Projecting Illinois Crime Rates and the Impact of Further Prison Population Reductions

James Austin, Richard Rosenfeld, and Todd Clear

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November 2020

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Abstract

Illinois is one of several states considering how to reduce its prison population amid the pandemic and calls for an end to mass incarceration. In recent years, the state has taken steps to reduce its prison population through judicial discretion, bail reform, and diversion programs.

As Illinois' prison population declines and policymakers, prosecutors, and courts consider alternatives to incarceration, what is the risk to public safety? Is crime likely to increase or decline in the state as those convicted of crimes are released or diverted to other programs?

In this study, funded by The Harry Frank Guggenheim Foundation, the authors conclude that Illinois crime rates, which have been on the decline since the 1990s, will continue to decline in a fluctuating pattern, with moderate year-to-year changes. This will be true even if Illinois reduces its prison population by an additional 25% over five years.

The authors reached this conclusion by constructing a quantitative model that accounts for Illinois crime trends over nearly four decades and provides a basis for predicting crime rates in the near future.

This study is a companion to the 2020 Harry Frank Guggenheim Foundation report **Explaining the Past and Projecting Future Crime Rates***, which examined national crime trends and reached similar conclusions about crime rates in the near future.*

Key Findings

Past and Projected Illinois Crime Trends

— Since the mid-1990s, crime rates in Illinois for both violent and property crime have steadily declined. The current rates are about the same as those in the mid-1960s.

— As with the national drop in crime, the Illinois drop is primarily related to macro-level economic (e.g., inflation, unemployment) and demographic (e.g., fertility, divorce, teen births) factors.

— These economic and demographic factors are likely to continue to suppress crime rates further over the next five years.

— COVID-19 will influence future crime rates through a) the downsizing of the state prison and local jail populations and b) its effect on unemployment. While these effects are difficult to predict, they are likely to be short-term as mitigating restrictions are relaxed. Current social unrest in response to police violence is also likely to affect crime rates in ways that are difficult to predict.

Impact of Illinois Imprisonment on Past and Projected Illinois Crime Rates

— Changes in the Illinois prison, county jail, county probation, and state parole populations have had no sizable impact on Illinois crime rates.

— The Illinois prison population dropped from 48,000 in 2015 to about 38,000 by March 2020. This was largely due to Illinois' Neighborhood Safety Act, bail reform in Cook County, and reductions in drug arrests.

— As with other populous states, the decline in the Illinois prison population occurred as the crime rate declined.

— An additional 25% reduction in the Illinois prison population could be achieved without raising the Illinois crime rate.

Conclusion: Under current macro-level demographic and economic trends, crime will continue to decline in a fluctuating pattern, with moderate year-to-year changes. This will be true even if Illinois continues to downsize its prison population.

Introduction

Major changes in America's crime rates have occurred since the 1960s. After several decades of relative stability, a significant, unanticipated uptick in crime began in the mid-1960s, reaching historic peaks in the early 1980s and then again in the early 1990s. Between 1960 and 1991, crime rates more than tripled. Then suddenly—and just as unexpectedly—crime started what became a long and steady decline, eventually returning to mid-1960 levels.

This historical volatility of crime makes today's policymakers question whether rates will continue their current decline, stabilize, or begin once again to increase. The ability to forecast near-term changes would be immensely useful to those responsible for choosing among crime policy options. While a reasonable body of research has identified factors associated with past crime rates,[1] little attention has been paid to projecting future crime rates.

With funding from The Harry Frank Guggenheim Foundation we developed a model for predicting crime rates based on factors that were associated with the rapid increase and subsequent decline in the national crime rate.[2]

To arrive at that model, we assessed the relative impact on crime of factors in four sectors:

Demographic Sector

— Percent of population age 15-24

— Fertility rate

— Teen birth rate

— Divorce rate

Economic Sector

— Inflation rate

— Unemployment rate

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1 ROSENFELD, RICHARD. 2011. "CHANGING CRIME RATES." IN *CRIME AND PUBLIC POLICY*, EDITED BY JAMES Q. WILSON AND JOAN PETERSILIA. NEW YORK: OXFORD UNIVERSITY PRESS.
2 JAMES AUSTIN, TODD CLEAR, AND RICHARD ROSENFELD. 2020. *EXPLAINING PAST AND PROJECTING FUTURE CRIME RATES*. NEW YORK, NY: THE HARRY FRANK GUGGENHEIM FOUNDATION. HTTPS://HFG.ORG/PAST_AND_FUTURE_CRIME.HTML

Social Sector

— Residential vacancy rate

— Higher education rate

Criminal Justice Sector

— Imprisonment rate

— Jail incarceration rate

— Probation rate

— Parole rate

We determined that a model that included demographic, social, and economic factors had the greatest power to explain past variation in national crime rates. That model also indicated that changes in correctional populations were not consistently related to changes in crime rates over time. Because the data in this crime model are readily available at the state level, we can now estimate with reasonable confidence how policies designed to increase or reduce incarceration are likely to affect future crime rates within a specific state.

This report presents the crime and incarceration projections for the state of Illinois.

Illinois Crime and Imprisonment Trends

Like most states, Illinois has undergone a rapid initial rise and then subsequent fall in crime rates since 1960 (Figure 1). Currently, both U.S. and Illinois UCR crime rates have fallen to levels last seen in the early 1960s. (See Appendix A for a description of the crime data used in this study.)

