Oregon Open Crime Data Analysis

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Intro

We will explore crime reports in Oregon. We will look at the number of reported offenses as aggregated by both month and county along with a close look at violent offenses in particular. Rates of offense aggregated along counties will be normalized using 2020 Census data. Source code will be posted on Github

Data

The two data sources used are the "Uniform Crime Reporting" Offenses data and the Oregon 2020 Census data from Portland University.

Crime Data   The crime reporting data set is accissable directly from

https://www.oregon.gov/osp/Pages/Uniform-Crime-Reporting-Data.aspx

Population Data   The Oregon census data can be found at the website

https://www.pdx.edu/population-research/census-data-oregon

with the direct link being

https://drive.google.com/uc?export=download&id=1JrrmYiQUBPux8nnJ88epAAk9U5rbRDBD

Data Exploration

Overview of number of records collected per month and the total number of distinct offenses for the data set.

Table 1: Offenses Reports

Agency Name	County	IncidentDate	NIBRS Crime Against	NIBRS Crime Description	NIBRS Report Title	Distinct Offenses
Warrenton PD	Clatsop	8/31/2022	Property	Destruction/Damage/Vandalisim of Property	Vandalism	1
Warrenton PD	Clatsop	8/31/2022	Society	All Other Offenses	All Other Offenses	1
Warrenton PD	Clatsop	8/31/2022	Society	Drug/Narcotic Violations	Drug/Narcotic Offenses	1
Wasco SO	Wasco	8/31/2022	Other	Oregon Specific Crime (ONIBRS)	Traffic Crime	1
Woodburn PD	Marion	8/31/2022	Property	Counterfeiting/Forgery	Counterfeiting/Forgery	1
Woodburn PD	Marion	8/31/2022	Property	Shoplifting	Larceny/Theft Offenses	4

Each record has a count of distinct offenses. We can compare the number of reports per month and the total number of distinct offenses.
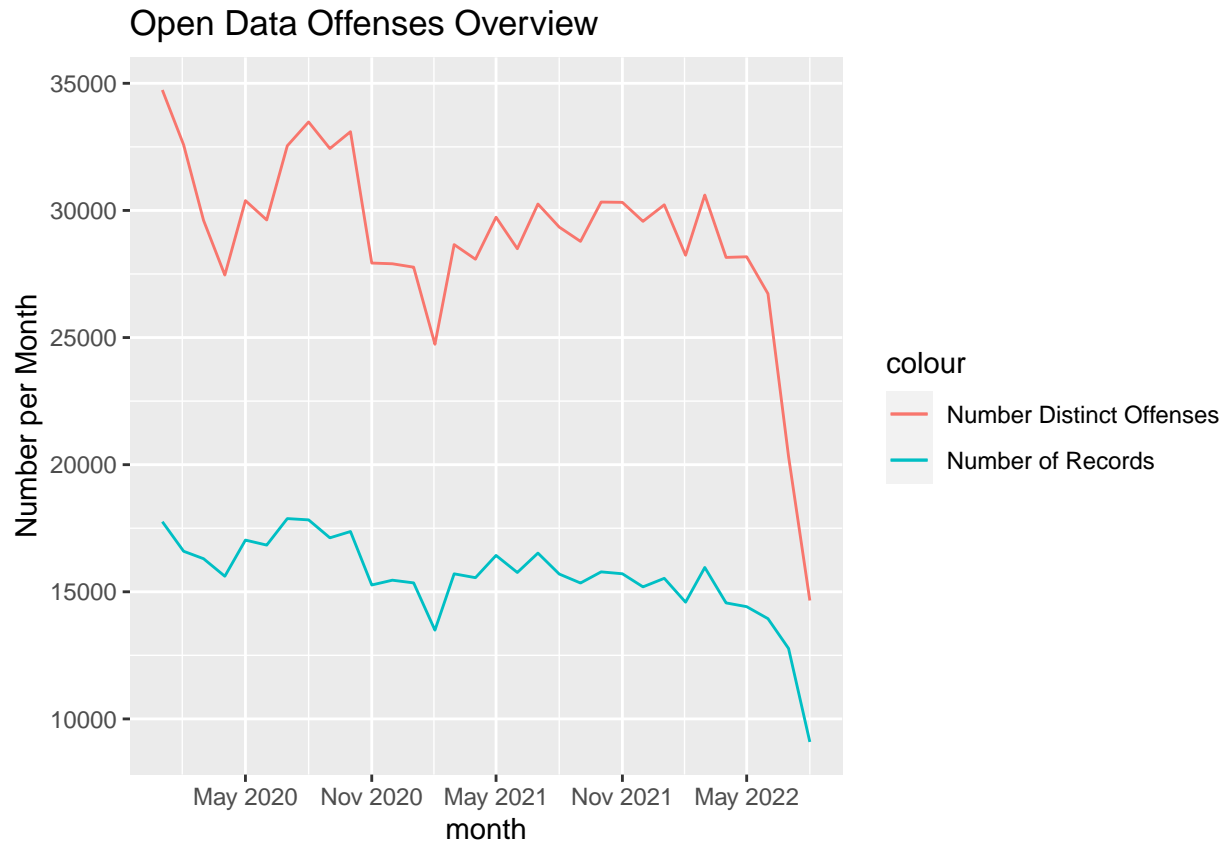
Open Data Offenses Overview

