camano	UN	90 Tumwater	0.71		

District names are provided for locales representing a single school district. A complete listing of districts in each locale is available following the table of contents in this report. Error codes used here are defined in technical notes.

State Source: Washington Association of Sheriffs and Police Chiefs (WASPC): Uniform Crime Report (UCR), National Incident-Based Reporting System (NIBRS)
Population Estimates: Washington State Office of Financial Management, Forecasting Division





Arrests (Age 10-17), Drug Law Violation

Five-Year Rates for Locales

DSHS Research and Data Analysis Division

Arrests (Age 10-17), Drug Law Violation, Five Year Rates

The arrests of adolescents (age 10-17) for drug law violations, per 1,000 adolescents (age 10-17). Drug law violations include all crimes involving sale, manufacturing, and possession of drugs.

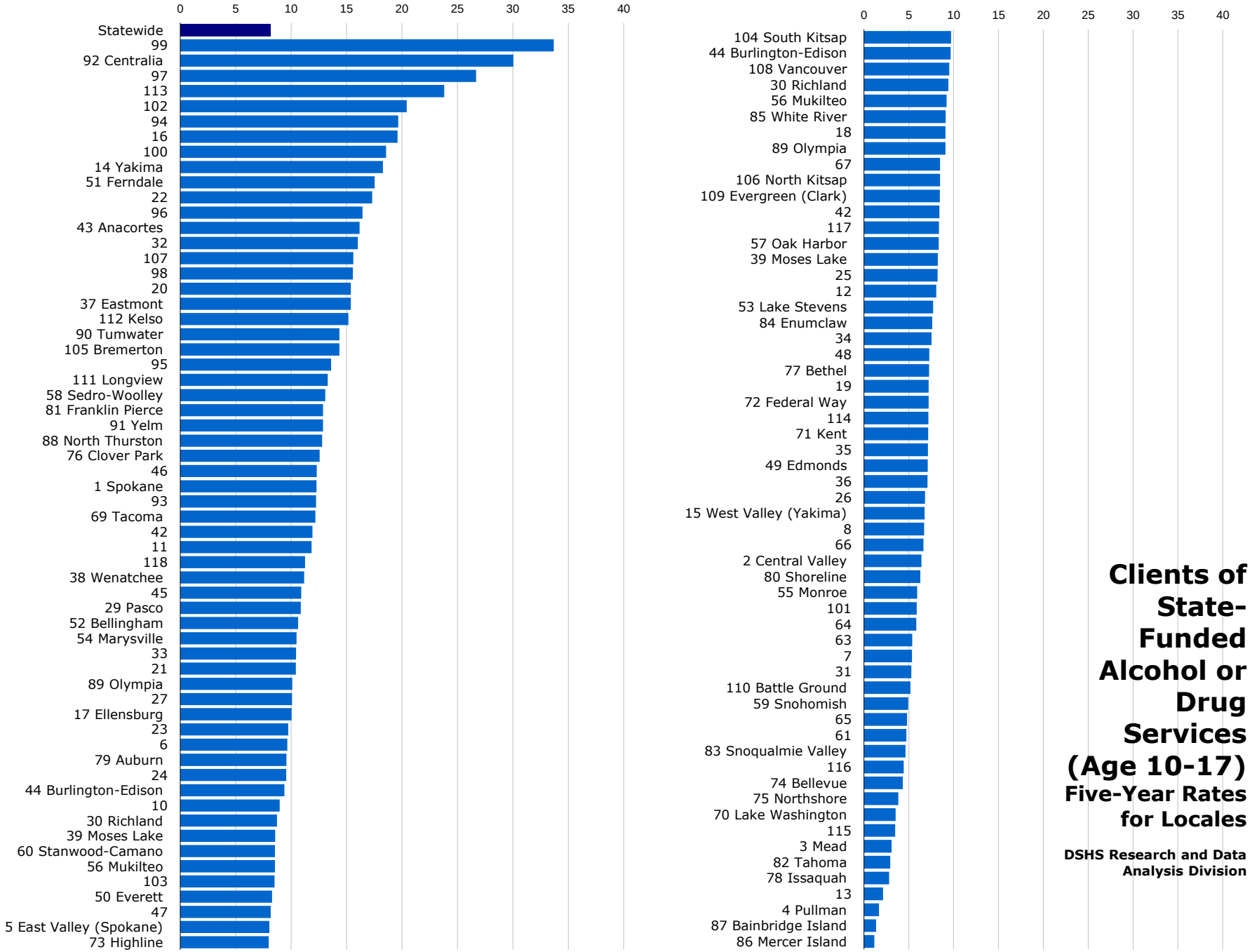
Statewide 2.23

Locale	Rate	Locale	Rate	Locale	Rate	Locale	Rate
1 Spokane	2.01	31	1.12	61	UN	91 Yelm	UN
2 Central Valley	1.85	32	3.15	62	0.67	92 Centralia	3.11
3 Mead	UN	33	UN	63	UN	93	UN
4 Pullman	2.74	34	0.99	64	2.71	94	UN
5 East Valley (Spokane)	UN	35	UN	65	2.07	95	UN
6	UN	36	UN	66	UN	96	5.07
7	UN	37 Eastmont	5.96	67	UN	97	UN
8	UN	38 Wenatchee	5.94	68 Seattle	0.44	98	4.25
9	0.92	39 Moses Lake	6.82	69 Tacoma	1.64	99	2.94
10	1.80	40	3.97	70 Lake Washington	1.18	100	UN
11	0.00	41	UN	71 Kent	1.37	101	UN
12	2.56	42	0.65	72 Federal Way	0.74	102	3.95
13	3.58	43 Anacortes	6.04	73 Highline	NR	103	3.78
14 Yakima	3.25	44 Burlington-Edison	3.67	74 Bellevue	0.99	104 South Kitsap	UN
15 West Valley (Yakima)	UN	45	UN	75 Northshore	0.61	105 Bremerton	2.20
16	4.08	46	3.33	76 Clover Park	2.38	106 North Kitsap	UN
17 Ellensburg	3.62	47	UN	77 Bethel	UN	107	UN
18	UN	48	UN	78 Issaquah	NR	108 Vancouver	UN
19	UN	49 Edmonds	2.33	79 Auburn	0.75	109 Evergreen (Clark)	UN
20	2.54	50 Everett	1.30	80 Shoreline	NR	110 Battle Ground	UN
21	UN	51 Ferndale	2.06	81 Franklin Pierce	UN	111 Longview	4.66
22	4.01	52 Bellingham	2.83	82 Tahoma	UN	112 Kelso	4.82
23	7.15	53 Lake Stevens	1.62	83 Snoqualmie Valley	NR	113	0.93
24	7.51	54 Marysville	5.58	84 Enumclaw	0.63	114	3.83
25	8.19	55 Monroe	UN	85 White River	UN	115	UN
26	2.23	56 Mukilteo	UN	86 Mercer Island	0.00	116	0.88
27	2.35	57 Oak Harbor	0.58	87 Bainbridge Island	0.85	117	1.01
28	4.73	58 Sedro-Woolley	3.03	88 North Thurston	3.24	118	0.56
29 Pasco	6.31	59 Snohomish	UN	89 Olympia	0.46	**Updated:**	9/16/2019
30 Richland	7.24	60 Stanwood-Camano	UN	90 Tumwater	0.57		