FIGURE 1. U.S. AND ILLINOIS CRIMES PER 100,000 POPULATION, 1960-2018
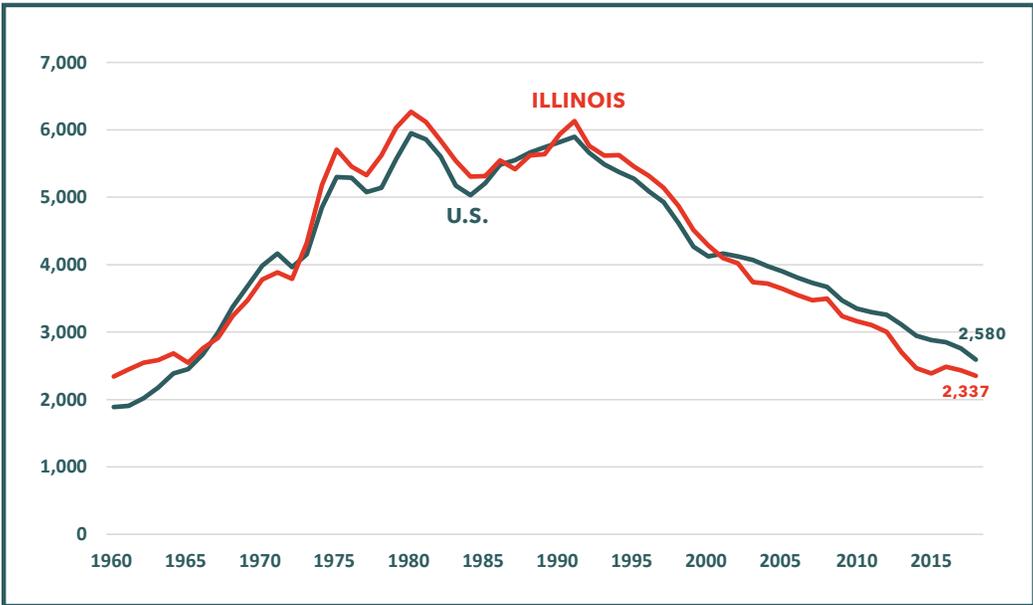
SOURCE: UNIFORM CRIME REPORTS

What was the role of incarceration in this pattern of crime rates? If increased reliance on incarceration tends to reduce crime rates, then all else equal we should observe that crime rates drop when incarceration rates grow. As shown in Figure 2, however, that is not what has occurred over the last 50 years. Imprisonment rates rose rapidly both nationally and in Illinois from the late 1970s through the end of the twentieth century. Yet as these rates grew, crime rates fluctuated in an essentially flat trend through the 1980s, and they did not begin to fall until the early 1990s. By contrast, incarceration rates plateaued around 2000 and then started to decline. In other words, when it comes to incarceration and crime over the last 50 years, sometimes both went up, sometimes both went down, and sometimes one went up while the other went down. It is not apparent that more incarceration produces less crime, or the reverse.

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FIGURE 2. U.S. AND ILLINOIS PRISONERS AND CRIMES PER 100,000 POPULATION, 1978-2018
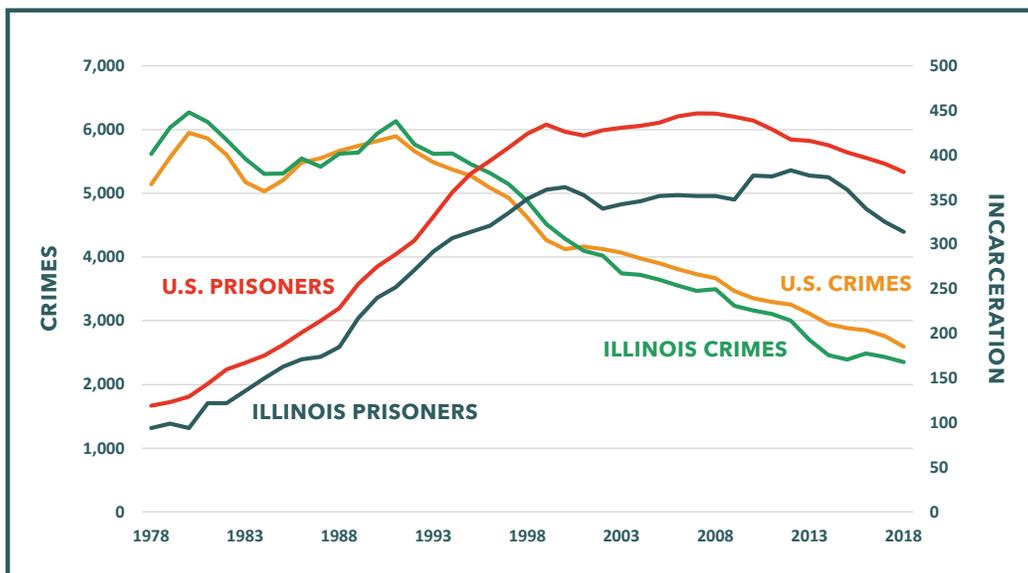
SOURCE: UNIFORM CRIME REPORTS; BUREAU OF JUSTICE STATISTICS

Indeed, some states have significantly lowered their prison populations while also seeing significant declines in their crime rates (see Table 1). New York and New Jersey, for example, lowered their prison populations by a third or more while their crimes rates dropped by about half.

TABLE 1. PRISON POPULATION AND CRIME RATE REDUCTIONS IN NEW YORK, NEW JERSEY, CALIFORNIA, AND MARYLAND

	NY	NJ	CA	MD
Year Reforms Initiated	1999	1999	2006	2008
Prison Population Before Reform	72,899	31,493	175,512	23,239
2018 Prison Population	46,636	19,362	128,625	18,856
Prison Reduction	−26,263	−12,131	−46,887	−4,383
% Reduction	−36%	−39%	−27%	−19%
UCR Crime Rate Before Reform	3,279	3,400	3,743	4,126
2018 Crime Rate	1,791	1,613	2,828	2,502
Crime Rate Reduction	−1,488	−1,787	−915	−1,624
% Reduction	−45%	−53%	−24%	−39%

SOURCES: BUREAU OF JUSTICE STATISTICS, PRISONERS SERIES AND UCR CRIME IN THE UNITED STATES SERIES

Likewise, Illinois has witnessed simultaneous declines in its prison population and crime rates, though more recently than other states (see Figure 2). Its prison population and admissions steadily increased through 2005, at which time prison admissions began to decline. An uptick in the length of stay (LOS) caused by a change in Meritorious Good Time (MGT) credits[3] kept the Illinois prison population growing, even as prison admissions were declining (see Figure 3).

