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COLORADO CRIME AND AURORA'S EXPERIENCE WITH AUTO THEFT

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ABOUT COMMON SENSE INSTITUTE

Common Sense Institute is a non-partisan research organization dedicated to the protection and promotion of Colorado's economy. CSI is at the forefront of important discussions concerning the future of free enterprise and aims to have an impact on the issues that matter most to Coloradans. CSI's mission is to examine the fiscal impacts of policies, initiatives, and proposed laws so that Coloradans are educated and informed about issues impacting their lives. CSI employs rigorous research techniques and dynamic modeling to evaluate the potential impact of these measures on the economy and individual opportunity.

TEAMS & FELLOWS STATEMENT

CSI is committed to independent, in-depth research that examines the impacts of policies, initiatives, and proposed laws so that Coloradans are educated and informed on issues impacting their lives. CSI's commitment to institutional independence is rooted in the individual independence of our researchers, economists, and fellows. At the core of CSI's mission is a belief in the power of the free enterprise system. Our work explores ideas that protect and promote jobs and the economy, and the CSI team and fellows take part in this pursuit with academic freedom. Our team's work is informed by data-driven research and evidence. The views and opinions of fellows do not reflect the institutional views of CSI. CSI operates independently of any political party and does not take advocacy positions.

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INTRODUCTION

Colorado's crime rate is not back to its pre-pandemic level. Both local and state authorities are currently attempting to find policy solutions.

Some localities have created policies and procedures that go beyond state guidelines in an effort to control crime. The City of Aurora implemented mandatory minimum sentencing guidelines for auto theft in 2022, for example, the year that Colorado's and Aurora's auto theft rates were highest. This policy led to a decrease in the auto theft rate in the city beyond what was seen statewide. In 2023, state lawmakers tried to address auto theft with passage of SB23-097. This bill did not implement mandatory minimum sentences, but instead made it a felony to commit auto theft regardless of the value of the vehicle. The law went into effect on July 1, 2023.

Using Aurora's experience as a guide, CSI attempted to assess what the economic savings would be if the state were to experience the same decrease in auto theft, shoplifting, and overall crime that Aurora did after implementing its ordinance.

KEY FINDINGS

- The share of auto theft in Aurora was 19% in July 2022. Since the passage of Aurora's ordinance, known as "Mandatory Minimum Sentences for Motor Vehicle Theft," the share averaged 16% from August 2022 through December 2024, representing a three percentage point decrease from the pre-August 2022 period.
- A market model predicting auto theft in Aurora suggests there were 723 fewer auto thefts in Aurora from August 2022 to December 2024, a 6% decline relative to other large cities in the state.
- For automobile crime, a 6% decline equates to \$16.3 million in economic savings for Aurora from August 2022 through December 2024. For the largest city in the state, Denver, the economic savings would be \$37.3 million over the same 29 months.
- In contrast to Aurora's experience, initial model results on the state impact from its 2023 effort was less pronounced at a 3% reduction in auto theft.
- If Aurora's experience is indicative of the potential savings of a similar statewide approach to crime, a 6% decline in crime statewide for all reported criminal offenses would have equated to \$1.8 billion in economic savings in 2024, or roughly \$774 per Colorado household.
 - > For just auto theft, the economic savings in 2024 would have been \$40.2 million.
 - > Had shoplifting gone down by 6% as automotive theft went down, the economic savings would have been \$107.3 million last year.
- Changes in local crime are not uniform across the state, however. The change in crime over the past five years varies widely by city and county.
 - > For instance, the annual shoplifting rate per 100,000 residents dropped by 45% in Boulder and increased by almost 73% in Jefferson.
 - > The change in the auto theft rate also differs widely by city and county. For instance, the auto theft rate was up 71% in Denver from 2019 to 2024 but down 8% in Mesa over the same period.

COLORADO CRIME TRENDS

As Figure 1 shows, at 288,169, instances of reported crime were still above pre-pandemic levels at the end of 2024. In March 2020, at the onset of the pandemic, crime counts stood at 277,387.

Together, Figure 3 and Figure 4 provide examples of the overall crime trends for shoplifting and auto theft for selected cities. These examples show crime shifts around the state, with some cities having seen a drop in shoplifting and auto theft and other cities having seen large increases.

