2022 Research Report

Social Policies as Crime Control

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SNS

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SNS – the Center for Business and Policy Studies, is an independent, non-profit organization founded in 1948 that aims to be Sweden's leading platform for objective debate and knowledge-sharing among decision-makers on key societal issues. SNS brings together representatives from the business community, public sector, academia, and politics. SNS takes no positions on policy issues, which supports its bridge-building role. Members include companies, public authorities, and organizations.

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Foreword

IN THIS REPORT, Randi Hjalmarsson, professor of economics at the University of Gothenburg, provides an overview of what research has to say on social policies as a means to reduce and control crime. She looks upon social policies as a complementary channel to criminal justice policies. Distinct from criminal justice policies that explicitly target crime, social policies include arenas such as education, early-childhood environment, labor market opportunities, healthcare, and welfare, all of which in themselves represent valuable policies but which might also have an impact on reducing and controlling crime.

Randi Hjalmarsson emphasizes the need to find causal evidence, not just correlations, on the relationship between the studied social policies and crime. In doing so, she evaluates available Swedish and international research and concludes by outlining potential Swedish policy reforms.

SNS hopes that this study may contribute to the current Swedish discussion on ways to reduce and control crime.

The author is solely responsible for the analysis, conclusions, and policy recommendations presented in the report. SNS as an organization does not take a position on these. The mission of SNS is to initiate and present research-based analyses of issues of importance for society.

The report is part of the SNS project Crime and Society, a project made possible through funding from a reference group that also follows the research project.

The reference group consists of Akavia, Avarn Security, City of Gothenburg, City of Malmö, City of Stockholm, Confederation of Swedish Enterprise, Fryshuset, Insurance Sweden, Mellby Gård,

MKB Fastighets AB, Swedish Bar Association, Swedish Enforcement Authority, Swedish National Courts Administration, Swedish Police Authority, Swedish Police Union, Swedish Prison and Probation Service, Swedish Property Federation, Swedish Prosecution Authority, Swedish Public Employment Service, Swedish Social Insurance Agency, Swedish Supermarket Owners' Association, Swedish Tax Agency. Martin Hällsten, professor of sociology at Stockholm University, is the SNS Scientific Council's representative in the reference group.

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At an academic seminar, Hans Grönqvist, professor of economics at Linnaeus University, provided constructive comments on the report.

SNS and the author are grateful to the reference group members, Hans Grönqvist, and the other participants in the academic seminar.

Stockholm in October 2022

Stefan Sandström
Research Director, SNS

Swedish Summary/ Svensk sammanfattning

FÖR ATT FÖRSÖKA minska brottsligheten kan politiska beslutsfattare använda sig av två verktyg: kriminalpolitik och socialpolitik. När de ställs inför ökande brottslighet tenderar de att välja det förstnämnda. Denna rapport visar att det finns en mängd socialpolitiska åtgärder som kan komplettera arbetet med att motverka brottslighet men att de ofta förbises.

Ett enkelt ramverk för varför både kriminal- och socialpolitik kan bidra till minskad brottslighet tillhandahålls i den ekonomiska modell av brottslighet som Gary Becker utvecklat. Personer som står inför valet att begå ett brott eller låta bli väger de förväntade kostnaderna och fördelarna med brottslighet mot att delta på den vanliga arbetsmarknaden. Kriminalpolitiska åtgärder som ökar sannolikheten att åka fast eller leder till hårdare straff avskräcker rationella brottslingar genom att öka den förväntade kostnaden för brottsligt beteende. Samma effekt kan dock även uppnås genom socialpolitiska åtgärder som ökar individens förväntade avkastning på arbetsmarknaden.

I rapporten används flera datakällor för att beskriva brottsutvecklingen och brottslingar i Sverige och andra länder. Brottslingar skiljer sig på många sätt från den övriga befolkningen, till exempel när det gäller utbildning, hälsa och psykisk hälsa, uppväxtmiljö, missbruk och anknytning till arbetsmarknaden. Svenska brottslingar skiljer sig i dessa avseenden inte från brottslingar i andra länder. Om det dessutom finns orsakssamband mellan dessa faktorer och kriminellt beteende kan socialpolitiska åtgärder som syftar till att mildra problemen vara ett sätt att minska brottsligheten.