FIGURE 3. ILLINOIS PRISON ADMISSIONS, PRISON POPULATION, AND LENGTH OF STAY, 1985–2020
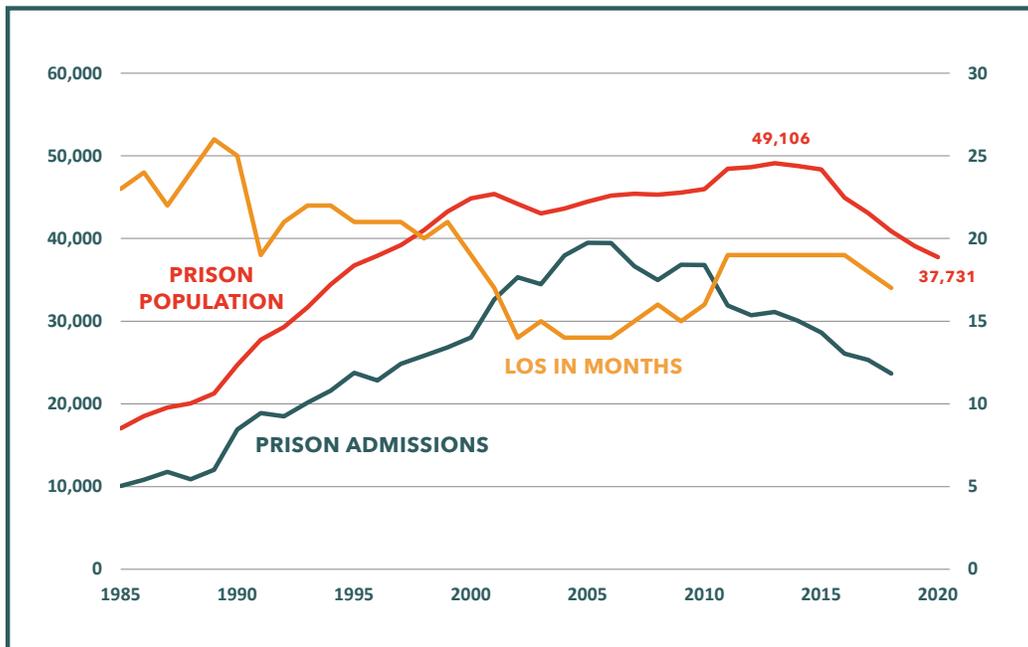
SOURCE: BUREAU OF JUSTICE STATISTICS

In 2017, Illinois Governor Bruce Rauner signed into law Senate Bill 2872, also known as the Neighborhood Safety Act. This bipartisan legislation inhibited two of the main drivers of incarceration in Illinois:

1. the state's "truth-in-sentencing" statute, which had limited the amount of credit toward release that those convicted of certain offenses were eligible to receive, and

2. the large number of people admitted to state prison for lower-level crimes requiring short sentences of imprisonment.

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3 MGT CREDITS WERE REDUCED AFTER THE APPEARANCE OF PRESS REPORTS OF PRISONERS CONVICTED OF VIOLENT CRIMES BEING AWARDED SUBSTANTIAL AMOUNTS OF CREDIT. HTTPS://WWW2.ILLINOIS.GOV/IDOC/DOCUMENTS/MGT_08132010_REPORT.PDF

It was estimated that the legislation would lower the 2017 prison population from 43,000 to 39,000 by 2019. When bail reform was implemented in Cook County in 2017, the number of people sentenced annually to state prison from Cook County declined by 3,000.[4] The number of adult arrests and felony convictions, especially for drug crimes, also decreased.[5]

The various initiatives designed to reduce Illinois' prison population have worked largely as projected. The current prison population is about 38,000 (12,000 fewer than the peak of 49,000 in 2013) and, as shown in Figure 2, crime rates have continued the decline that started three decades ago.

Despite these impressive achievements—or perhaps because of them—there remains interest in lowering further the state prison and local jail populations. This can be accomplished slowly by further reductions in admissions. But the greatest potential lies in reducing lengths of stay, especially for people convicted of serious crimes who have already served a substantial portion of a very long sentence and no longer represent a significant risk of reoffending.[6]

A central policy concern is whether further prison population reductions can be achieved without undermining Illinois' gains in public safety. The remainder of this report addresses that question, using our crime model to predict the effect of further changes in incarceration rates on crime.

4   JAMES AUSTIN AND WENDY NARO. APRIL 2020. *WHY BAIL REFORM IS SAFE AND EFFECTIVE: THE CASE OF COOK COUNTY*. WASHINGTON, DC: THE JFA INSTITUTE.
5   DAVID OLSON. OCTOBER 2019. *RESEARCH ON PROBATION IN ILLINOIS: MACRO AND MICRO LEVEL PERSPECTIVES*. PRESENTATION MADE AT THE ILLINOIS PROBATION AND COURT SERVICES ASSOCIATION'S FALL CONFERENCE. CHICAGO, IL: LOYOLA UNIVERSITY CHICAGO.
6   JAMES AUSTIN, TODD CLEAR, ALISA MATLIN, JOHNETTE PEYTON, WENDY NARO-WARE, AND RICHARD ROSENFELD. 2018. *SAFELY REDUCING THE ILLINOIS PRISON POPULATION BY 25%*. DENVER, CO: JFA INSTITUTE.