District names are provided for locales representing a single school district. A complete listing of districts in each locale is available following the table of contents in this report. Error codes used here are defined in technical notes.

State Source: Washington Association of Sheriffs and Police Chiefs (WASPC): Uniform Crime Report (UCR), National Incident-Based Reporting System (NIBRS)
Population Estimates: Washington State Office of Financial Management, Forecasting Division

Substance Use



Clients of State-Funded Alcohol or Drug Services (Age 10-17)

Five-Year Rates for Locales

DSHS Research and Data Analysis Division

Clients of State-Funded Alcohol or Drug Services (Age 10-17), Five Year Rates

The adolescents (age 10-17) receiving state-funded alcohol or drug services, per 1,000 adolescents 10-17. Counts are unduplicated so that those receiving services more than once during the year are only counted once for that year. Client counts are linked to state service records through the Research and Data Analysis Client Services Database. State-funded services include treatment, assessment, and detox. Persons in Department of Corrections treatment programs are not included.

Statewide 8.11

Locale	Rate	Locale	Rate	Locale	Rate	Locale	Rate
1 Spokane	12.29	31	4.55	61	2.98	91 Yelm	12.88
2 Central Valley	5.32	32	16.01	62	6.48	92 Centralia	30.05
3 Mead	3.60	33	10.44	63	3.34	93	12.26
4 Pullman	2.01	34	6.11	64	5.12	94	19.66
5 East Valley (Spokane)	8.04	35	5.83	65	3.49	95	13.61
6	9.65	36	5.81	66	3.37	96	16.45
7	5.13	37 Eastmont	15.38	67	6.91	97	26.68
8	5.82	38 Wenatchee	11.17	68 Seattle	6.48	98	15.58
9	7.89	39 Moses Lake	8.57	69 Tacoma	12.19	99	33.69
10	8.97	40	6.18	70 Lake Washington	2.32	100	18.56
11	11.85	41	7.96	71 Kent	5.30	101	4.45
12	4.22	42	11.92	72 Federal Way	4.43	102	20.44
13	2.50	43 Anacortes	16.17	73 Highline	7.98	103	8.51
14 Yakima	18.28	44 Burlington-Edison	9.39	74 Bellevue	3.00	104 South Kitsap	7.10
15 West Valley (Yakima)	5.48	45	10.92	75 Northshore	2.73	105 Bremerton	14.36
16	19.60	46	12.32	76 Clover Park	12.58	106 North Kitsap	5.37
17 Ellensburg	10.05	47	8.17	77 Bethel	6.59	107	15.61
18	6.20	48	5.24	78 Issaquah	2.11	108 Vancouver	5.51
19	7.16	49 Edmonds	5.92	79 Auburn	9.58	109 Evergreen (Clark)	4.33
20	15.38	50 Everett	8.29	80 Shoreline	4.75	110 Battle Ground	3.94
21	10.42	51 Ferndale	17.54	81 Franklin Pierce	12.88	111 Longview	13.31
22	17.31	52 Bellingham	10.64	82 Tahoma	2.14	112 Kelso	15.17
23	9.74	53 Lake Stevens	6.24	83 Snoqualmie Valley	3.78	113	23.82
24	9.55	54 Marysville	10.49	84 Enumclaw	6.33	114	6.50
25	7.03	55 Monroe	5.77	85 White River	4.19	115	2.12
26	5.52	56 Mukilteo	8.54	86 Mercer Island	0.33	116	2.05
27	10.08	57 Oak Harbor	5.10	87 Bainbridge Island	1.24	117	4.38
28	6.09	58 Sedro-Woolley	13.09	88 North Thurston	12.80	118	11.25
29 Pasco	10.87	59 Snohomish	3.04	89 Olympia	10.10	**Updated:**	8/2/2019
30 Richland	8.72	60 Stanwood-Camano	8.55	90 Tumwater	14.36		

District names are provided for locales representing a single school district. A complete listing of districts in each locale is available following the table of contents in this report. Error codes used here are defined in technical notes.

State Source: Department of Social and Health Services, Division of Behavioral Health and Recovery services reported from the Research and Data Analysis Client Services Database (CSDB).
Population Estimates: Washington State Office of Financial Management, Forecasting Division

Technical Notes

TOPICS:

- Suppression Codes
- Counting Alcohol- or Drug-related Deaths
- Transitioning from Uniform Crime Reporting (UCR) to National Incident-Based Reporting System (NIBRS)
- Crime Reporting - Non-Reporting Police Jurisdictions
- CORE Conversion Process and Weighted Reliability Index
- Standardization of CORE Indicators
- Graduation and Dropout Data Methodology Changes
- Where are the roadblocks to learning in our communities?
- Changes in Hospitalization Data

Suppression Codes for Yearly Trend Data

UN = Unreliable conversion of events to report geography, failure of **weighted reliability index** (WRI). The WRI evaluation process is further explained in the section labeled 'CORE Conversion Process and Weighted Reliability Index'.

SP = Suppressed by agreement with data provider when denominator is below agreed level and may compromise a person's rights to confidentiality.

SN = Small Number Sample. Geography has less than 30 events in the denominator. More reliable at 5-year level or for larger area.

NR = Not reliable due to non-reporting of police jurisdictions data; 50 percent or more of the population is not represented by the data due to non-reporting jurisdictions.

BD = Three of the five years data have been suppressed, making a five-year rate unreliable.