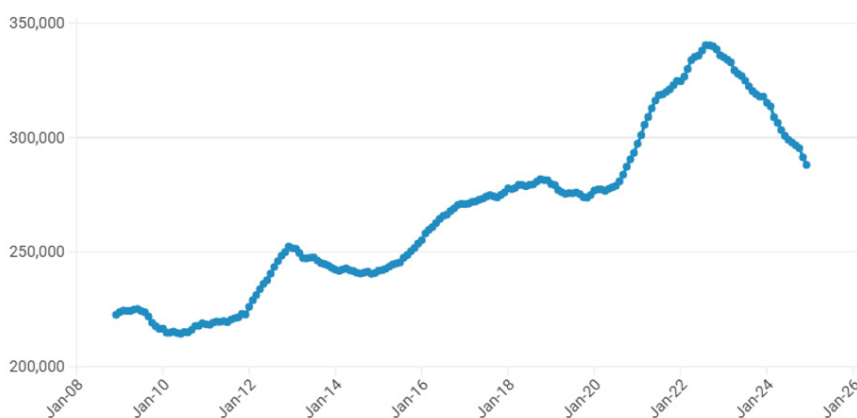
State and municipal policy related to punishment for committing a crime affects crime rates. As an example of the impact municipal policy can have, this report evaluates the impact Aurora's policy on mandatory minimum sentences has had on auto theft.

Although overall reported crime has been trending down, that scenario is not the case for all types of crime. For instance, as Figure 2 shows, motor vehicle theft has trended lower since

FIGURE 1

Colorado Crime

The 12-month moving sum of crime in Colorado is trending towards its pre-pandemic level, but not there yet.



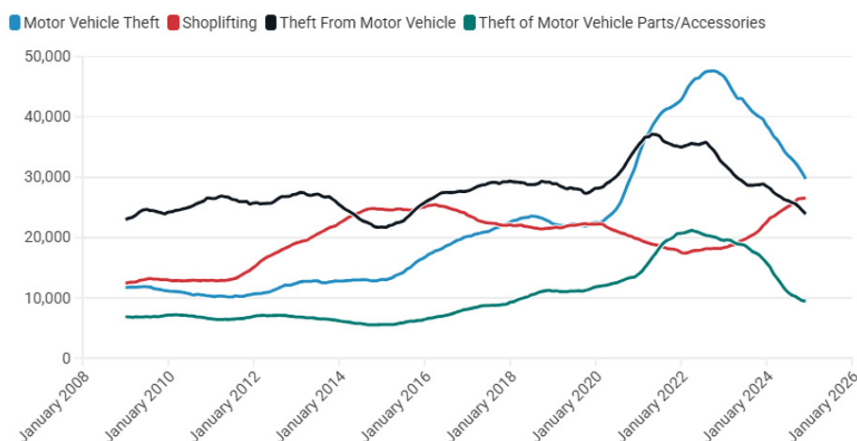
Source: Colorado Crime Stats, CSI Research & Modeling



FIGURE 2

Colorado Crime - Recent Trends in Selected Crimes

Figures are the 12-month moving sum for motor vehicle theft, shoplifting, theft from motor vehicle, and theft of motor vehicle parts/accessories



Source: CSI Research, Colorado Crime Stats



peaking in October 2022, but shoplifting has continued to trend up since bottoming in February 2022 at 17,426.

The change in crime over the past five years varies widely by city and county. For instance, as Figure 3 shows, the annual shoplifting rate per 100,000 residents dropped by 45% in Boulder, but increased by almost 73% in Jefferson.

The change in the auto theft rate also differs widely by city and county. For instance, as Figure 4 shows, the auto theft rate was up 71% in Denver from 2019 to 2024, but down 8% in Mesa over the same period.