Modeling Crime Rates

A statistical model that would guide policymaking must meet two requirements: it must be comprehensive, and it must be accurate. A comprehensive model incorporates as many of the known influences on the outcome as possible, given the available data. An accurate model yields estimates that are very close to the observed values of the outcome. Our models of change in Illinois crime rates stand up well against both of these criteria. They incorporate multiple demographic, social, and economic variables that influence crime rates, including the inflation rate, age composition of the population, divorce rate, measures of socioeconomic status, teen birth rate, and overall fertility rate (see Appendix B). They also incorporate, in addition to the imprisonment rate, other components of the correctional system (sentence length and rates of jail, probation, and parole), which have rarely been included in research on imprisonment and crime.

The model estimates year-to-year changes in the violent, property, and total Illinois crime rate between 1980 and 2017. One important finding of the modeling exercise is that changes in incarceration (increases or reductions) did not predict changes in violent crime—a point we return to later in this report. Incarceration does have a small effect on property and total crime.

FIGURE 4. OBSERVED AND PREDICTED TOTAL ILLINOIS CRIMES PER 100,000 POPULATION, 1983-2017
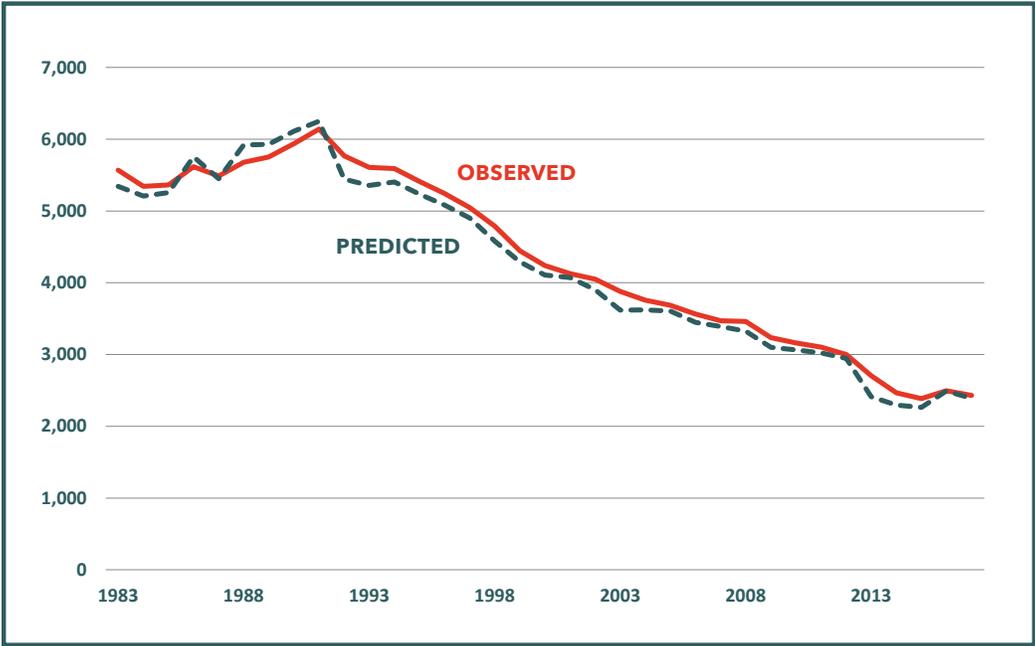
SOURCES: UNIFORM CRIME REPORTS; BUREAU OF JUSTICE STATISTICS; CENSUS BUREAU; BUREAU OF LABOR STATISTICS

As Figure 4 shows, the model of the total crime rate (violent plus property) fits closely the actual crime rate trend from 1983 to 2017. Said another way, the statistical model developed to predict the annual change in crime rate produces a 35-year predicted crime pattern that maps quite closely onto the observed pattern of crime. Both the observed and predicted levels of serious crime in Illinois have dropped by nearly 60% since peaking in the late 1980s.

While the long-term crime trend matters, year-to-year changes are of significant interest to policy-makers, because crime policy reforms tend to be driven by short-term changes in crime rather than the long-term trends. Yet in the short term, crime is relatively volatile. This can be seen in Figures 5 and 6, which show annual percentage changes in violent crime and property crime, respectively. Annual changes in violent crime fluctuate between -15% (1998-1999) and +13% (1985-1986). Property crime changes fluctuate between -11% (2012-2013) and +4% (1997-1998).

FIGURE 5. OBSERVED AND PREDICTED YEARLY CHANGE IN VIOLENT CRIME RATE, 1983-2017
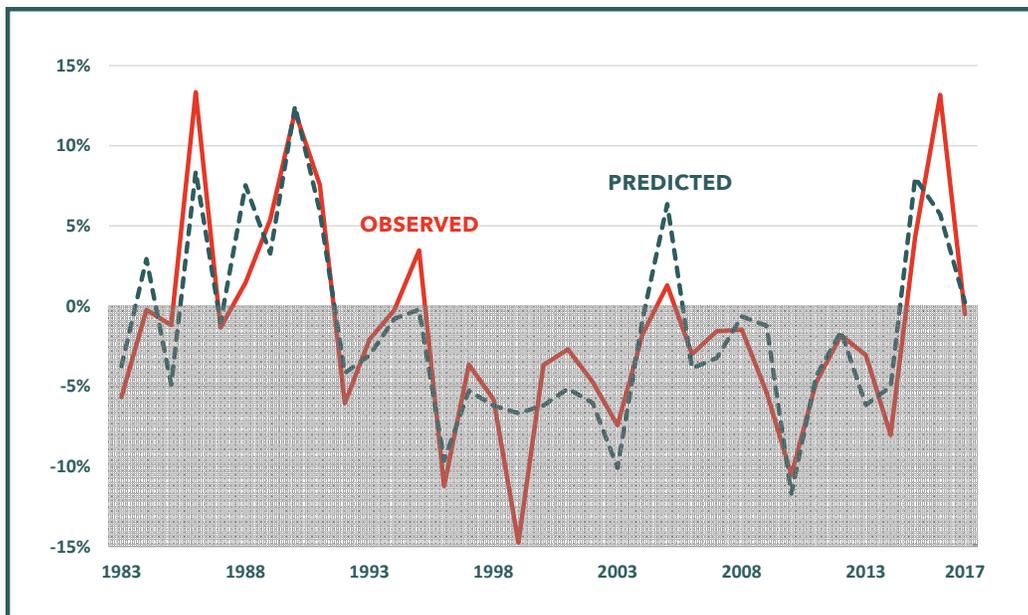
SOURCES: UNIFORM CRIME REPORTS; BUREAU OF JUSTICE STATISTICS; CENSUS BUREAU; BUREAU OF LABOR STATISTICS