Counting Alcohol- or Drug-related Deaths

AOD deaths are identified by matching all the contributory causes of death from death certificate records to a list of causes that are considered AOD-related. The deaths identified as AOD-related then may be summed to provide area totals. Dividing the total AOD-related deaths by all deaths in an area gives the percent of all deaths that are alcohol and drug related. Lists of underlying causes of death that are AOD-related have been developed in several studies. Citations for these studies are listed following the AOD attribution tables. AOD-related deaths used in this report are determined using a comprehensive assembly of disease, accident, and injury codes identified in those studies. The codes are based upon the International Classification of Diseases, Ninth Revision (ICD-9) from 1990 to 1998 or International Classification of Diseases, Tenth Revision (ICD-10) after 1998.

The identified AOD-related causes of death may be either fully attributable or sometimes attributable to alcohol or drugs. Some contributory causes of death are explicit in their mention of alcohol or drugs. Examples include alcoholic cirrhosis of the liver (ICD-9 code 571.2), alcohol and drug dependence syndromes (ICD-9 codes 303 and 304, respectively), and drug poisonings (ICD-9 codes E850 through E859). All deaths of this sort are fully, or 100 percent, attributable to alcohol or drug abuse and are considered direct AOD-related deaths.

Other contributory causes of death are related only sometimes to alcohol or drugs. For example, epidemiological studies have shown that, among persons over 35 years of age, 60 percent of deaths due to chronic pancreatitis (ICD-9 code 577.1) and 75 percent of malignant neoplasms of the esophagus (ICD-9 code 150) are alcohol-related. For persons of all ages, 42 percent of motor vehicle traffic and non-traffic deaths (ICD-9 codes E810 through E825) are alcohol-related. The appropriate percentage of such indirectly attributable deaths is also counted toward totals for AOD-related deaths.

Counting Alcohol- or Drug-related Deaths

TABLE TOPICS:

- Diseases Directly Attributable to Alcohol
- Diseases Indirectly Attributable to Alcohol
- Diseases Directly Attributable to Drugs
- Diseases Indirectly Attributable to Drug

The tables on the following pages characterize the different diseases, injuries, and accidents by: name, ICD-9 or ICD-10 code, and percent attributable to alcohol or drugs, age of inclusion.

Diseases Directly Attributable to Alcohol

Disease Category	ICD-10 Code	ICD-9 Code	Attrib	Age
Alcoholic psychoses	F10, F10.3-F10.9	291	100%	>=15
Alcohol dependence syndrome	F10.2	303	100%	>=15
Alcoholic polyneuropathy	G62.1	357.5	100%	>=15
Alcoholic cardiomyopathy	I42.6	425.5	100%	>=15
Alcoholic gastritis	K29.2	535.3	100%	>=15
Alcoholic fatty liver	K70.0	571.0	100%	>=15
Acute alcoholic hepatitis	K70.1, K70.4	571.1	100%	>=15
Alcoholic cirrhosis of the liver	K70.3	571.2	100%	>=15
Alcoholic liver damage, other	K70.2, K70.9, K70	571.3	100%	>=15
Excessive blood level of alcohol, toxic effect of alcohol	R78.0, T51	790.3. 980	100%	>=0
Accidental poisoning by alcohol	X45, Y15	E860	100%	>=0
Nondependent abuse of Alcohol	F10.1	305.0	100%	>=0
Alcohol-induced pseudo-Cushing's syndrome	E24.4	Not Available in ICD-9	100%	>=15
Degeneration of nervous system due to alcohol	G31.2	Not Available in ICD-9	100%	>=15
Alcoholic myopathy	G72.1	Not Available in ICD-9	100%	>=15
Maternal care for (suspected) damage to fetus from alcohol	O35.4	Not Available in ICD-9	100%	>=15
Newborn affected by maternal use of alcohol	P04.3	Not Available in ICD-9	100%	>=0
Fetal alcohol syndrome (dysmorphic)	Q86.0	Not Available in ICD-9	100%	>=0
Suicide attributable to alcohol	X65	Not Available in ICD-9	100%	>=0
Alcoholic Pellagra	E52	265.2	100%	>=0

Diseases Indirectly Attributable to Alcohol

Disease Category	ICD-10 Code	ICD-9 Code	Attrib	Age
NEOPLASMS				
Breast	C50, D05	174.0-174.9, 233.0	13% F	>=35
Esophagus	C15, D00.1	150.1-150.9, 230.1	75%	>=35
Larynx	C32 , D02.0	161.0-.161.9, 231.0	50% M, 40% F	>=35
Lip, oral cavity, pharynx	C00-C14, D00.0	140.1-141.9, 143.0-149.9, 230.0	50% M, 40% F	>=35
Liver	C22, D01.5	155.0-155.2, 230.8	29%	>=35
CARDIOVASCULAR				
Cardiomyopathy	I42.0 - I42.2, I42.5, I42.7- I42.9	425.1, 425.4, 425.9	40%M	>=35
Hypertension	I10-113, O10-O14, O16	401.0-404.9, 642.0, 642.2, 642.9	11%	>=35
DIGESTIVE SYSTEM				
Cirrhosis	K71.7, K74.5-K74.6	571.5	74%	>=35
Duodenal Ulcers	K26	532.0-532.9	10%	>=35
Pancreatitis, acute	K85	577.0	47%	>=35
Pancreatitis, chronic	K86.1- K86.3, K86.9	577.1, 577.2, 577.9	72%	>=35
OTHER DISEASES OR CONDITIONS				
Epilepsy	G40.3,G40.4,G40.6,G40.9	345.1, 345.3, 345.9	30%	>=15
Seizures	R56	780.3	41%	>=15
Tuberculosis	A16-A19	011-013, 017, 018	25%	>=15
Accident or Injury Causes:	V02–V04, V09.0, V09.2, V12–V14, V19.0–V19.2, V19.4–V19.6, V20–V79, V80.3– V80.5, V81.0–V81.1, V82.0–V82.1, V83–V86, V87.0–V87.8, V88.0–V88.8, V89.0, V89.2	E810-E825	42%	>=0
Motor vehicle traffic and non-traffic accidents				
Pedal cycle and other road vehicle accidents	V01, V05–V06, V09.1, V09.3–V09.9, V10–V11, V15–V18, V19.3, V19.8–V19.9, V80.0–V80.2, V80.6–V80.9, V82.2–V82.9, V87.9, V88.9, V89.1, V89.3, V89.9	E826-E829	20%	>=0
Water transport accidents	V90-V94	E830-E838	20%	>=0
Air and space transport accidents	V95-V97	E840-E845	16%	>=0
Accidental falls	W00-W19	E880-E888	35%	>=15
Accidents caused by fire	X00-X09	E890-E899	45%	>=0
Accidental drowning and submersion	W65-W74	E910	38%	>=0
SUICIDES DUE TO ALCOHOL OR DRUGS are now considered direct AOD-related deaths, other suicides are not apportioned. This brings our definitions into compliance with NCHS definitions.				
Homicide and other purposely inflicted injury	X86–Y09, Y87.1	E960-E962, E962.1-E969	46%	>=15
Other	X31, W79, W50-W52, W20- W34, Y15-Y19	E901, E911, E917-E920, E922	25%	>=15

Other category includes: Excessive cold, Choking on food in airway; Striking against or struck accidentally by objects or persons; Caught accidentally in or between objects; Accidents caused by machinery; Accidents caused by cutting and piercing instruments.

