

# Crain's Public Safety Op-Ed Crime Rate Data and Crime Model

<b>Cleveland: Crime, Crime Rates and Other Police Activity</b>					
	2018	2019	2020	2021	4-Yr Avg
Total Crime Rate/ 10K Pop	713.1	699.1	676.8	650.9	685.0
<b>Reported Major Crime</b>	<b>27,170</b>	<b>26,637</b>	<b>25,785</b>	<b>24,800</b>	26,098
<b>Violent Crime Total</b>	<b>6,290</b>	<b>6,078</b>	<b>7,094</b>	<b>7,050</b>	6,628
Murder	101	103	160	166	133
Rape	580	536	439	470	506
Robbery	2,227	2,003	1,909	1,669	1,952
Aggravated Assault	3,382	3,436	4,586	4,745	4,037
<b>Property Crime Total</b>	<b>20,880</b>	<b>20,559</b>	<b>18,691</b>	<b>17,750</b>	19,470
Burglary	4,921	4,562	4,056	3,502	4,260
Larceny/ Theft	12,678	12,916	11,351	10,696	11,910
Motor Vehicle Theft	3,281	3,081	3,284	3,552	3,300
<b>Other Police Activity</b>					
Drug Crimes	2,112	1,861	1,413	1,482	1,717
DUI- Alcohol, Drugs	442	428	452	566	472
Criminal Arrests	15,584	12,790	9,217	9,257	11,712
Prisoners	13,025	12,299	5,723	8,979	10,007
Traffic Citations	41,095	41,747	28,042	32,302	35,797
Parking Citations	26,970	24,017	17,075	20,777	22,210
Accident Reports	17,982	17,282	15,237	16,525	16,757

Sources: OIBRS. City of Cleveland 2021 audit. Population estimated at 381,000.

<b>Crime Rates Per 10,000 Population for Ohio Large Cities (2017-2021)</b>					
City	4-Year Avg Crime Rate/ 10k Pop	2021 Crime Rate/ 10K Pop	2020 Crime Rate/ 10K Pop	2019 Crime Rate/ 10K Pop	2018 Crime Rate/ 10K Pop
Cleveland	686	661	680	698	706
Akron	525	NA	553	495	527
Dayton	517	482	515	515	558
Cincinnati	491	428	470	519	548
Toledo	446	414	423	461	485
Columbus	403	404	390	394	423
Ohio Total Reported	311	283	303	317	342
Cle Times Ohio Rate	2.2	2.3	2.2	2.2	2.1

Source: CJS, OIBRS. Ohio total includes about 300-370 cities. Large cities > 100,000 population.

<b>% Violent Crime in Ohio Large Cities (2017-2021)</b>					
City	4-Year Avg % Violent Crime	2021 % Violent Crimes	2020 % Violent Crimes	2019 % Violent Crimes	2018 % Violent Crimes
Cleveland	26%	28%	28%	23%	23%
Toledo	24%	27%	27%	21%	19%
Dayton	21%	23%	23%	20%	18%
Cincinnati	18%	20%	20%	17%	16%
Akron	18%	NA	19%	18%	16%
Columbus	15%	17%	17%	14%	13%
Ohio Totals (n=330)	15%	17%	17%	14%	13%

Source: CJS, OIBRS. Ohio total includes about 300-370 cities. Large cities > 100,000 population.

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## Cleveland Crime Cost Savings: 10% & 25% Increase in Police