Table 2: Recent Offenses

	month	Total Records	Total Distinct Offenses
27	2022-03-01	15956	30605
28	2022-04-01	14562	28152
29	2022-05-01	14415	28177
30	2022-06-01	13943	26724
31	2022-07-01	12771	20322
32	2022-08-01	9093	14657

There is a shape decline in the last month. We will ignore that month, assuming that it is due to a lag in reporting and assimilating.

Population

For per ca-pita calculations we need to know the population broken down by counties. This data is in the Census data set. The data gives us the population in 2010 and 2020 along with the percentage change.

Table 3: County Population

county	2010	2020	percent change
oregon	3831074	4237256	10.6
baker	16134	16668	3.3
clackamas	375992	421401	12.1
lane	351715	382971	8.9
multnomah	735334	815428	10.9
washington	529710	600372	13.3

Using simple linear model we can use the recorded rate of population change along with initial 2020 population to interpolated populations for months in our data set.

```
## Note: Using an external vector in selections is ambiguous.
## i Use `all_of(study_counties)` instead of `study_counties` to silence this message.
## i See <https://tidyselect.r-lib.org/reference/faq-external-vector.html>.
## This message is displayed once per session.
```

Table 4: County Population

| month	oregon	lane	multnomah	washington	baker	clackamas
2020-01-01	4241000	383254.6	816168.1	601039.4	16672.60	421825.1
2020-02-01	4244743	383538.2	816908.3	601706.8	16677.19	422249.2
2020-03-01	4248487	383821.8	817648.4	602374.2	16681.79	422673.3
2020-04-01	4252231	384105.5	818388.6	603041.6	16686.39	423097.4
2020-05-01	4255975	384389.1	819128.7	603709.0	16690.99	423521.5

Violent Offenses

Violent offenses are of particular concern so let's look at those offenses. To determine which offenses are violent we use the FBI's definition of violent crimes to categorize the 'NIBRS Report Title' column in the data set.