Diseases Directly Attributable to Drugs

Disease Category	ICD-10 Code	ICD-9 Code	Attrib	Age
Drug psychoses	F11-F16, F18-F19	292	100%	>=0
Drug dependence syndrome	F11-F16, F18-F19	304	100%	>=0
Polyneuropathy due to drugs	G62.0	357.6	100%	>=15
Drug dependence during pregnancy	F11-F16, F18-F19	648.3	100%	>=0
Suspected damage to fetus from drugs	O35.5,	655.5	100%	>=0
Noxious influences affecting fetus	P04.4	760.7	100%	>=0
Drug reactions, intox., withdrawal specific to newborn	P96.1	779.4, 779.5	100%	>=0
Selected drug poisonings	R78,R78.1-R78.6, T38 ; excludes Y40-59.9 (therapeutic use)	962, 965, 967-971, 977 excludes E930-949	100%	>=0
Selected accidental drug poisonings	X40-X44	E850-E858	100%	>=0
Accidental Poisonings (magic mushrooms, huffing and other drug use)	X46-X49	E861-E869	100%	>=0
Nondependent abuse of drugs	F11-F16, F18-F19	305.2-305.9	100%	>=0
Assault by poisoning using drugs and medicaments	x85	E962.0	100%	>=0
Drug induced myopathy	G72.0	Not Available in ICD-9	100%	
Poisoning by drugs, accidentally or purposely inflicted	Y10-Y14	E980.0-E980.5	100%	>=0
Suicides attributable to drugs	x60-64	E950.0-E950.5	100%	>=0

Diseases Indirectly Attributable to Drugs

Disease Category	ICD-10 Code	ICD-9 Code	Attrib	Age
AIDS (from IV drug use exposure)	B20-B24	042.0-044.9	5%	>=15
CARDIOVASCULAR				
Endocarditis	I33.0, I33.9	421.0, 421.9	75%	>=15
OTHER				
Hepatitis A	B15.9	70.1	12%	>=15
Hepatitis B	B16-B16.9	70.2, 70.3	36%	>=15
Hepatitis C	B17-B19.9	70.5, 70.9	10%	>=15

Table Information Sources:

1. Schultz J, Rice D, and Parker D. 1990. Alcohol-related mortality and years of potential life lost - United States, 1987. Morbidity and Mortality Weekly Report, 39, 173-178.
2. Rice D, et al. 1990. The Economic Costs of Alcohol and Drug Abuse and Mental Illness: 1985. Report submitted to the Office of Financing and Coverage Policy of the Alcohol, Drug Abuse, and mental health Administration, U.S. Department of Health and Human Services. San Francisco, CA: Institute for Health and Aging, University of California.
3. Fox K, Merrill J, Chang H, and Califano J. 1995. Estimating the Costs of Substance Abuse to the Medicaid Hospital Care Program. American Journal of Public Health, 85(1), 48-54.
4. Seattle-King County HIV/AIDS Epidemiology Unit and Washington State Office of HIV/AIDS Epidemiology and Evaluation. 1994. Washington State/Seattle-King County HIV/AIDS Epidemiology Report (2nd Quarter, 1994), p. 4.

Transitioning from Uniform Crime Reporting (UCR) to National Incident-Based Reporting System (NIBRS)

Over 80 years ago, standards were established for the Uniform Crime Reporting (UCR) Program so agencies could report their crime and arrest information in the same format and at the same level of detail and accuracy. Under the traditional UCR system agencies report monthly of the eight (8) "Part One" offenses and values of property stolen, as well as counts of arrests. The FBI Crime Index reports only designated Part One Crimes. These are criminal homicide, forcible rape, robbery, aggravated assault, burglary, larceny, motor vehicle theft and arson. This is now referred to as Summary UCR. Most law enforcement agencies report arrest and offense data to the Washington Association of Sheriffs and Police Chiefs (WASPC), which in turn provides data to the FBI's Uniform Crime Reporting Program (UCR).

In 1989, the FBI instituted a new crime-reporting system called the National Incident-Based Reporting System (NIBRS) to provide a more detailed and comprehensive view of crime in the United States. While Summary UCR collects only counts on eight (8) offense types, NIBRS collects information on twenty-three (23) different offenses. Some of the additional offenses in NIBRS are forcible and non-forcible sex offenses, fraud, kidnapping, and drug violations. Washington State has transitioned to the NIBRS system for reporting. This was a costly staged process which was particularly difficult for smaller communities. Washington State became certified to begin submitting NIBRS data to the FBI in December 2006. Summary reporting was phased out and all reporting agencies began submitting NIBRS data by January 1, 2012. The rates for Part One offenses we previously reported should show no impact of the system change. However, the rates for *total arrests* by age group include all arrests for offenses reported which now cover the twenty-three offense categories rather than the previous eight categories. Care must be taken when interpreting the yearly trend of "total arrest" rates for an area. In areas where large amounts of arrests are likely for crimes not previously reported, a substantial increase in total arrests could to be expected starting with the 2012 data.

Crime Reporting – Non-Reporting Police Jurisdictions

Reporting to WASPC is voluntary for arrests and offenses. Some jurisdictions do not report all arrests and offenses, some report partial years, and some withhold certain categories of arrests or offenses. Offenses are more likely to be reported since some funding is associated with reporting. All offenses are incidence reporting. When more than one victim is involved an offense is filed for each victim. Multiple property violations performed at the same incident are counted as one offense. However, when both types of events happen, only the victim incidents are reported as offenses. Offenses focus on the nature of the crime, while arrests focus on the apprehended accused perpetrator. Many offenses occur without arresting perpetrators. Sometimes charges are dropped and sometimes no perpetrator is ever found. The age of the perpetrator cannot be assigned to offense data so the entire age range of population is used as the denominator. Each area report shows how and when that area's police jurisdictions reported data to WASPC. If a report area contains jurisdictions having a significant amount of incomplete data, be very careful to adjust any risk assessment to reflect this. In other words, the reported arrest rates may not adequately reflect the entire area. This will be true especially in those cases where the non-reporting police jurisdictions have either very high or very low arrest rates, compared to the reporting area.