FIGURE 3

% Change in Annual Shoplifting Rate per 100,000

2019-2024

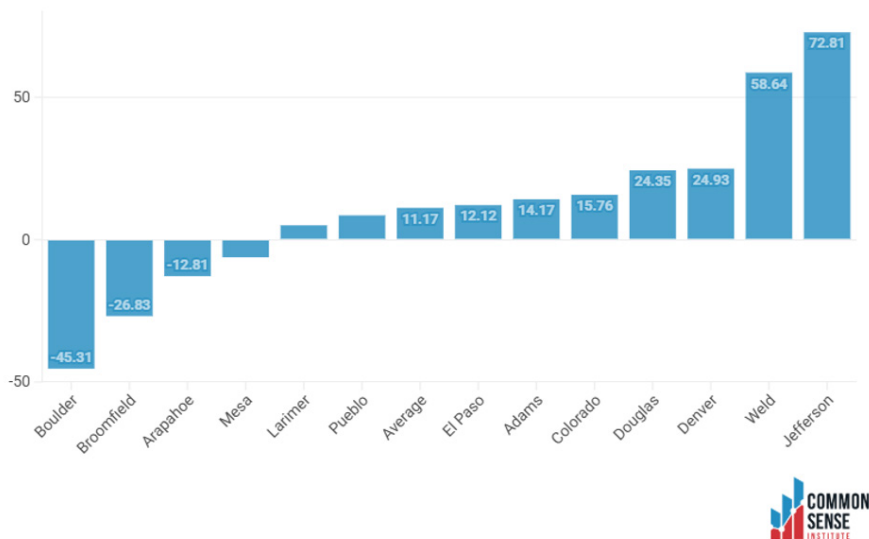
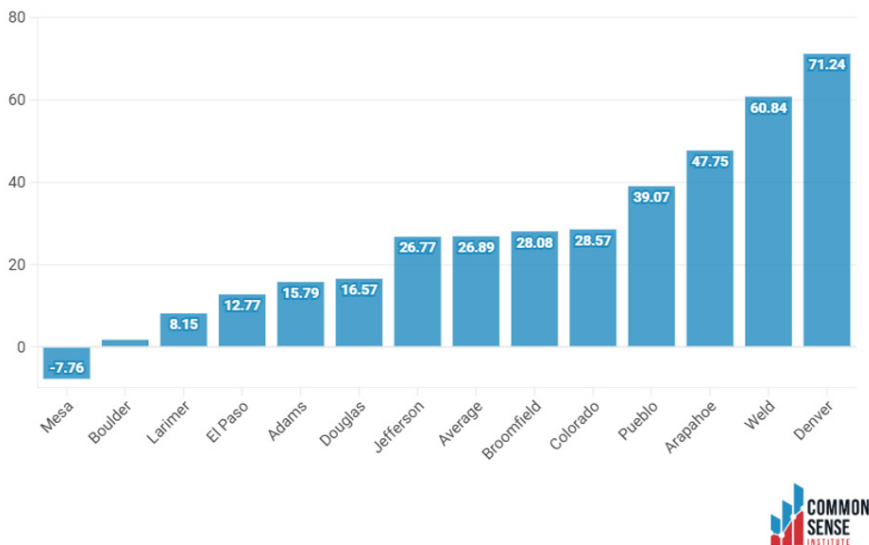


FIGURE 4

% Change in Annual Auto Theft Rate per 100,000

2019-2024



THE AURORA EXPERIENCE WITH AUTO THEFT

In July 2022, Aurora's City Council approved new mandatory minimum sentences for convictions related to stealing a carⁱⁱ. The ordinance, which initially had an effective length of two years, was renewed in 2024ⁱⁱⁱ.

With an effective date of August 2022, the policy shift offers an opportunity to review the effect the policy had on motor vehicle theft in Aurora in relation to other cities. It is also worth noting that the state also took on the issue of auto theft in 2023 with passage of SB23-097^{iv}. This bill did not implement mandatory minimum sentences, but instead made it a felony to commit auto theft regardless of the value of the vehicle. It went into effect July 1, 2023.

Figure 5 shows the rate of motor vehicle theft per 100,000 residents for 18 of the 20 largest cities in Colorado.^v (Two cities did not provide sufficient police data for a comparison.) The city of Aurora is red. Highlighted in yellow is the period in which the new ordinance has been in effect.

In Aurora, motor vehicle theft per 100,000 residents generally floated in the 20 to 40 range from 2008 through most of 2016. In the fall of 2016, motor vehicle theft began to rise until it reached a new, somewhat stable level in the 40 to 60 range through February 2020.