Rapporten fokuserar på sju socialpolitiska områden – utbildning,

alkohol, tidig uppväxtmiljö, hälso- och sjukvård, sysselsättning, välfärd och värnplikt – och undersöker huruvida insatser på dessa områden kan utgöra potentiella sätt att minska brottsligheten. För varje enskilt politikområde besvaras fyra övergripande frågor:

1. På vilka sätt kan i teorin socialpolitiska insatser påverka brottsligheten?
2. Vilka utmaningar ställs den empiriska forskningen inför när den ska identifiera orsakssamband? Det är ju möjligt att se korrelationer även om det inte finns något bakomliggande orsakssamband. Socialpolitik baserad på samband som inte är orsakssamband kommer inte att leda till minskad brottslighet.
3. Finns det evidens för orsakssamband inom varje socialpolitiskt område när det gäller brottslighet? Denna fråga besvaras genom att granska den empiriska forskning som använder kvasiexperimentella upplägg för att reda ut skillnader mellan orsakssamband och korrelationer.
4. Hur bör svenska beslutsfattare reagera på dessa resultat? Vilka åtgärder bör de överväga och vilka frågor bör de ställa sig?

Utmaningar med att särskilja orsakssamband från korrelationer

Oavsett vilket socialpolitiskt område som studeras står forskare alltid inför två empiriska utmaningar när de ska försöka särskilja orsakssamband från samband som endast är korrelationer. Ett exempel: brottslingar har lägre utbildningsnivå än icke-brottslingar. Kan man då säga att kortare utbildning leder till brottslighet? Att en korrelation kan uppstå – även om det inte finns något underliggande orsakssamband – kan bero på att en utelämnad variabel bidrar till missvisande resultat. Vad det handlar om är att det kan finnas icke-observerbara individuella egenskaper (det vill säga egenskaper som inte observeras av forskaren och därmed inte är en del av analysen), såsom förmåga eller familjebakgrund, som påverkar både utbildningsresultat och valet att begå kriminella handlingar. En annan möjlig orsak till korrelationer är det som kallas för omvända orsakssamband: om kriminellt beteende påverkar utbildningsresultat kommer det att finnas ett samband mellan utbildning och brottslighet, även om kausaliteten inte går i den riktningen.

Kausala effekter av socialpolitik på brottslighet

Utbildning kan påverka brottslighet på flera olika sätt. Ökat humankapital kan leda till högre avkastning på arbetsmarknaden, vilket ökar alternativkostnaderna för kriminellt beteende (det vill säga att brottslighet blir relativt mindre lönsamt jämfört med att arbeta). Dessutom kan utbildning påverka brottslighet genom att ungdomar hålls borta från brott medan de är i skolan. En sådan effekt kan ytterligare minska brottsligheten i framtiden om det leder till att ungdomar hamnar på en bana som leder till minskad brottslighet. En stor mängd studier finner orsakssamband i form av att i) skolundervisning minskar möjligheten att begå brott, ii) mer utbildning minskar framtida brottslighet och iii) utbildning av högre kvalitet minskar brottslighet, i synnerhet för missgynnade grupper.

Alkoholkonsumtion kan påverka en individs kriminella beteende och risken att utsättas för brott på två sätt. Sett ur ett farmakologiskt perspektiv kan alkohol påverka en persons känslor, omdöme, beslutsförmåga och aggressivitet. Alkohol kan också påverka genom den plats man befinner sig på, vem man umgås med och när (exempelvis på en bar sent på natten tillsammans med andra berusade personer). Det finns bred empirisk evidens för att alkoholkonsumtion ökar såväl kriminellt beteende som risken för att drabbas av brott. Brottslighet påverkas också av politiska beslut som leder till förändrad alkoholkonsumtion. Många av dessa mekanismer gäller även för andra substanser, såsom narkotika, men eftersom narkotika i de flesta länder är olagligt gör det att bruket av narkotika faller under kriminalpolitik snarare än socialpolitik, och därmed hamnar utanför ramarna för denna rapport.