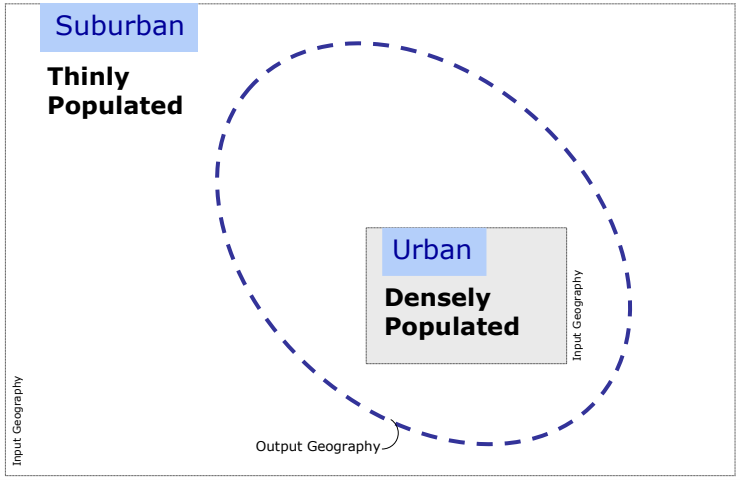
To compensate for missing police reports, we have adjusted the denominator in the rate calculation so that it reflects only the proportion of the area for which we do have data. For instance, say area A, with a population of 40,000, has eight police districts. If one of the police districts in the area did not report their arrests, the number of arrests would not be representative of the whole area. Therefore, we would not want to use the population of the whole area in the denominator because that would make the rate lower than it should be. The solution used in this report is to subtract the population of that missing police district from the area population. We follow the same procedure for police districts that report partial years: if they report only six months, we use only half of the population to calculate the rate. Due to the uneven geographic distribution of crime, missing police data can cause spikes or dips in the trend data comparison of multiple consecutive years. We do not run into this problem in the state report because the county rates there (as opposed to the individual county reports) only report 5-year averages. However for individual county reports and reports for smaller areas like districts the trend data can become unstable due to non-reporting. Additionally, the conversion of data from certain police jurisdictions to other areas like districts may not apportion directly causing too much of the data to be apportioned based on population rather than clearly assigned to one area. We use a weighted reliability index (WRI) to determine when the conversion is no longer reliable.

CORE Conversion Process and Weighted Reliability Index (WRI)

CORE obtains data from more than fifty government agency sources. The data are represented as events (e.g. # of teen births, # of crimes, # of clients) occurring within a given geographic unit. This geographic unit is generally the smallest that can be obtained from the agency source. For example, data may be available by school district, by zip code, by census tract or by police jurisdictions. CORE calls these geographic units the "source geography." CORE data is usually reported at the geographic level of county or community – called in the rest of this report the "destination geography." Therefore, data usually needs to be converted from the "source geographies" to the "destination geography."

The conversion is based on an overlay process, in which the events occurring in small source geographies that are totally contained within the destination are combined with synthetic estimates of events occurring in source geographies that are partly within and partly outside the destination geography. The synthetic estimation is weighted by the population distribution between the source and destination areas. Therefore, it requires a small-scale count of the population underlying both source and destination geographies. This process is explained below through examples.

Example 1 | **Geography Output Type 1**



Example 1: Data being converted from a smaller geography (source geography) like school district to a larger geography (like a county) is usually fairly reliable because most of the smaller pieces fit neatly and wholly into the new geography.

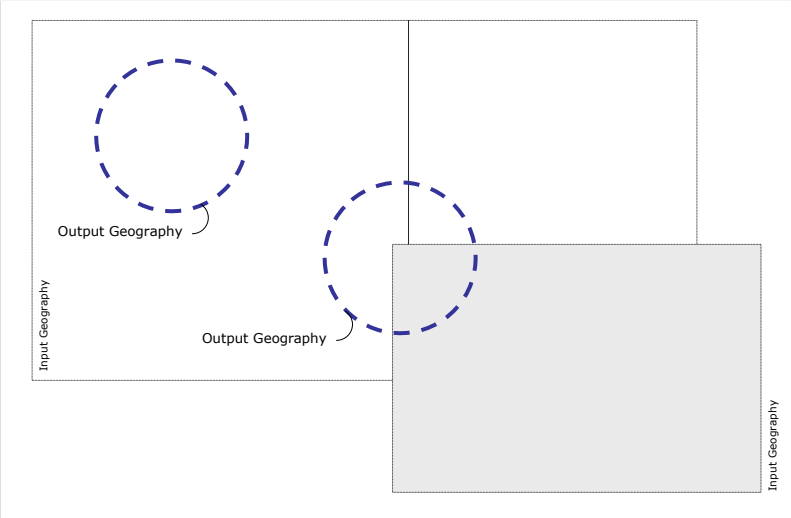
The rectangles represent two possible data source geographies (one densely populated school district – urban school district – and one thinly populated school district – suburban school district – surrounding it). The large oval represents a report's destination geography such as county or locale.

The following statements refer to the first example:
All of the events occurring in the urban school district can be attributed entirely to the destination geography.

The events occurring in the split source geography (suburban school district, in this example) are distributed to the destination geography in the same proportion as the underlying population is distributed. If 40 percent of the suburban school district population lies within the destination geography, then 40 percent of its events are attributed to the destination geography.

These events are split by age, race and gender subgroups whenever possible, as are the populations. So the synthetic estimation is broken down that way also. If 40 percent of the young White population of the suburban school district lives in the destination geography, then 40 percent of the events occurring to young White people are attributed there. If, on the other hand, only 10 percent of the young American Indian population of the suburban school district lives in the destination geography, then only 10 percent of the events occurring to young American Indian people are attributed there.

Example 2 | **Geography Output Type 2**



Example 2: While we can develop an algorithm to distribute all source geography populations to all destination geography populations that distribution will not always be reliable.
For example, see the situation depicted in Example 2. Here we are trying to estimate the number of events contained in two very small destination geographies (the circles). This is very much the case with county sheriff jurisdictions. City jurisdictions are usually fairly consistent with school districts, but the county sheriff covers all areas that are not cities. In this case all the areas not in the circles.