Table 5: Violent Offense Titles

x
Aggravated Assault
Forcible Rape
Forcible Sodomy
Robbery
Willful Murder

We can look at the break down of these violent offenses for the whole state.
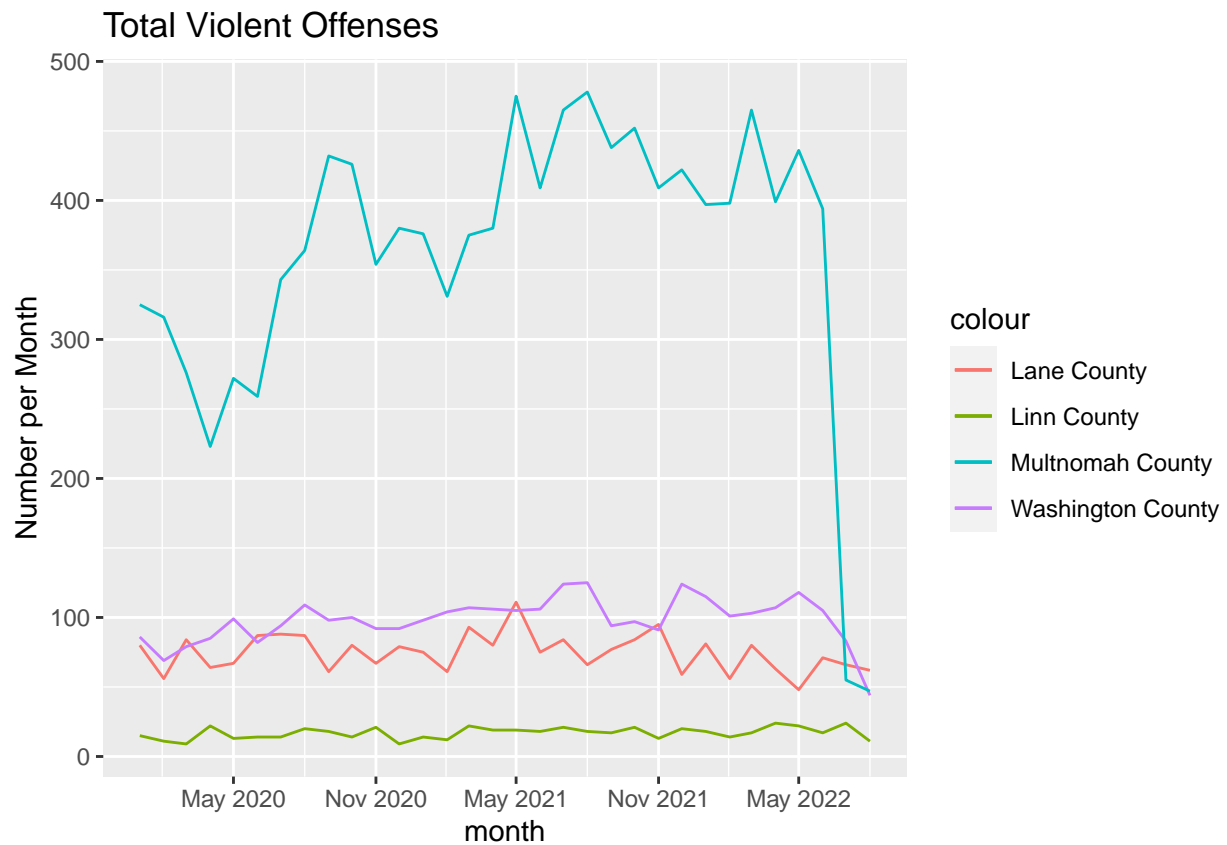
Violent Offenses in Oregon
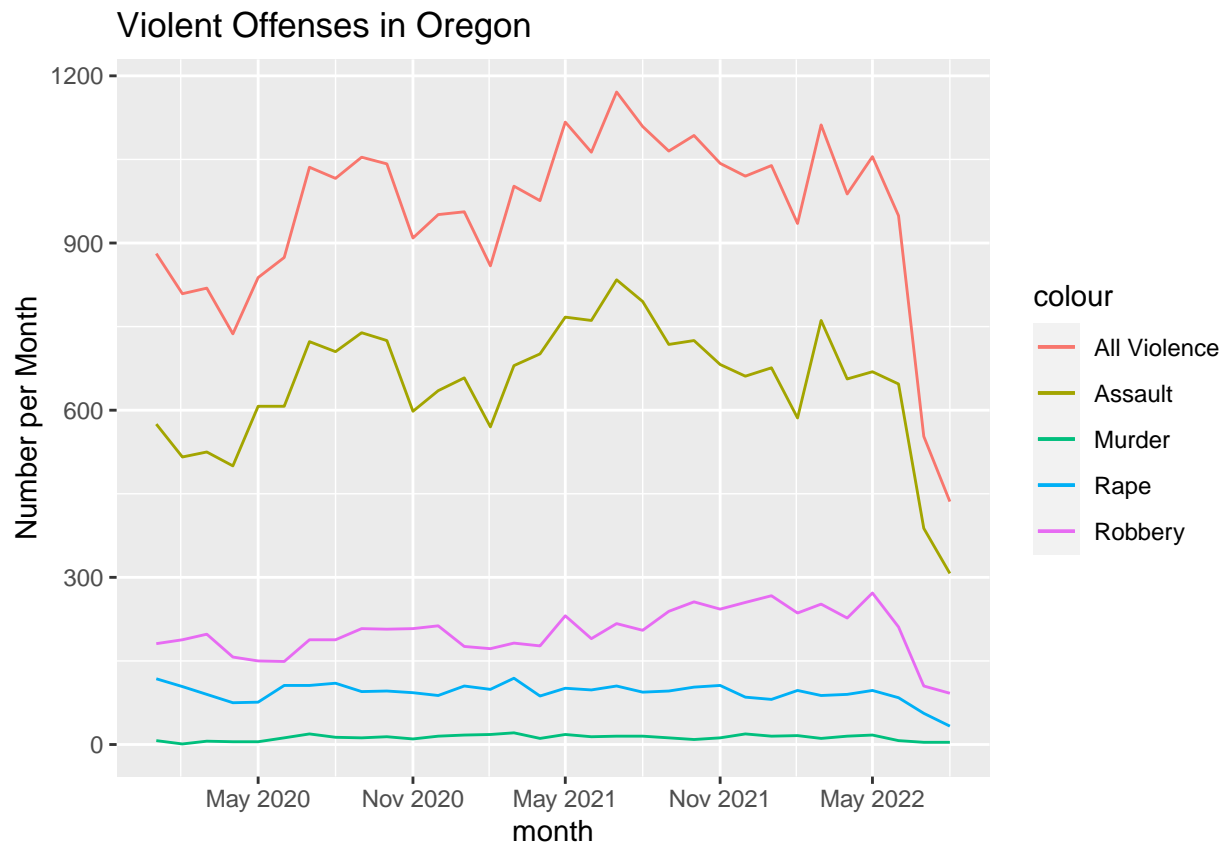
We can also compare the number of violent offenses verses non-violent offenses for the state over the study period.