Tidig uppväxtmiljö innefattar många dimensioner som påverkar ett barns kognitiva och icke-kognitiva utveckling: fysisk miljö, uppfostran, förskola och utbildning, kost samt hälso- och sjukvård. Den tidiga uppväxtmiljön kan påverka brottslighet senare i livet om den till exempel påverkar utbildningsnivå och beslutsförmåga. I fokus för rapporten står orsakssambanden gällande tre aspekter i tidiga uppväxtmiljöer: blyexponering, kost och utbildning i unga år. Den empiriska forskningen finner följande orsakssamband: i) att bli exponerad för bly som barn leder till ökad brottslighet i vuxen ålder, ii) välfärdsprogram med fokus på att förbättra barns kost leder till minskad brottslighet och iii)

utbildningsprogram riktade till små barn i utsatta grupper leder till minskad brottslighet.

Fysisk och psykisk hälsa kan påverka brottsligheten genom flera mekanismer, inklusive ekonomiska (om dålig hälsa påverkar sysselsättning, löner eller humankapital), och genom att påverka personers förmåga att fatta kloka beslut. Den empiriska forskningen har funnit evidens för att hälso- och sjukvård (utanför fängelser) faktiskt har en inverkan: i) psykisk vård, ii) missbruksbehandling och iii) politiska åtgärder som gör hälso- och sjukvård mer tillgänglig eller billigare leder samtliga till minskad brottslighet.

Sysselsättning kan påverka brottslighet genom att öka alternativkostnaden för kriminellt beteende, hålla individer borta från att begå brott medan de är på jobbet samt minska ekonomiska problem genom att tillhandahålla en inkomst. Den empiriska forskning som analyseras i denna rapport betonar främst kopplingen mellan sysselsättning och brottslighet bland unga, eftersom personer som begår brott är som mest brottsligt aktiva under sin tid som unga vuxna. I forskningen återfinns två huvudsakliga orsakssamband: i) ökad arbetslöshet leder till ökad (egendomsrelaterad) brottslighet och ii) sommarjobbsprogram för högriskungdomar leder till minskad våldsbrottslighet.

Välfärdsprogram kan minska brottsligheten genom att lindra ekonomiska bekymmer. Men de kan också leda till ökad brottslighet om de uppmuntrar individer att inte delta på arbetsmarknaden. Till exempel skulle den effekt som förhindrar brott när man är på arbetet inte finnas. Sverige har redan omfattande välfärdsprogram. I denna rapport behandlas därför de kausala effekterna av välfärdsprogrammens tillhandahållande (och tar för givet att det går att få ta del av dem). Fokus ligger i synnerhet på tidpunkten för och hur ofta utbetalningar görs samt hur strikt den aktiva arbetsmarknadspolitiken tillämpas. Forskare har funnit att det går att minska brottslighet genom (i) att betala ut välfärdsstöd oftare, vilket kan hjälpa mottagarna att jämna ut sin konsumtion och (ii) strängare krav på att aktivt delta i arbetsmarknadspolitiska åtgärder.

Värnplikt kan leda till minskad brottslighet genom att hålla unga män borta från att begå brott. I teorin är effekten på brottslighet efter avslutad värnplikt tvetydig. Det skulle kunna leda till minskad brottslighet om ungdomar under värnplikten lär sig disciplin, om man får ordning på ungdomar på glid, förbättrar ungdomars sociala nätverk

och lär ut färdigheter som kan skapa mer gynnsamma utfall på arbetsmarknaden. Å andra sidan kan värnplikt leda till ökad brottslighet om individer blir mindre känsliga för våld, exponeras för negativt inflytande från kamrater och får sämre utfall på arbetsmarknaden. Den empiriska evidensen är spretig, men finner i allmänhet inte att värnplikt leder till minskad brottslighet. Faktum är att den viktigaste utvärderingen av svensk värnplikt på 1990-talet visar på en betydande ökning i brottslighet efter genomförd värnplikt. Denna ökning drivs av de mest utsatta i befolkningen. Utvärderingen visar att detta kan bero på negativa utfall på arbetsmarknaden och negativt inflytande från andra värnpliktiga.