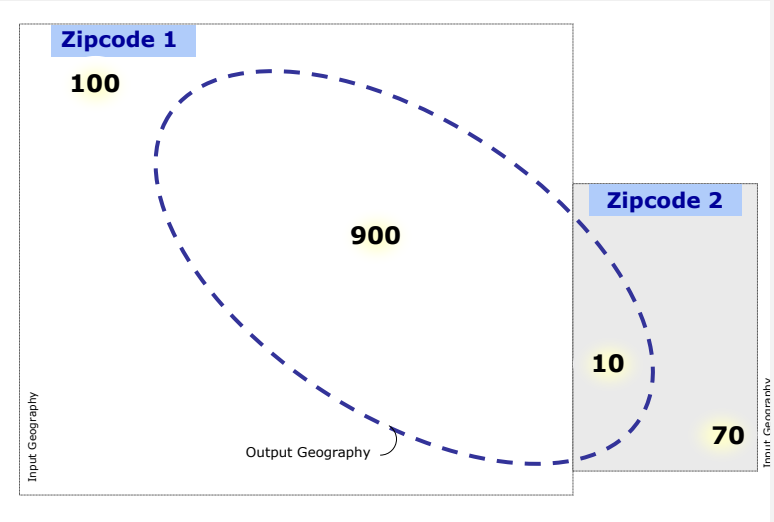
There is no accurate way to split the county sheriff data to suburban areas of different cities. Could this synthetic estimate be reliable? Perhaps, if the small area within the circles really is representative of the whole area – but more likely not. A statistic is needed to assist researchers in determining when a destination geography's events cannot be reliably estimated using these processes. For CORE, that statistic is the Weighted Reliability Index (WRI).

The amount of overlap between source and destination populations can vary from less than 1 percent to 99 percent – only a little of a source population can live in a destination, or almost all of the source population can live in a destination.

The key underlying assumption behind the CORE Weighted Reliability Index is as follows: When most of the population for the source geography is also in the destination geography, we can be more certain of the reliability of the estimation process.

Therefore, the weighting process lets us calculate, for each source-geography/destination-geography combination, the reliability of each destination geography's estimate.

Example 3 | **Calculation of WRI**



The oval represents the destination geography boundary – the edge of a destination city. The rectangles represent the source geography boundaries for two zipcodes.

The numbers are counts of people living in each place: 900 people live both in Destination City and in the first source (Zipcode 1), and 10 people live both in Destination City and in the second source (Zipcode 2).

For zipcode 1 the source area population is mostly in the destination oval (encased in the dashed line), but the majority population from the other contributing source area is not.

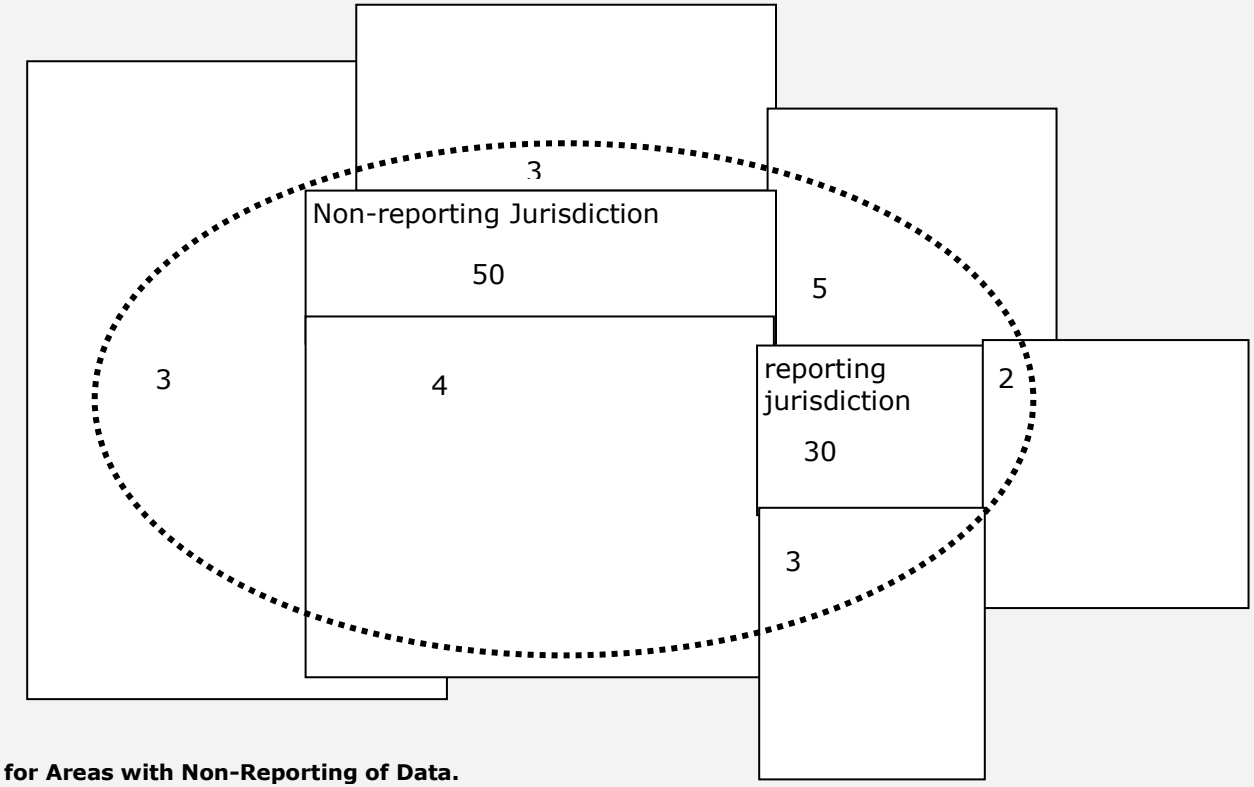
The formula for Weighted Reliability Index for a single destination is the total weighted destination population as a percent of total population.

To understand this formula, see the calculations below.

	Percent of source population attributed to destination	Multiplied by the population attributed to the destination	Destination population attributed directly
Zipcode 1	900/1000 = 90%	* 900	810.00
Zipcode 2	10/80 = 12.5%	* 10	1.25
	Total for Destination	**910**	**811.25**

In the above example, the Weighted Reliability Index for Destination City is **811.25 / 910 = 89 percent**. Basically, 89 percent of the event locations were directly attributed to the area they occurred. Along with the WRI a cut point for reliable reporting is needed. When half or more of the events have been imputed to the destination geography, rather than directly attributed from the source geography, the data is considered unreliable and rates are suppressed. This means the WRI value must be more than 50 to be reported.