	Crimes/Yr	Crime Chg/1%
Murder	133	-0.666%
Rape	506	-0.255%
Robbery	1,952	-0.559%
Aggrav Assault	4,037	-0.099%
Burglary	4,260	-0.225%
Larceny	11,910	-0.083%
Motor Veh Theft	3,300	-0.343%
Total	26,098	
	Incr Police = 10%	Incr Police = 25%
<b>ASSUME: Increase in Police</b>	<b>130</b>	<b>325</b>
% Increase	10.0%	25.0%
Cle Police 2021 Audit / Officer	\$ 135,000	\$ 135,000
<b>RESULTS</b>		
Current Crime Cost	\$1,646,545,000	\$1,646,545,000
<b>Chg in Number of Major Crimes</b>	<b>(479)</b>	<b>(1,197)</b>
Crime Savings from Police Incr	<b>(\$80,455,000)</b>	<b>(\$201,139,000)</b>
Cost of Addl Officers	\$17,550,000	\$43,875,000
<b>NET CRIME REDUCTION SAVINGS</b>	<b>(\$62,905,000)</b>	<b>(\$157,264,000)</b>
<b>Net Savings Per Addl Officer</b>	<b>(\$483,885)</b>	<b>(\$483,889)</b>
Source for crime elasticity: Chalkin and McCrary, Are US Cities Underpoliced (2018)		
Source for Cle police avg cost: 2021 Cle Fin Audit		

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MODEL ASSUMPTIONS				
	Cleveland Crime- 2018-21 Avg	Cleveland Crime- 2018- 21 Avg	Avg Cost Per Crime (\$2020)	Crime Chg Per 1% Incr in Police
Murder	133	133	\$ 7,246,950	-0.666%
Rape	506	506	\$ 198,142	-0.255%
Robbery	1,952	1,952	\$ 75,686	-0.559%
Aggravated Assault	4,037	4,037	\$ 86,153	-0.099%
Burglary	4,260	4,260	\$ 5,859	-0.225%
Larceny Theft	11,910	11,910	\$ 2,206	-0.083%
Motor Vehicle Theft	3,300	3,300	\$ 10,809	-0.343%
Total Crime, excl Drugs	26,098	26,098		
Population		381,000		
Size of Police Dept		1,300		
1% Chg in Police		13		
Avg Cost Per Officer		\$135,000		
Note: Model design based on Rand Cost of Crime model.				
Source: Crime estimates for large communities from OIBRS or Police Reports. Estimates based on 5-yr average. Small communities est'd at 5.				
Source: Drug estimate from OIBRS, 2020-21 avg.. Estimates for some communities based on 20 drug arrest per 10K population.				
Sources for crime cost: Miller et al. (2020), McCollister (2010), Chalkin (2017), Rand (2010), Cooley & Pianto (2016) Estimates adjusted to 2020 Dollars				
Source for crime elasticity: Chalkin and McCrary, Are US Cities Underpoliced (2018)				
Source for Cle police size and avg cost: 2021 Cle Fin Audit				

## Cleveland: 10% Increase in Police

<b>ASSUME: Increase in Police</b>	130
<b>% Increase</b>	10.0%
Size of Cle Police Dept	1300
1% Chg in Police	13
Cle Police 2021 Audit / Officer	\$ 135,000
Cleveland Population	381,000
<b>RESULTS</b>	
<b>Current Crime Cost</b>	\$1,646,545,000
<b>Chg in Number of Major Crimes</b>	(479)
<b>Crime Savings from Police Incr</b>	(\$80,455,000)
<b>Cost of Addl Officers</b>	\$17,550,000
<b>NET CRIME REDUCTION SAVINGS</b>	(\$62,905,000)
<b>Net Savings Per Addl Officer</b>	(\$483,885)
<b>Current crime Cost Per Capita</b>	\$4,322
<b>Net Savings Per Capita</b>	\$ (165)

	Crimes/Yr	Avg Cost Per Crime	Crime Cost (\$Mil)	Crime Chg/1%	Chg No of Crimes	Chg in Crime Cost (\$Mil)
Murder	133	\$ 7,246,950	\$963.8	-0.666%	(8.86)	\$ (64.19)
Rape	506	\$ 198,142	\$100.3	-0.255%	(12.90)	\$ (2.56)
Robbery	1,952	\$ 75,686	\$147.7	-0.559%	(109.12)	\$ (8.26)
Aggrav Assault	4,037	\$ 86,153	\$347.8	-0.099%	(39.97)	\$ (3.44)
Burglary	4,260	\$ 5,859	\$25.0	-0.225%	(95.85)	\$ (0.56)
Larceny	11,910	\$ 2,206	\$26.3	-0.083%	(98.85)	\$ (0.22)
Motor Veh Theft	3,300	\$ 10,809	\$35.7	-0.343%	(113.19)	\$ (1.22)
Total	26,098		\$1,646.5		(478.74)	\$ (80.46)
% Change Number & Cost Crime					-1.8%	-4.9%