Violent vs Non Violent Offenses in Oregon
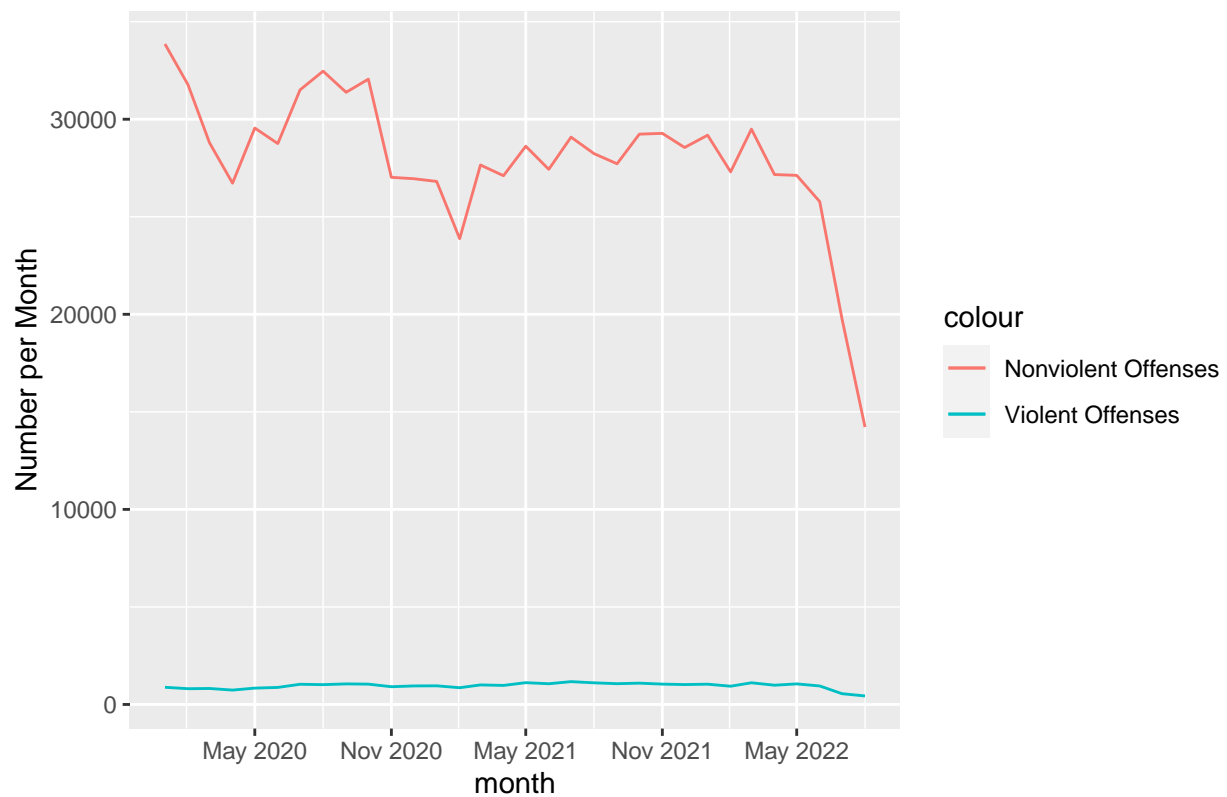
Next we can look at the total number of distinct violent offenses by county.