Example 4 |
Adjusting for Non-Reporting



Example 4: WRI for Areas with Non-Reporting of Data.

There is a second way that data may become unreliable. Some police jurisdictions do not report data to the state sources, use a reporting method which cannot be included in our files, fail to report for either adults or juveniles, or report for only part of a year. This is particularly true for court data – arrests or offenses. In order to accurately evaluate the reliability of data conversions for destination geographies containing those jurisdictions, non-reporting jurisdiction populations were excluded from the calculations for WRI and the non-reporting jurisdiction issue is evaluated separately. Partial Reporting, part of a year or part of a population, is also taken into consideration when computing the percentage of non-reporting in a destination geography. Adult and juvenile rates are evaluated separately. Some areas may pass for one, but not for the other due to their reporting habits. For partial year reporting the percentage of the year with data reported is used to evaluate each category.
The second test of reliability is to determine whether the population for the rate is adequately represented. In this example, allow the numbers inside the oval to represent a population of 100 allocated to the destination geography. Two source jurisdictions are entirely located in the destination geography represented by the oval. Their events when reported would be directly attributed. The non-reporting jurisdiction would have its population of 50 excluded from the calculation for WRI, while the reporting jurisdiction would have its population included in the calculation. In this case the completely contained reporting jurisdiction would represent 30 of the remaining 50 population (60 percent) in the destination oval. The imputed portion is 40 percent allowing the destination geography to pass the first test for WRI.

CORE also requires that the excluded non-reporting jurisdiction population (50 of 100) is less than 50 percent of the total population for the destination geography. With an exclusion rate of 50 percent, this destination geography would fail the reliability criteria.

The reliability of arrest rates is calculated each year based on non-reporting. For five year rates, three out of five data years must be considered reliable by both tests and the average of the yearly WRI for all five years must reach the WRI cut point value.

Standardization of CORE Indicators

Technical Notes

An individual indicator by itself is interesting because you can compare your county (school district, locale) to all other counties (school districts, locales), and to the state. You can also look at how the indicator changes over time. But it is more difficult to compare several indicators to each other, for example, if you want to see which indicator of risk is extremely high and which is just average. For instance, you cannot directly compare the number (or rate) of alcohol retail licenses to the number (or rate) of Food Stamp recipients---this would be like comparing apples and oranges and would not be meaningful.

The preferred way to compare different indicators is to find out how much each individual indicator varies from some common point; in CORE reports the point we use is the indicator's value for the state. In more technical terms, we transform the original absolute rates to a common scale: the relative deviation from the state rate. This is called a **standardized score**, and is based on the mathematical calculation of the standard deviation. For a particular indicator, the county (school district, locale) with the highest absolute rate will have the highest standardized score. A standardized score of 1.2, for instance, means that the county's rate is 1.2 standard deviations above the state rate, and a –1.2 would be 1.2 standard measures below the state rate. Approximately 95% of all counties (school districts, locales) in the state will fall between +2 and –2 standard deviations from the state rate.

Here is an example. Let's say an indicator for extreme family economic deprivation (Food Stamp recipients per 100 people) has a standardized score of 2.5 and an indicator for availability of drugs (alcohol retail licenses per 1,000 people) has a score of 1.2. We can say that, other things being equal, the county (school district, locale) in question has a higher risk for extreme family economic deprivation than for availability of drugs.

CORE indicators are standardized using a formula similar to the calculation of a z-score. A typical z-score for an observation (a county, a locale, a school district) is calculated as a difference between an observation and the mean (average) of all observations, divided by the standard deviation for all observations. A CORE standardized score for a county (school district, locale) is instead calculated using the state rate in place of the mean for all counties (school districts, locales). A standardized CORE indicator avoids the problem of using an un-weighted mean of all counties (school districts, locales) that would give counties of very different size equal weight, and therefore provides a more meaningful comparison.

CORE standardized indicators for counties are calculated using the following formula. The same formula is used for locales and for districts, by substituting locale or district rates for county rates in the formula.

$$stdiz_score = \frac{county_{rate} - state_{rate}}{\sqrt{\frac{\sum_{i=1}^{N}(county_{rate,i} - state_{rate})^2}{N}}}$$

Graduation and Dropout Data Methodology Changes

Beginning with the 2011-2012 school year major changes were made in how to measure dropouts and graduation for students in Washington State. "Graduation Rate Calculations in Washington State", a March 2012 publication by the Office of Superintendent of Public Instruction, does an excellent job of explaining these changes. The following chart is an extract from that document (page 4).
How do the methods differ?

Estimated Cohort (old method) Prior to 2011-2012 school year	**Adjusted Cohort (new method)** 2011-2012 and beyond
Is a composite cohort. Uses dropout rates for all grades within one school year to determine an estimate of the number of students graduating.	Is an actual cohort; individuals are tracked over 4 years with adjustments made for transfers in/out.
Allows for alternate expected graduation year for students in special education or ELL programs.	Imposes concept of four-year timespan. There are no adjustments for Special Ed or Limited English students who are expected to take longer.
May adjust for deficient credits.	All students are expected to graduate four years after first entering 9th grade. Transfers from out of state or other districts who are credit deficient may not be reclassified into a lower grade.

Where are the roadblocks to learning in our communities?

Academic Achievement:

The CORE measures academic achievement using three groups of indicators:

1. Student assessment on statewide tests (risk factor);
2. Students who graduate from high school (protective factor);
3. Students who drop out of high school, failing to complete their education (risk factor).

Student Assessment

Indicators for *Poor Academic Performance* are available for grades 4, 7 and 10. The indicators are calculated as a percentage of students tested in each grade assessment. Earlier years of information are from the Washington Assessment of Student Learning (WASL). In 2009-10 the WASL was replaced by the Measurements of Student Progress (MSP) for grades 3 through 8 and the High School Proficiency Exam (HSPE) for grade 10. Some districts have chosen to test students in both grades 9 and 10 for the 10th grade assessment, giving freshmen a second chance to pass the test. Passing the HSPE is essential for high-school graduation. Ninth graders who were tested are included with the tenth graders in the calculation of the Academic Achievement indicator for grade 10.

Technical Notes

Graduating from High School

According to the National Institute on Drug Abuse (NIDA), protective factors are characteristics that decrease an individual's risk for a substance abuse disorder. Among the protective factors listed are: aspirations or expectations to go to college, high commitment to schooling, education is valued and encouraged, and academic competence. Children who graduate share many of these protections, therefore, CORE has chosen to categorize On-time and Extended Graduation as protective factors. Two types of high school graduation rates are listed in the CORE reports, *On-time Graduation* and *Extended Graduation*.