Three conclusions can be drawn from Figures 5 and 6. The first is that volatility in violent crime rates is greater than for property crime rates. This is due, in large part, to the much smaller number of violent crimes, so that any changes are relatively larger in percentage terms in relation to the smaller base number. Second, year-to-year volatility can be deceiving. We have shaded the area of the graphs that corresponds to drops in crime. Most of the volatility is in the change

in size of a *drop* in crime—during our study period crime increases less frequently than it drops, especially property crime. Third, a policy alarm about a one-year rise in crime is often unwarranted. In this 35-year period, one year's increase in crime was far more likely to be followed the next year by a drop in crime than another increase.

FIGURE 6. OBSERVED AND PREDICTED YEARLY CHANGE IN PROPERTY CRIME RATE, 1983–2017
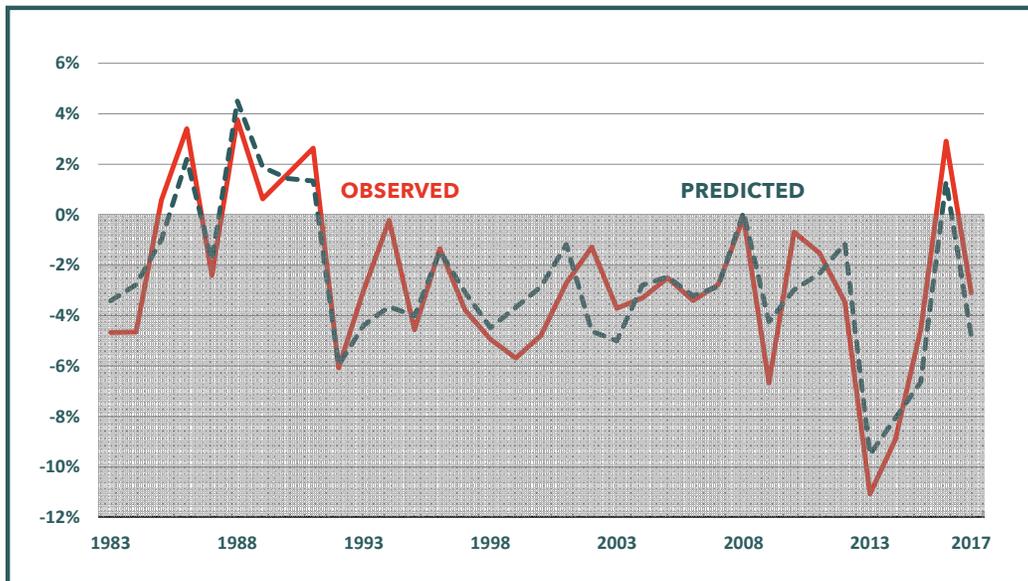
SOURCES: UNIFORM CRIME REPORTS; BUREAU OF JUSTICE STATISTICS; CENSUS BUREAU; BUREAU OF LABOR STATISTICS

The main point, that our model of changes in crime provides accurate predictions of the change in crime, is confirmed by Figure 4, above. The model receives further confirmation in Table 2, which compares the actual 2018 crime rate to the rate predicted by the crime model (built on data from 1983 to 2017). Although the model predicts slightly larger decreases in crime than were observed, it would have served as a highly reliable policy guide for Illinois crime levels in 2018.

TABLE 2. OBSERVED AND PREDICTED PERCENTAGE CHANGE IN ILLINOIS CRIME RATES, 2017–2018

	Violent Crime	Property Crime	Total Crime
Observed Change	–2.8%	–3.0%	–3.6%
Predicted Change	–3.4%	–3.8%	–4.6%

The Future of Crime in Illinois

The construction of an Illinois crime model enables us to provide a baseline estimate of the probable changes in Illinois crime rates beyond the 1980-2017 period on which the model is built. Table 2 showed that our models yield valid predictions of the crime changes that occurred in 2018. We now extend the predictions five years ahead to 2022.

Such predictions are always risky because they are based on crime-related factors whose future values are unknown. Predicting the future of crime, even in the near term, is especially difficult in the current period. The social response to the COVID-19 pandemic and the widespread unrest surrounding violent police actions are likely to influence crime rates in ways that are difficult to foresee. We take a conservative approach and, with one exception, base our projections of crime rates for the next five years on the average values of the crime covariates during the previous five years (2014-2018). The inflation rate, divorce and fertility rates, and age composition of the population do not change appreciably from one year to the next, and so these recent five-year averages constitute a conservative basis for the projections.