Total Violent Offenses

Recall from the population table that these counties vary greatly by population. So, using the population data we can plot the above graph adjusted to the county's population.

Violent Offenses by County

Per Capita Violent Offenses
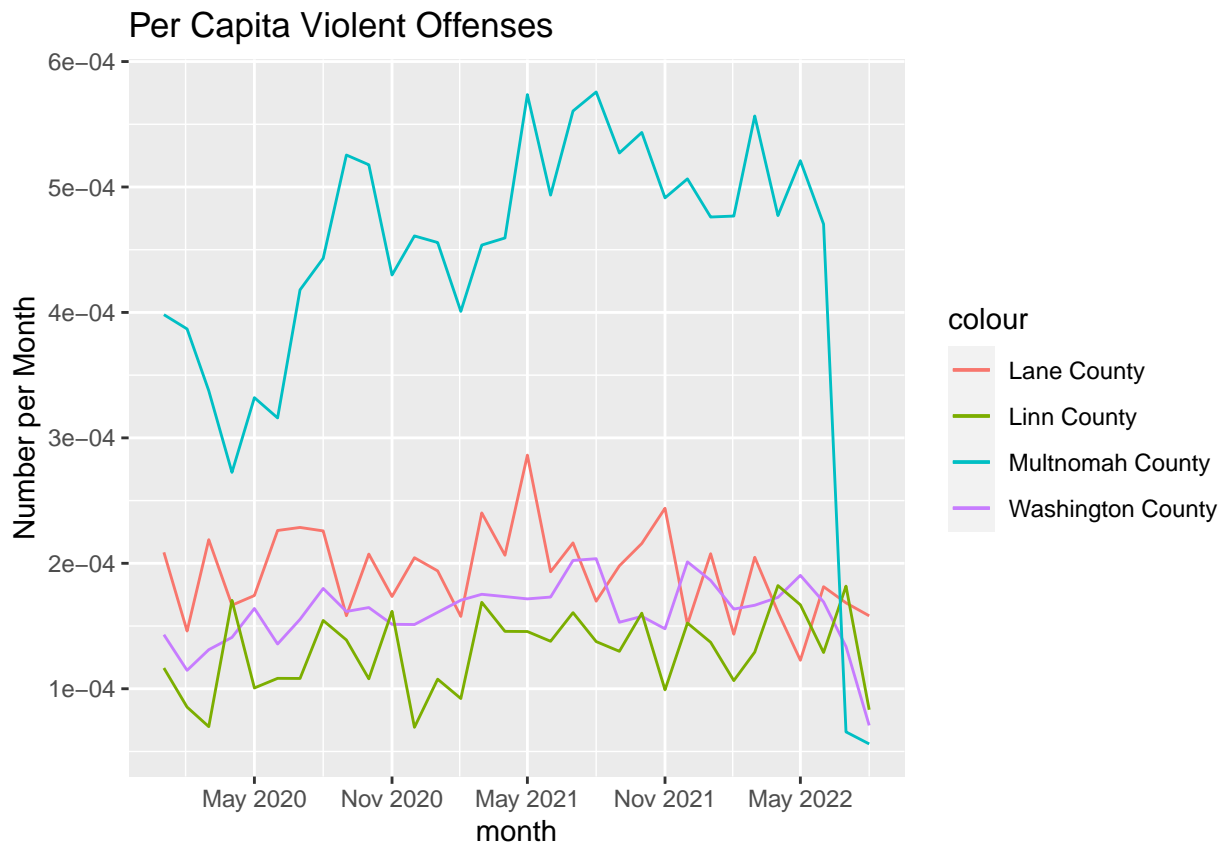
We can look at the aggregates of violent offenses by county.