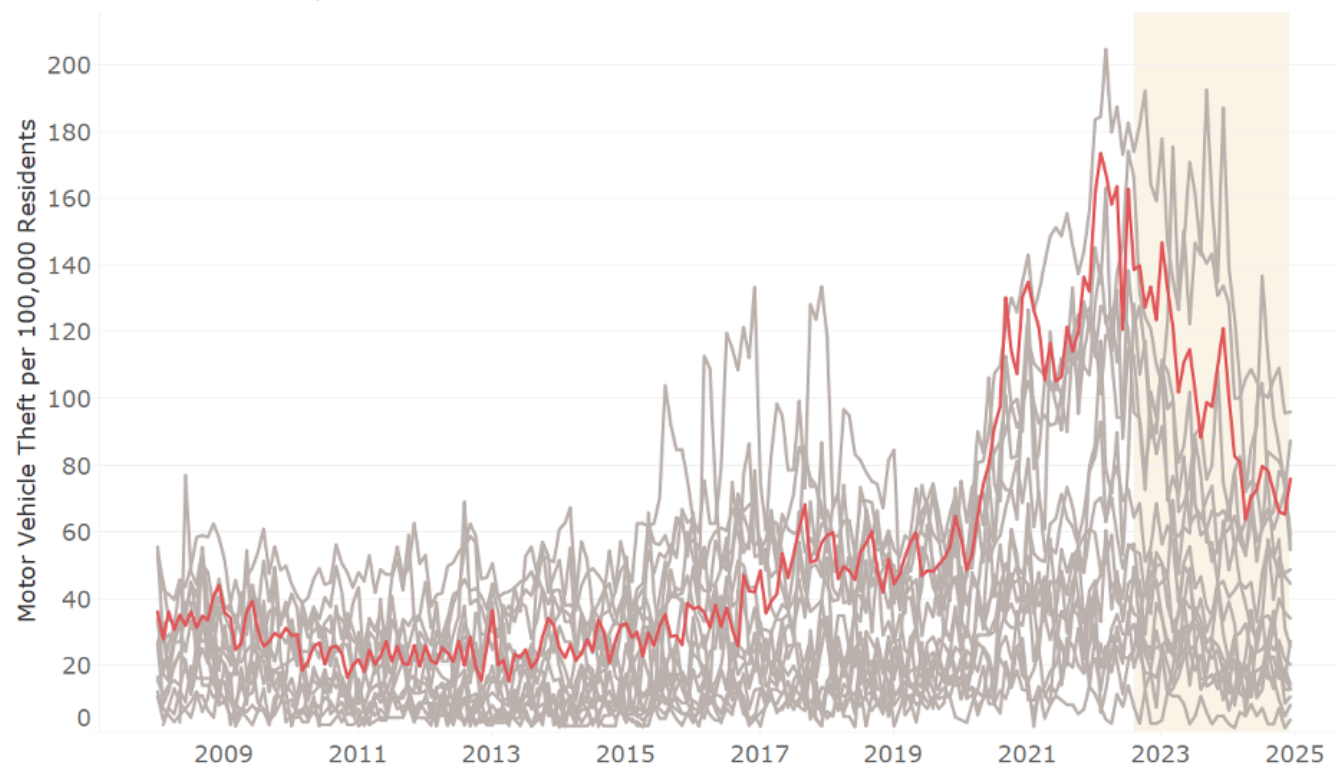
The acute phase of the pandemic period, from March 2020 through February 2022, saw motor vehicle theft balloon in the city, reaching a peak of 173.4 offenses per 100,000 residents in February 2022. The second and third-highest months of all time occurred in May and July 2022. Since then, motor vehicle theft has generally trended downward, ending 2024 at 75.8 per 100,000 residents. That number was quite high by historical comparison, but lower than the enormous rise seen from 2020 through the first half of 2022.

Up until August 2022, the general trends in motor vehicle theft in Aurora are somewhat similar to other municipalities, which, again, are also shown in Figure 5.

The question is whether motor vehicle theft dropped more quickly in Aurora than in other cities after the implementation of the July 2022 ordinance that increased the penalty for auto theft to a mandatory minimum sentence.

FIGURE 5

Motor Vehicle Theft per 100,000 Residents



Incident Date

- Aurora Police Department
- Arvada Police Department
- Boulder Police Department
- Broomfield Police Department
- Castle Rock Police Department
- Centennial Police Department
- Colorado Springs Police Department
- Commerce City Police Department
- Denver Police Department
- Fort Collins Police Department
- Grand Junction Police Department
- Greeley Police Department
- Lakewood Police Department
- Loveland Police Department
- Parker Police Department
- Pueblo Police Department
- Thornton Police Department
- Westminster Police Department