Rekommendationer

Utbildning: En möjlighet är att utöka antalet obligatoriska år i skolan. Detta kommer dock inte att vara ett framgångsrikt sätt att minska brottsligheten om de mest brottsbenägna skolkar från skolan. Skolk är ett problem i Sverige. Därför bör beslutsfattare överväga åtgärder som syftar till att öka ungdomars närvaro i skolan. Beslutsfattare bör även fokusera på att öka kvaliteten på utbildningen samt minska skolkproblematiken i de mest utsatta områdena, såväl som att tillföra resurser som möjliggör till exempel ökad lärarkvalitet, minskad läraromsättning och minskad klasstorlek.

Alkohol: Historiskt sett har det funnits ett brett spektrum av politiska åtgärder för att reglera bruket av alkohol i Sverige. Även om alkoholkonsumtionen bland ungdomar har minskat, är den fortfarande på höga nivåer. Med tanke på sambandet mellan ålder och brottslighet bör beslutsfattare särskilt ha gruppen unga vuxna i åtanke. En möjlig åtgärd är att öka utbildningsinsatser och informationskampanjer riktade till ungdomar om riskerna med alkohol kopplade till brottslighet.

Tidig uppväxtmiljö: Sverige satsar redan betydande resurser på tidiga uppväxtmiljöer. De flesta program är tillgängliga för alla, inklusive förskola och skolluncher. Detta betyder däremot inte att alla barn åtnjuter samma höga kvalitet vad gäller tidig uppväxtmiljö. Beslutsfattare bör ställa sig frågan om det finns grupper (i) där graden av blyexponering under tidig uppväxt fortfarande är för hög, (ii) där man inte har råd med en näringsrik kost och (iii) där förskolor är av dålig kvalitet eller inte når tillräckligt många.

Hälso- och sjukvård: Psykiska problem och missbruk är vanligt bland kriminella. Även om de får vård och behandling i fängelse, bör målet vara att se till att dessa högriskgrupper också får denna vård utanför fängelset – allra helst innan de begår brott. Beslutsfattare bör överväga huruvida kvaliteten och nyttjandet av vård och behandling kan höjas i de mest utsatta områdena. Är det möjligt att nå personer innan de hamnar i fängelse?

Sysselsättning: Svenska beslutsfattare bör fokusera på att både öka ungdomars sysselsättningsgrad och utöka program som erbjuder ungdomar sommarjobb. Det skulle kunna handla om programmens storlek, men även om innehåll (beteendeterapi, jobbsökarkurser, mentorskap) och den grupp som programmen riktar in sig på (med tonvikt på högriskungdomar eller utsatta områden).

Välfärdsprogram: Beslutsfattare bör undersöka om tillhandahållandet av programmen kan reformeras på ett sätt som skulle kunna leda till minskad brottslighet. Det skulle till exempel kunna ske genom tätare utbetalningar i olika program eller genom utvidgade åtgärder för ett aktivt deltagande på arbetsmarknaden, i synnerhet sådana som riktar sig till unga vuxna.

Värnplikt: Beslutsfattare bör tänka igenom utformningen av dagens värnpliktsystem. Inte alla 18-åringar gör värnplikten – det finns här stor handlingsfrihet. De bör noga beakta både vem som väljs ut för att göra värnplikten (försöka undvika de med dåligt inflytande som kan ha negativa kamrateffekter) och hur värnpliktiga placeras tillsammans (återigen för att minimera negativa kamrateffekter). De bör också överväga att se till det att finns vägledning och rådgivning i slutet av tjänstgöringen för att underlätta inträdet på arbetsmarknaden.

Executive Summary

POLICY MAKERS can aim to reduce crime via two channels—criminal justice policies and social policies. They typically turn to the former as a response to rising crime. This report highlights that a wide range of social policies provide a complementary—but often overlooked—policy response.