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## Cleveland: 25% Increase in Police (Full Strength)

<b>ASSUME: Increase in Police</b>	325
<b>% Increase</b>	25.0%
Size of Cle Police Dept	1300
1% Chg in Police	13
Cle Police 2021 Audit / Officer	\$ 135,000
Cleveland Population	381,000
<b>RESULTS</b>	
<b>Current Crime Cost</b>	\$1,646,545,000
<b>Chg in Number of Major Crimes</b>	(1,197)
<b>Crime Savings from Police Incr</b>	(\$201,139,000)
<b>Cost of Addl Officers</b>	\$43,875,000
<b>NET CRIME REDUCTION SAVINGS</b>	(\$157,264,000)
<b>Net Savings Per Addl Officer</b>	(\$483,889)
<b>Current crime Cost Per Capita</b>	\$4,322
<b>Net Savings Per Capita</b>	\$ (413)

	Crimes/Yr	Avg Cost Per Crime	Crime Cost (\$Mil)	Crime Chg/1%	Chg No of Crimes	Chg in Crime Cost (\$Mil)
Murder	133	\$ 7,246,950	\$963.8	-0.666%	(22.15)	\$ (160.48)
Rape	506	\$ 198,142	\$100.3	-0.255%	(32.26)	\$ (6.39)
Robbery	1,952	\$ 75,686	\$147.7	-0.559%	(272.79)	\$ (20.65)
Aggrav Assault	4,037	\$ 86,153	\$347.8	-0.099%	(99.92)	\$ (8.61)
Burglary	4,260	\$ 5,859	\$25.0	-0.225%	(239.63)	\$ (1.40)
Larceny	11,910	\$ 2,206	\$26.3	-0.083%	(247.13)	\$ (0.55)
Motor Veh Theft	3,300	\$ 10,809	\$35.7	-0.343%	(282.98)	\$ (3.06)
<b>Total</b>	<b>26,098</b>		<b>\$1,646.5</b>		<b>(1196.84)</b>	<b>\$ (201.14)</b>
<b>% Change Number &amp; Cost Crime</b>					<b>-4.6%</b>	<b>-12.2%</b>

## Cleveland Crime Cost Savings: 10% & 25% Increase in Police

	Crimes/Yr	Crime Chg/1%
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Robbery	1,952	-0.559%
Aggrav Assault	4,037	-0.099%
Burglary	4,260	-0.225%
Larceny	11,910	-0.083%
Motor Veh Theft	3,300	-0.343%
<b>Total</b>	<b>26,098</b>	
	<b>Incr Police = 10%</b>	<b>Incr Police = 25%</b>

<b>ASSUME: Increase in Police</b>	<b>130</b>	<b>325</b>
<b>% Increase</b>	10.0%	25.0%
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<b>Current Crime Cost</b>	\$1,646,545,000	\$1,646,545,000
<b>Chg in Number of Major Crimes</b>	(479)	(1,197)
<b>Crime Savings from Police Incr</b>	(\$80,455,000)	(\$201,139,000)
<b>Cost of Addl Officers</b>	\$17,550,000	\$43,875,000
<b>NET CRIME REDUCTION SAVINGS</b>	(\$62,905,000)	(\$157,264,000)
<b>Net Savings Per Addl Officer</b>	(\$483,885)	(\$483,889)

Source for crime elasticity: Chalkin and McCrary, Are US Cities Underpoliced (2018)

Source for Cle police avg cost: 2021 Cle Fin Audit