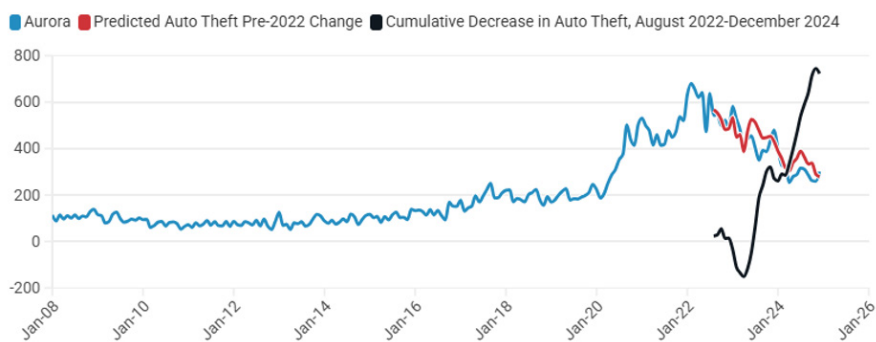
Effect of Mandatory Minimum Sentence

To investigate the effect of mandatory minimum sentencing in Aurora, we employed a market model and the share of total auto thefts in the market. Our results are reported in Figure 6 and Figure 7. They suggest that, since August 2022, auto thefts declined by 6% more in the Aurora area than in other large cities after accounting for the drops in other cities. Appendix A offers details of the methodology.

FIGURE 6

Aurora Change in Auto Theft from July 2022 Ordinance Change

The blue line is auto theft in Aurora from 2008 to December 2024. The red line is the predicted auto theft in Aurora using the "market" for auto theft across the top 18 cities with reported data. The black line is the cumulative difference between actual auto thefts and predicted auto thefts from August 2022 through December 2024. The July 2022 ordinance reduced auto theft by 723.



Source: Colorado Crime Stats, CSI Research & Modeling

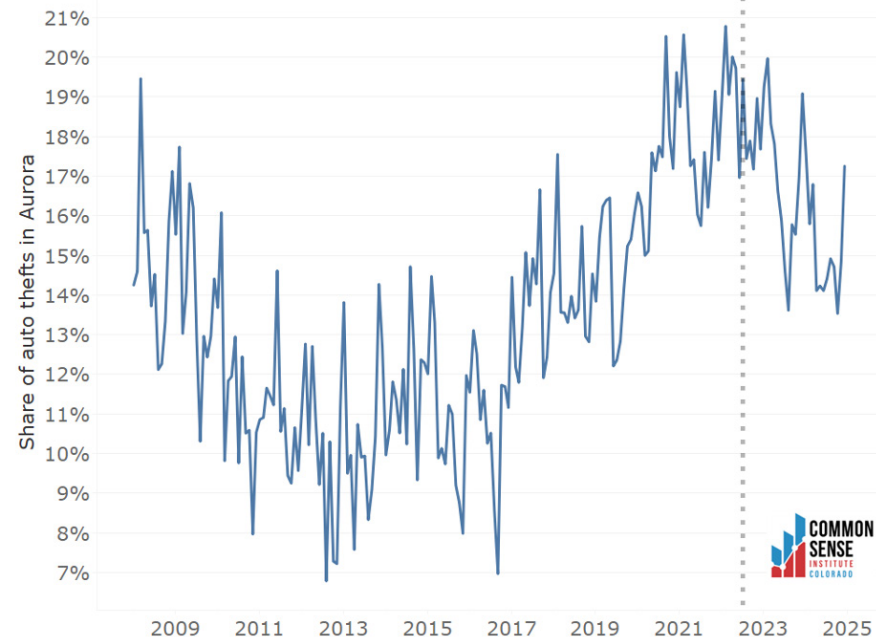


Share of Total Auto Thefts in the Top 18 Cities

A second scope through which to view the impact of Aurora's ordinance is the share of auto thefts in municipality relative to the other cities. In July 2022, Aurora stood at 19% of total auto thefts. Since the passage of the Aurora ordinance, auto thefts in Aurora have averaged 16% of total auto thefts.

FIGURE 7

Share of auto thefts in Aurora



THE STATE'S RESPONSE TO AUTOMOBILE THEFT

The Impact of SB23-097

As noted earlier in this paper, the state's bipartisan response to rising and continually high automobile theft was to make auto theft a felony regardless of the value of the vehicle. That bill went into effect on July 1, 2023. To inspect the impact of the Colorado Legislature's response, we performed a Chow test on the historical experience of crime with the test looking at whether the trend in automotive theft from the pre-July 2022 period changed after passage of SB 23-097.