Gary Becker's economic model of crime provides a simple framework for why both criminal justice and social policies can work as crime control channels. Potential offenders decide whether to engage in crime by weighing the expected costs and benefits of crime with participation in the legitimate labor market. Criminal justice policies that increase the probability of getting caught or severity of punishment deter rational offenders by increasing the expected cost of crime. But the same effect can be achieved by social policies that increase an individual's expected returns in the labor market.

I use a wide range of data sources to characterize both recent Swedish crime trends and offenders in Sweden and around the world. The offender population is negatively selected in many dimensions, including education, health and mental health, childhood environment, substance abuse, and labor market attachment. Offenders in Sweden are as negatively selected as those in other countries. Moreover, if these factors are causally related to criminal behavior, then social policies directed towards alleviating these problems can be used to reduce crime rates.

This report focuses on seven social policy arenas—education, alcohol, early childhood environment, healthcare, employment, welfare, and military conscription—to investigate as potential crime control channels. For each policy arena, I answer four broad questions:

1. Through what channels can these policies theoretically affect crime?
2. Correlations can be observed even if there is no underlying causal relationship. What challenges do empirical researchers face in identifying whether a causal effect exists? Social policies based on relationships that are not causal will not reduce crime.
3. Is there evidence of a causal relationship of each social policy arena on crime? I answer this question by reviewing a growing body of empirical research papers that use quasi-experimental research designs capable of disentangling causality and correlation.
4. How should Swedish policy makers react to these findings? What policies should they consider and what questions should they ask themselves?

Challenges to Disentangling Correlation and Causation

Regardless of the social policy arena studied, researchers consistently face two empirical challenges to disentangling causal relationships from ones that are just correlational. I illustrate these issues in the context of education. Criminals are less educated than non-criminals. Does less education cause crime? One reason a correlation can arise—even if there is no underlying causal relationship—is the so-called omitted variable bias. This refers to the possibility that there are unobservable individual characteristics (i.e., characteristics that are unobserved by the researcher and thereby omitted from their analyses), like ability or family background, that affect both educational attainment and criminal choices. Another potential reason for a correlational relationship is what we call simultaneity bias or reverse causality: if criminal behavior affects educational attainment, there will be a relationship between education and crime even if the causal channel does not run that direction.

The Causal Effects of Social Policies on Crime

Education can impact crime through multiple channels. More human capital can lead to higher labor market returns, thereby increasing the opportunity costs of criminal behavior (i.e., the benefits that could have been gotten from the next best behavior). Education can contemporaneously impact crime by incapacitating youths while they are busy in school. Such an incapacitation effect can further reduce crime in the future if it results in youths landing on a new lower crime trajectory. A large body of research finds causal evidence that (i) schooling incapacitates crime, (ii) more education reduces future crime, and (iii) higher quality education reduces crime, especially for disadvantaged high-risk populations.

Alcohol consumption can affect an individual's criminal behavior or risk of victimization through two channels. Pharmacologically, alcohol can affect an individual's emotions, judgement and decision-making abilities, and aggressiveness. Environmentally, alcohol can affect where one is, who they are with, and when they are (e.g., at a bar late at night with other drunk individuals). There is a wide range of empirical evidence that alcohol consumption causally increases criminal behavior and the risk of victimization. Crime responds to policies that change alcohol consumption levels. Though many of these mechanisms apply to other substances, like drugs, drugs are largely considered illegal substances and their use mediated by criminal law rather than social policies, and hence outside the scope of this report.

Early childhood environment includes many dimensions—physical environment, parenting, education/daycare, nutrition, and healthcare—that affect a child's cognitive and non-cognitive development. This early environment can affect crime later in life if, for instance, it affects traits like educational attainment and decision-making abilities. This report focuses on the causal effects of three aspects of early childhood environment: exposure to lead, nutrition, and early childhood education. The empirical literature finds causal evidence that these factors matter: (i) lead exposure as a child increases adult crime, (ii) welfare programs targeting early childhood nutrition reduce crime, and (iii) early childhood education programs targeted towards the disadvantaged population reduce crime.