Table 6: County Total Violent Offenses

|	county	offenses	percap_off
1	oregon	0	0.0000000
2	baker	79	0.4739621
4	clackamas	1898	0.4504023
21	lane	2387	0.6232848
27	multnomah	11571	1.4190094
35	washington	3142	0.5233422

From the table it appears that the rate of violent offenses is far higher in Multnomah county than others.

Table 7: Counties with Highest Per Capita Violent Offenses

	county	offenses	2020	percap_off
26	multnomah	11571	815428	1.4190094
18	klamath	624	69413	0.8989671
4	clatsop	346	41072	0.8424231
24	marion	2784	345920	0.8048104
17	josephine	682	88090	0.7742082
34	wasco	197	26670	0.7386577

Per Capita Violent Offenses
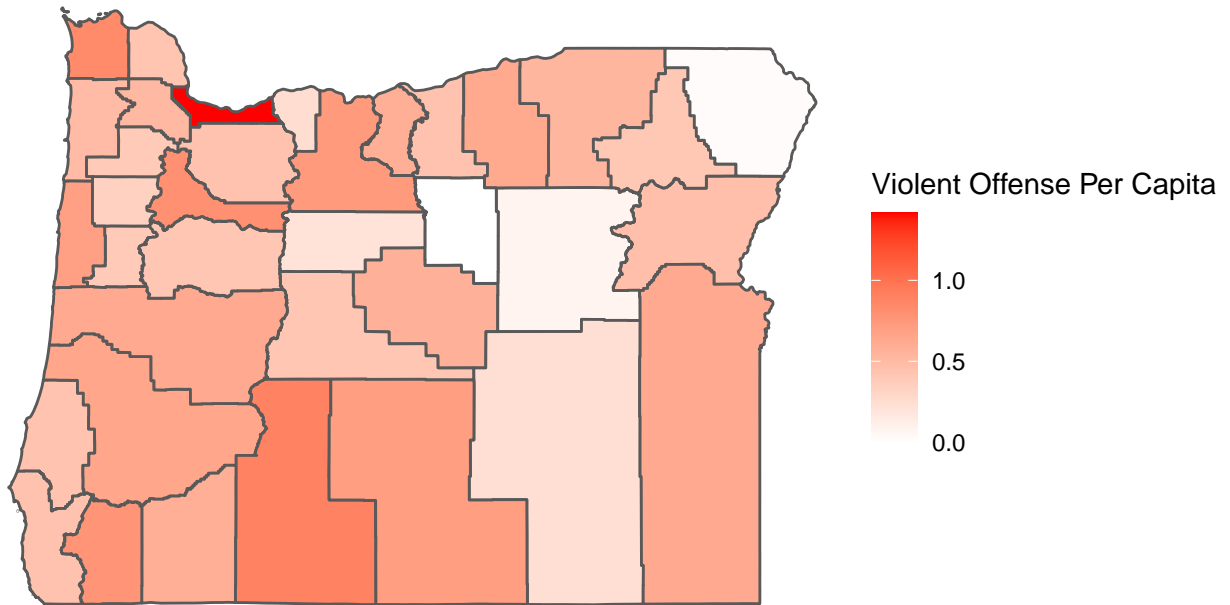
Sources

Oregon Crime Data   "Oregon State Police: Uniform Crime Reporting"

https://www.oregon.gov/osp/Pages/Uniform-Crime-Reporting-Data.aspx

Oregon Census Data   "Census Data for Oregon" Population Research Center

https://www.pdx.edu/population-research/census-data-oregon

Direct link for data set:

https://drive.google.com/uc?export=download&id=1JrrmYiQUBPux8nnJ88epAAk9U5rbRDBD

FBI   "FBI-Violent Crime" FBI: UCR

https://ucr.fbi.gov/crime-in-the-u.s/2019/crime-in-the-u.s.-2019/topic-pages/violent-crime

APPENDIX A

Appendix description: Raw data tables.