As Figure 8 shows, the result of the Chow test suggested there was a "structural break" in auto thefts post-July 2023, meaning the state policy may have had an effect on the number of thefts as well. (See Appendix B for details.)

How large was effect? Using the change in the coefficient, state policy may have reduced auto thefts by 3% — in other words, not as much as the Aurora experience, but still an impact. Given that many factors impact crime, further multifactor research is needed to confirm the differentiated trends.

FIGURE 8

Colorado Motor Vehicle Theft



COST OF CRIME IN COLORADO

Economic Savings from Automobile Theft

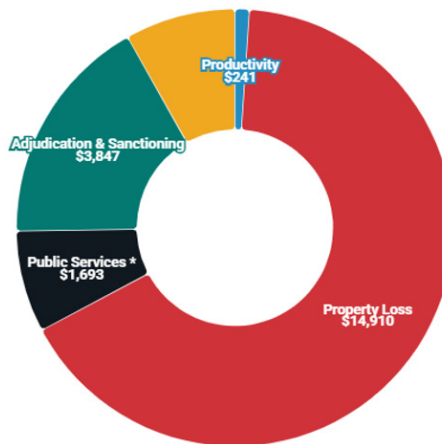
Finding and penalizing individuals committing auto theft is expensive. Using a cost-benefit model for the cost of crime developed by T.R. Miller and his fellow researchers in 2017,^{vi} we estimate Aurora's ordinance reduced the economic cost of reported crime by \$16.3 million.

Figure 9 provides a breakdown of a single incident of auto theft. The largest cost of auto theft is property loss (\$14,910), followed by the cost of adjudication and sanctioning (\$3,847) and public services (\$1,693).

FIGURE 9

Economic Cost of Auto Theft: The Case of Aurora

August 2022 - December 2024



Savings from a 6% Drop for Shoplifting, Overall Crime

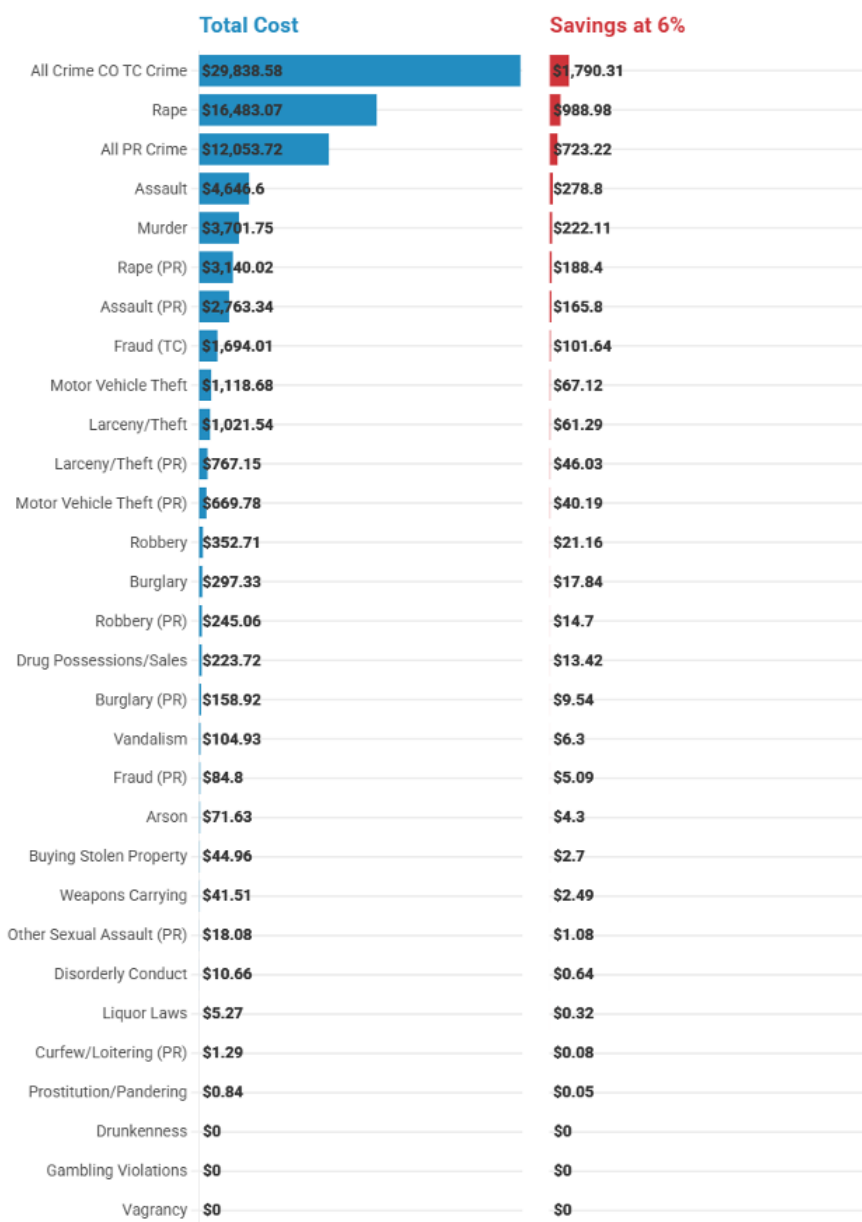
The Aurora experience demonstrates that, if Colorado were to adopt tougher stances on all types of crime, overall crime rates would fall materially and the savings would be significant. In fact, as Figure 10 shows, with a 6% drop in crime, the state could have saved \$1.8 billion in 2024. The economic savings from a 6% drop in theft/larceny would have been \$107.3 million last year from police reported and non-police reported crime. These figures stem from research developed by the previously mentioned T.R. Miller^{vii} and developed further by CSI. The estimates include estimates for social costs such as medical care, mental healthcare, productivity, property loss, public services, adjudication and sanctioning, perpetrator work loss, and quality of life.