To graduate on-time, a student must graduate within four years by completion of the graduation requirements. The **Estimated Cohort (old method)** On-Time Graduation rate formula uses dropout rates discussed below; the formula is: 100*(1-grade 9 dropout rate)*(1-grade 10 dropout rate)*(1-grade 11 dropout rate)*(1-grade 12 dropout rate-grade 12 continuing rate). The on-time graduation rate is the inverse of the cumulative dropout rate with the senior class adjusted to remove those students who stay in school for more than four years from the calculation. The **Adjusted Cohort (new method) rate** divides the number of students graduating in their fourth year by the adjusted freshman cohort for those students.

Extended Graduation requires more resources and dedication from district staff. It includes those students who stay in school after their senior year and complete the graduation requirements. Districts which have high extended graduation rates may also have higher dropout rates since the students attempting extended graduation are also at highest risk of again dropping out. A large difference in the size of the on-time and extended graduation rates may indicate that a district or school is working hard to keep students in school or to have dropouts return to school and attempt to graduate. The **Estimated Cohort (old method)** Extended Graduation rate formula is: (the number of on-time and late graduates)/(the number of on-time graduates divided by the on-time graduation rate). The **Adjusted Cohort (new method) rate** is the number of students graduating within five years divided by the adjusted cohort for the freshman class of the graduates.

Dropping Out of High School

Two types of high school dropout rates are listed in the CORE reports, *Annual (Event) Dropouts* and *High School Cohort (Cumulative) Dropouts*. The *Annual Dropout rate* measures the proportion of students enrolled in grades *9-12 who drop out in a single year* without completing high school as a percentage of all students in grades 9 through 12 that year. When districts try new policies or projects to keep students in school the impact of those actions will be more immediately visible in this rate. This rate is much more difficult to compute with the new cohort designations for students as it draws information from four separate cohorts. This indicator will have a break in data production during the transition to the new method. At least one year of data will probably never be produced.

The *High School Cohort Dropout rate* (may also be referred to as the longitudinal, cumulative, or freshmen cohort dropout rate) measures what happens to a single group (or cohort) of students over a period of time. This rate is most useful for seeing the long-term impact on the community. The **Estimated Cohort (old method)** Cohort (Cumulative) Dropout rate formula is: 100-(100*(1-grade 9 dropout rate)*(1-grade 10 dropout rate)*(1-grade 11 dropout rate)*(1-grade 12 dropout rate)). The cohort rate is significantly higher than the annual rate for the same area as it measures the cumulative effect of the multiyear loss of students from their freshmen cohort. The **Adjusted Cohort (new method) rate** is the number of students dropping out prior to graduation divided by the adjusted cohort for the freshman class of the graduates.

Technical Notes

School Climate:

Indicators listed under School Climate give an idea of how safe students may feel in their school or how committed they and their fellow students are to learning. These indicators are *Weapons Incidents in School* (rate per 1,000 students) and *Unexcused Absences for Students in Grades 1 to 8* (as a percentage of total student days possible in the school year, which equals the number of students times teaching days). When weapons incidents are common or it is acceptable for young students to frequently miss school without explanation the school climate is not conducive to learning.

Extreme Family Economic Deprivation:

Hungry students find it difficult to focus their attention long enough to learn. Those with inadequate housing or clothing may find it difficult to interact with their peers. There are three indicators which evaluate levels of poverty.

Child Recipients of TANF (Temporary Assistance for Needy Families) gives the rate of children from birth to 17 who receive income assistance. The child must be a citizen or legal alien and their caregiver must not have exceeded the 60 month maximum. There is a requirement for the adults to seek work and an income evaluation. Teen parents must attend school.

Supplemental Nutrition Assistance Program (SNAP) Recipients, formerly called Food Stamps shows a more generalized level of need. While the persons must be citizens or legal aliens who seek work and meet the income guidelines there is no cutoff time limit for benefits.

Students Eligible for Free or Reduced Price Lunch gives a much broader look at poverty in your area. Children of people who are "working poor", who have exceeded 60 months in benefits, are not legal aliens, or are not seeking work can still receive meals and free milk. The free guidelines are at or below 130 percent of the Federal poverty guidelines and the reduced price guidelines are between 130 and at or below 185 percent of the Federal poverty guidelines. However, there are other ways to qualify.

Many persons earning a gross income up to 200% of the Federal Poverty Level apply for income assistance because their children are automatically eligible for free school lunch if they meet the adjusted income guidelines. These are sometimes called $0 grants. Households receiving assistance under SNAP, TANF for their children, Food Distribution Program on Indian Reservations (FDPIR) or, with children who are homeless, fostered, runaway, migrant, or in Head Start Programs are eligible for free benefits. If any child or household member receives benefits under Assistance Programs all children who are members of the household are eligible for free school meals.

Changes in Hospitalization Data

When CHARS was first developed there were basically two types of patients: inpatient and outpatient including emergency department. Since that time, however, a third category of patients has come into being, and has grown. These are known as "observation" patients.

Some observation patients may be similar to outpatients in that their lengths of stay at the hospital can be measured in hours. Other observation patients are more like inpatients; their lengths of stay can be a full day – or longer. Up until May 2007 CHARS only collected data on inpatients. Observation patients with lengths of stay exceeding a day or more were previously not reported to CHARS. This situation becomes even more concerning because the designation of a patient as either an inpatient or an observation patient is based upon each patient's payer's criteria. Hence, one patient may be deemed an inpatient by their payer and have their data reported to CHARS, while another patient with exactly the same clinic conditions and treatments – but with a different payer – may be deemed an observation patient and did not have their data reported to CHARS in the past. Revisions have been made which add these observation events to CORE from 2008 forward. This will change the trend data for those years for any rate containing data from CHARS.

In addition to the inclusion of observation admissions, supplemental diagnosis fields and supplemental external cause fields have been added to the analysis of patient data. Previously analysis was limited to the first nine diagnosis and the first external cause code. Both of these changes may increase the rates seen in data trends for 2008 to the present.

Data on hospital stays after October 1, 2015 uses ICD-10 definitions. Both ICD-9 and ICD-10 categories used to define alcohol, drug, suicide and injury accidents are detailed in the section called Counting Alcohol- or Drug-related Deaths. CHARS events use only directly attributable diagnosis definitions.