The exception is the unemployment rate. As a consequence of the pandemic, current unemployment levels are higher than at any time since the Great Depression and are likely to remain elevated for some time. To account for this, we assume that the Illinois unemployment rate in 2020 will be 10 percentage points higher than during the previous year and will drop by 5 percentage points in 2021 and by another 2.5 points in 2022. Because we treat this unemployment pattern as an assumption, we test how our crime rate projections are affected by reasonable departures from it. We include these tests as upper- and lower-bound estimates in our projection of the next five years' total crime rate (the combined violent and property rates).

Figure 7 presents those baseline crime projections added to the crime rate trend since 1983. It shows no major departure from the 30-year downward trend in crime. Our projection (the dotted green line) is that crime will first drop a small amount, then rise again a very small amount. To take into account the unprecedented nature of the current context (i.e., COVID-19, civil unrest), we offer a confidence interval bounded by "high" (red) and "low" (orange) projections[7] around

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[7] THIS 95% CONFIDENCE INTERVAL CAN BE INTERPRETED TO MEAN THAT, EVEN THOUGH THE PANDEMIC AND THE REACTION TO POLICE VIOLENCE WILL SHAPE CRIME IN WAYS THAT CANNOT BE FULLY KNOWN AT THE MOMENT, WE WOULD EXPECT 95% OF CRIME-RATE CHANGES TO FALL BETWEEN THE HIGH AND LOW ESTIMATES.

the predicted change. These alternative projections are intended to indicate that events could move the crime rate up or down compared to the baseline prediction.

FIGURE 7. OBSERVED AND PREDICTED ILLINOIS CRIMES PER 100,000 POPULATION, 1983-2017, WITH PROJECTIONS TO 2022
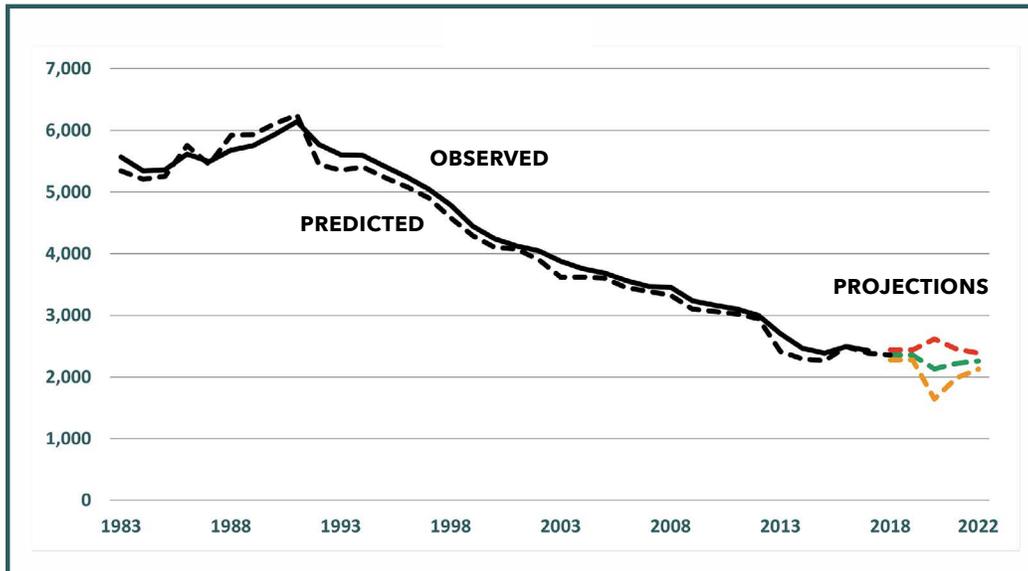
SOURCES: UNIFORM CRIME REPORTS; BUREAU OF JUSTICE STATISTICS; CENSUS BUREAU;
BUREAU OF LABOR STATISTICS

While Figure 7 shows that our model predicts a continuation of the drop in crime that has lasted for a generation, it is the year-to-year changes in crime that are more noticeable and more pertinent to policymakers, a point we made earlier. Figure 8 puts our projections in this short-term context.

We project essentially no change in the total crime rate in 2019, followed by a 10% drop in 2020. The preliminary data from the Illinois State Police show a 2% drop in the violent crime rate and 6% drop in property crime from 2018. The overall crime decrease between 2018 and 2019 is 5%.[8]

The projected 2020 crime decrease is almost entirely produced by the COVID-related 10% increase in the Illinois unemployment rate we assume will occur.[9] If that assumption proved invalid and unemployment were to increase even more, say by 15%, in 2020, then the predicted decrease in total crime would also be greater: about 14%. Either way, the crime rate is expected to decline in response to a substantial rise in unemployment, just as it did during the Great Depression of the

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[8] DATA PROVIDED BY DAVID OLSON, LOYOLA UNIVERSITY CHICAGO.
[9] CONTRARY TO COMMONLY HELD OPINION, INCREASES IN UNEMPLOYMENT ARE OFTEN ASSOCIATED WITH DECREASES IN CRIME, RATHER THAN INCREASES. THE CLASSIC STUDY IS DAVID CANTOR AND KENNETH C. LAND, 1985, "UNEMPLOYMENT AND CRIME RATES IN THE POST-WORLD WAR II UNITED STATES." *AMERICAN SOCIOLOGICAL REVIEW* 50: 317-332.

1930s and the Great Recession of the last decade. Of note, the total number of UCR crimes in Chicago through June 2020 shows a substantial decline (-18%), with most of the drop in property crimes (-23%). Violent crimes remained unchanged.[10]

In 2021 and 2022, when employment levels begin to recover, the crime rate in Illinois is expected to return to levels similar to those during the pre-pandemic period. If the employment recovery is slower than our models assume, the lowered crime rate will rise more slowly.