FIGURE 10

Cost of Crime in Colorado and the Potential Savings

Should the Aurora auto theft example be indicative of the potential for broader crime savings, the potential savings @ 6% is \$1.8 billion.

In millions \$



Source: CSI Research, Colorado Crime Statistics



BOTTOM LINE

Overall, crime in the state is still above its pre-pandemic level, but, based on the impact of the City of Aurora's ordinance change, which introduced mandatory penalties for automobile theft, crime and the costs associated costs of it could be brought down.

APPENDIX A: MARKET MODEL

Commonly used in financial markets analysis to estimate abnormal returns^{viii}, a market model is an event study that compares the change in auto theft in Aurora to the change in auto theft for the entire auto theft market. For this study, the entire auto theft market is represented by the top 18 cities with comparable auto theft figures.

Formally, the model is:

$$\text{Auto Theft}_{\text{Aurora},t} = \alpha_i + \beta_i \text{Market}_{\text{mt}} + \epsilon_{it}$$

where $\text{Auto Theft}_{\text{Aurora},t}$ is auto theft in Aurora for period t , $\text{Market}_{\text{mt}}$ is the count of auto thefts in the market for period t , α_i is the intercept of the model not attributable to the market and ϵ_{it} is the error term. This model is estimated for the period from January 2008 through July 2022 and produces the following results.

Dependent variable: Auto thefts in Aurora

Period: Jan 2008 to July 2022

Adj. $R^2 = 0.93$

F-statistic: 2303

p-value = 2.2×10^{-16}

Intercept: -90.32

Market coefficient: 0.256

After deriving the coefficients, the model then produces forecasts for the number of auto thefts in Aurora using what happened with the market over the period August 2008 to December 2024.

The difference between the market estimated number of auto thefts in Aurora and the actual number of auto thefts is attributed to the July 2022 ordinance passed by the Aurora City Council.

APPENDIX B: STATE POLICY IMPACT – STRUCTURAL BREAK

Using a Chow test on a simple model where the auto theft is a function of a constant and the first lag of auto thefts. Group1 is the period through July 2022 and Group2 is the period after. Further multifactor research will be helpful in confirming these results.

Linear regression

MotorVehicleTheft	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
Lag1_group1	.992	.012	81.22	0	.968	1.016	***
Lag1_group2	.959	.017	56.55	0	.926	.993	***
Constant	28.015	24.633	1.14	.257	-20.558	76.588	
Mean dependent var	1846.330		SD dependent var	995.507			
R-squared	0.973		Number of obs	203			
F-test	3545.822		Prob > F	0.000			
Akaike crit. (AIC)	2653.785		Bayesian crit. (BIC)	2663.725			
*** p<.01, ** p<.05, * p<.1							

SOURCES

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- v. Highlands Ranch and Longmont.
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- vii. Ibid
- viii. The Econometrics of Financial Markets by John Campbell, Andrew Lo, and MacKinlay