Total Violent Offenses Per Capita per County

Total counts for study period:

Table 8: County Total Violent Offenses

county	offenses	percap_off
oregon	0	0.0000000
baker	79	0.4739621
benton	376	0.3950244
clackamas	1898	0.4504023
clatsop	346	0.8424231
columbia	226	0.4297477
coos	289	0.4451016
crook	143	0.5780580
curry	105	0.4478376
deschutes	838	0.4226922
douglas	723	0.6501740
gilliam	9	0.4511278
grant	6	0.0829531
harney	18	0.2401601
hood river	61	0.2544105
jackson	1320	0.5912416
jefferson	51	0.2081463
josephine	682	0.7742082
klamath	624	0.8989671
lake	58	0.7107843
lane	2387	0.6232848
lincoln	350	0.6945133
linn	541	0.4206516
malheur	197	0.6239904
marion	2784	0.8048104
morrow	77	0.6318726
multnomah	11571	1.4190094
polk	299	0.3419761
sherman	11	0.5882353
tillamook	138	0.5038335
umatilla	429	0.5357477
union	107	0.4084593
wallowa	2	0.0270599
wasco	197	0.7386577
washington	3142	0.5233422
wheeler	0	0.0000000
yamhill	423	0.3926774

Population

Table 9: County Population 2010 and 2020

county	2010	2020	percent change
oregon	3831074	4237256	10.6
baker	16134	16668	3.3
benton	85579	95184	11.2
clackamas	375992	421401	12.1
clatsop	37039	41072	10.9
columbia	49351	52589	6.6
coos	63043	64929	3.0
crook	20978	24738	17.9
curry	22364	23446	4.8
deschutes	157733	198253	25.7
douglas	107667	111201	3.3
gilliam	1871	1995	6.6
grant	7445	7233	-2.8
harney	7422	7495	1.0
hood river	22346	23977	7.3
jackson	203206	223259	9.9
jefferson	21720	24502	12.8
josephine	82713	88090	6.5
klamath	66380	69413	4.6
lake	7895	8160	3.4
lane	351715	382971	8.9
lincoln	46034	50395	9.5
linn	116672	128610	10.2
malheur	31313	31571	0.8
marion	315335	345920	9.7
morrow	11173	12186	9.1
multnomah	735334	815428	10.9
polk	75403	87433	16.0
sherman	1765	1870	5.9
tillamook	25250	27390	8.5
umatilla	75889	80075	5.5
union	25748	26196	1.7
wallowa	7008	7391	5.5
wasco	25213	26670	5.8
washington	529710	600372	13.3
wheeler	1441	1451	0.7
yamhill	99193	107722	8.6

Offenses by Type

Table 10: Offenses

title	count
Part 3	87644
Traffic Crime	41730
Simple Assault	49825
Fraud Offenses	43447
Larceny/Theft Offenses	215912
Motor Vehicle Theft	49030
Robbery	6440
Vandalism	97923
All Other Offenses	120808
Disorderly Conduct	24434
Driving Under the Influence	33654
Drug/Narcotic Offenses	28091
Liquor Law Violations	4122
Runaway	3448
Weapon Law Violations	15937
Aggravated Assault	20697
Forcible Rape	2981
Other Sex Offenses	6228
Intimidation	13958
Burglary	36496
Counterfeiting/Forgery	7877
Family Offenses, Nonviolent	1538
Gambling Offenses	4
Stolen Property	3582
Embezzlement	640
Extortion/Blackmail	565
Pornography/Obscene Material	1439
Justifiable Homicide	26
Arson	3489
Kidnapping	1225
Curfew/Loitering/Vagrancy Violations	360
Prostitution Offenses	588
Willful Murder	389
Neg. Homicide	119
Peeping Tom	72
Fish and Game Laws	17
Bribery	26
Marine Violations	182

Appendix B

source code available at https://github.com/russl-corey/Oregon_Crime

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