FIGURE 8. OBSERVED AND PREDICTED YEARLY CHANGE IN ILLINOIS CRIME RATE, 2000–2017, WITH PROJECTIONS TO 2022
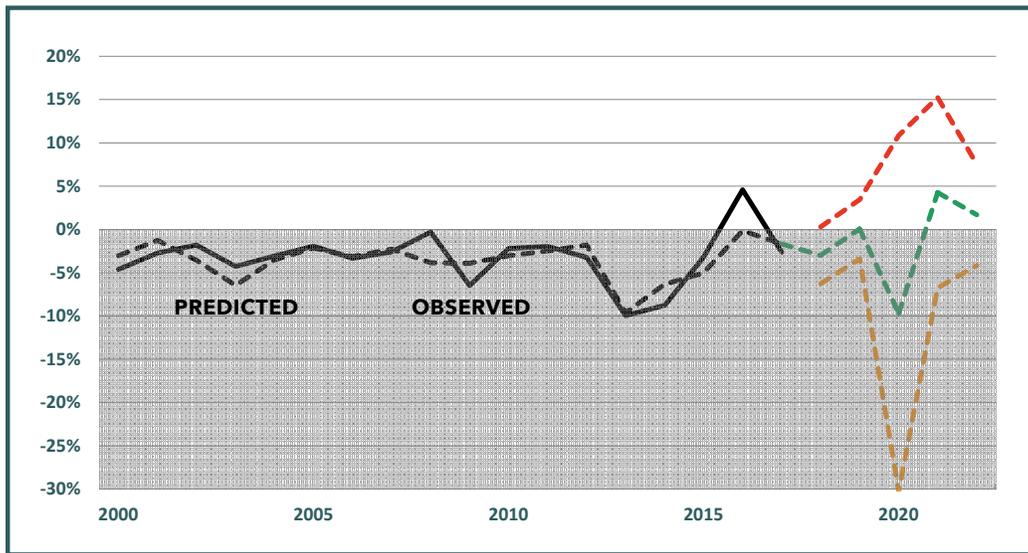
SOURCES: UNIFORM CRIME REPORTS; BUREAU OF JUSTICE STATISTICS; CENSUS BUREAU; BUREAU OF LABOR STATISTICS

The volatility of the current moment is well illustrated by the size of the confidence interval for predicted crime rates in the immediate future. We find, for example, that in 2020, crime rates conceivably could increase by about 12% or decrease by as much as 30%. This range seems daunting, but it needs to be interpreted appropriately. First, a 12% increase in Illinois's already low crime rate of 2,337 per 100,000 would mean 2,617 crimes per 100,000—still well below the historic high of 6,000 per 100,000 population in the 1990s. Second, the most likely pattern will be the predicted one (the dotted green line)—the farther away a year's prediction is from that line, the less likely it is to prove true. Moreover, another way to interpret this range is to note that most of the changes we predict indicate a *drop* rather than an increase in crime rates (the shaded area of the graph).

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10 DATA FROM CHICAGO POLICE DEPARTMENT.

The Impacts of Further Reduction of the Illinois Prison Population

Given this projected pattern in crime, what would be the public safety impact of a 25% reduction in the prison population below today's levels? History provides a glimpse of the most reasonable answer. The Illinois prison population has already been dropping from its 2013 peak. The 2018 rate of 314 per 100,000 is a roughly 18% decline from that peak. Thus, an additional 25% reduction in the imprisonment rate would simply extend the reductions of recent years—a period in which crime dropped by about one-sixth.

Our crime prediction model enables us to derive a more precise estimate of the impact of a further 25% imprisonment reduction. We assume that a decline of this magnitude would not occur in a single year—for purposes of modeling, we project a five-year planned reduction. This time frame is realistic, and it has the added benefit of providing ample time for policymakers and criminal justice officials to make mid-course corrections, if needed.

To conduct this assessment, we use the factors in the crime model to estimate what the total crime rate would be had Illinois policymakers decided in 2017 to reduce the imprisonment rate by 25% over the next five years. The projected crime rate through 2022 under this assumption is nearly identical to the rate without a 25% reduction in imprisonment.

This is an encouraging projection, but of course it is not possible to compare it to crime rates that have not yet been measured. We can increase our confidence in the model by carrying out the prison reduction experiment for a recent period, for which the crime and imprisonment rates are known. Assume now that Illinois policymakers had decided to reduce imprisonment by 25% over five years, beginning in 2014. We would have estimated that Illinois property and total crime rates would fall by 1-2% when in actuality they fell by 3-4%. (Figure 9).[11]

One notable implication of our analysis is how important it is to take account of the way non-incarceration factors affect crime. Their effect on crime changes is substantial. Our analysis suggests that, after accounting for these other effects, a 25% reduction in incarceration over this period

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11 AS WE POINTED OUT EARLIER, THE STATISTICAL MODEL PREDICTING CRIME SHOWS THAT CHANGES IN THE IMPRISONMENT RATE HAVE NO SIGNIFICANT EFFECT ON VIOLENT CRIME. THUS, OUR ASSESSMENT OF THE EFFECTS OF PRISON REDUCTION ON PUBLIC SAFETY IS LIMITED TO PROPERTY CRIME AND TOTAL CRIME (WHICH INCLUDES VIOLENT CRIME).

would be associated with a decrease in property and total crime of 1% to 2%. Stated another way, a meaningful further reduction in imprisonment in Illinois will likely have no impact on violent crime and effects on property and total crime that will be dwarfed by other factors.

FIGURE 9. ANNUAL CHANGE IN ILLINOIS CRIME RATE ASSUMING A 25% REDUCTION IN IMPRISONMENT RATE BETWEEN 2014 AND 2018
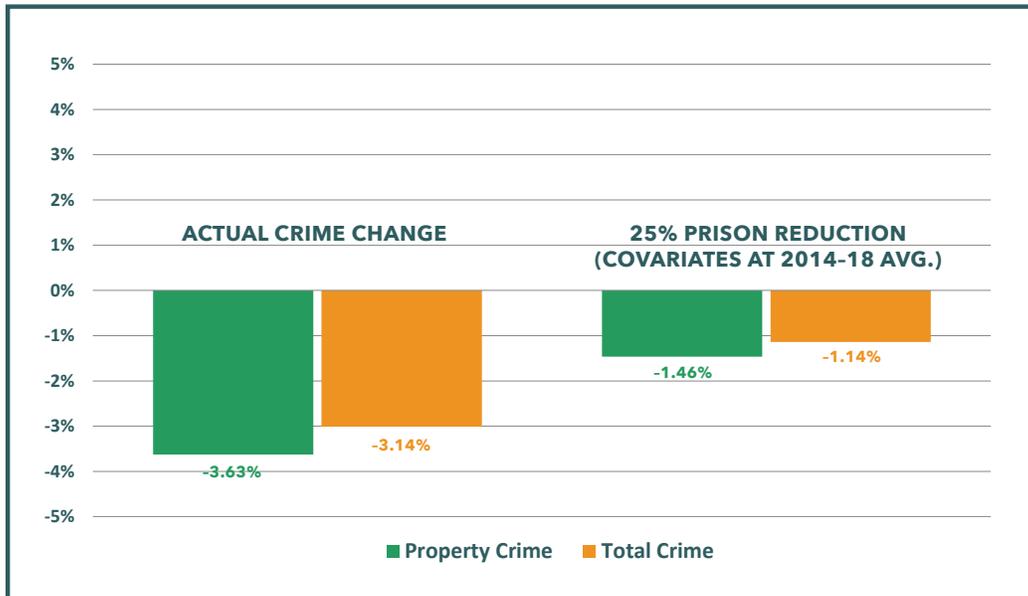
An online tool based upon our forecasting models (hfg.org/illinois_forecaster.htm) allows users to observe the effect on violent and property crime of altering levels of the predictive variables.

Key Takeaways

Our task in this report was three-fold. First, we constructed a model of crime in Illinois that would enable us to predict changes in crime rates into the near future. Second, we placed recent changes in Illinois' crime and incarceration in historical and national context. Third, we estimated the impact on crime of an additional 25% reduction in incarceration over five years.

The models we have presented indicate that under current macro-level demographic and economic trends, crime will continue to decline in a fluctuating pattern, with moderate year-to-year changes. This will be true even if Illinois continues to downsize its prison population.

Appendix A: Crime Data

There are two methods for establishing trends in crime in the United States. The longest-standing method is through the FBI's Uniform Crime Reports (UCR), which has been collecting data since 1931. The UCR is based only on incidents of the following eight crimes reported to and recorded by the police:

— Murder
— Rape
— Robbery
— Aggravated Assault
— Burglary
— Larceny
— Auto Theft
— Arson

UCR crime rates are expressed as crimes per 100,000 U.S. population as reported by the U.S. Census. The conventional use of a rate based on crimes per 100,000 tends to obscure the fact that the risk of being victimized by a serious crime is low. For example, the 2017 crime rate was 2,756 per 100,000, which means that only 2.7% of the U.S. population experienced one of the eight UCR crimes recorded by the police that year (or less if some persons reported more than one crime).

The UCR data only reflect incidents reported to and recorded as crimes by the police; they do not include crimes unknown to the police. To correct for this limitation, the Bureau of Justice Statistics of the U.S. Department of Justice began a new crime reporting program in 1973 that is based on a national survey of U.S. households. Known now as the National Crime Victimization Survey (NCVS), this survey counts all crimes against members of the sampled household aged 12 or older. The rates for the NCVS are higher than UCR rates but show the same general pattern of a significantly declining trend since the mid-1990s. Because the NCVS is a national survey, it cannot be used to compute state crime rates.

Appendix B: Models

Our statistical models for violent, property, and total crime rates in Illinois include multiple independent variables shown in prior research to influence crime rates. A somewhat different mix of variables is included in each of the three models to achieve the best fit to the observed data. The variables were selected from a dataset we compiled containing more than 20 measures of demographic, social, and economic factors in Illinois over the period 1980-2018. We incorporated each of these measures in the models in varying combinations until a final model was achieved that maximized model fit (based on the coefficient of determination). Each of the final models includes the following criminal justice measures:

— Prisoners per 100,000 population
— Average length of stay for prisoners
— Persons on parole per 100,000 population
— Persons on probation per 100,000 population
— Persons in jail per 100,000 population

Each of the models includes the following additional variables from the 1980, 1990, and 2000 decennial census (values are interpolated between census years) and the 2006-2018 American Community Survey (2001-2005 values interpolated):

— U.S. inflation rate
— Percent of the population age 15-24
— Births per 1,000 females age 15-24
— Births per 1,000 females age 15-44 (at 14 years before each prediction year)

The violent crime model also includes the following variables:

— Percent of the population age 25 and over with a four-year college degree or higher
— Percent of the population age 15 and over divorced

The property crime and total crime models also include the following variables:

— Percent of the population age 15 and over divorced
— Percent of housing units vacant

Data Sources

Crime data are from the FBI's Uniform Crime Reports and from the Illinois State Police. Corrections data are from the Bureau of Justice Statistics. Inflation data are from the Bureau of Labor Statistics. All other variables are from the decennial census and American Community Survey of the Census Bureau.

Authors

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The authors and The Harry Frank Guggenheim Foundation would like to acknowledge Professor David Olson of Loyola University Chicago and the John D. and Catherine T. MacArthur Foundation for their assistance in securing data used for this report.

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consequences, and reduction
of violence in its many forms, including war,
crime, and human aggression.