Health and mental health can affect crime via multiple mechanisms, including economic channels (if poor health impacts employment, wages, or human capital) and by affecting one's ability to make sound decisions. Empirical researchers have found evidence that healthcare (outside of prison) does indeed have a causal impact on crime: (i) mental healthcare decreases crime, (ii) substance abuse treatment decreases crime, and (iii) policies that make healthcare more accessible or affordable decrease crime.

Employment can impact crime by increasing the opportunity cost of criminal behavior, incapacitating individuals while they are busy at work, and alleviating financial pressures by providing income. The empirical research surveyed in this report primarily emphasizes the employment-crime link of young individuals, since the age-crime profile peaks in young adulthood. Two main causal relationships are found. Increased unemployment increases (property) crime. Summer job programs for (high-risk) youth reduce violent crime. These effects are not just driven by the incapacitation channel.

Welfare can reduce crime by alleviating financial pressures. But it can also increase crime if it incentivizes individuals to stay out of the labor market. For instance, the incapacitation effect of working would, for instance, not occur. Sweden has a high level of welfare provision already. Thus, this report considers the causal effects of the structure of the welfare provision (taking that it will be provided as a given). In particular, I consider the timing and quantity of welfare payments and the stringency of active labor market policies. Researchers have found that crime can be reduced by (i) more frequent welfare payments that could help recipients smooth consumption and (ii) more stringent active labor market participation policies.

Military conscription can reduce contemporaneous crime by incapacitating young men at a high-risk age. The theoretical effect on post-service crime is ambiguous. It could decrease if conscription teaches discipline, straightens out troubled youth, improves social networks and teaches skills that can improve labor market outcomes. It could increase if individuals become desensitized to violence, exposed to a negative peer group, and have worse labor market outcomes. The empirical evidence is mixed, but generally does not find that conscription reduces crime. In fact, the main evaluation of Swedish conscription in the 1990s finds a significant increase in post-service

crime, which is driven by the most disadvantaged in the population, and provides evidence that this could be due to negative impacts on the labor market as well as negative peer effects.

Recommendations

Education: One possibility is expanding compulsory schooling requirements. But this will not be successful (as a crime reducing channel) if the most delinquent are truant from school. Truancy—student absence for illegitimate reasons—is a problem in Sweden. Thus, policy makers should consider policies aimed at increasing the presence at school of enrolled youths. Policy makers should also focus on the quality of schooling and truancy problems in the most disadvantaged neighborhoods, and consider policies that allow for increased operating and capital expenditures.

Alcohol: A wide range of alcohol regulation policies have been used in Sweden in the past. Though alcohol consumption amongst youths has decreased in Sweden, it is still at significant levels. Given that young adults are at the peak of the age-crime profile, policy makers should keep this population in mind. One possibility is to increase education and marketing campaigns about the crime-related risk of alcohol to youths.

Early Childhood Environment: Sweden already dedicates substantial resources to early childhood environment. Most programs are universal, including daycare and school lunches. But this does not mean that all individuals are exposed to the same high quality early childhood environment. Policy makers should ask whether there are sub-populations in Sweden for whom (i) early childhood lead exposure is still too high, (ii) providing adequate nutrition is unaffordable, and (iii) daycare is of poor quality or not taken up at high enough levels.

Healthcare: Mental health problems and substance use are prominent among offender populations. Though Sweden provides a high level of healthcare and treatment to these populations in prison, the goal should be to make sure these high-risk populations receive this care outside of prison—before they commit a crime. Policy makers should consider whether the quality and take-up of care and treatment can be increased in the most disadvantaged neighborhoods? Can individuals be reached before they end up in prison?

Employment: Swedish policy makers should focus on both increasing the youth employment rate and expanding summer youth job programs. Such an expansion could be with respect to the size of the program but also the content (behavioral therapy, job search training, mentorship) and population targeted (with an emphasis on high-risk youth or neighborhoods).

Welfare: Policy makers can consider whether the structure of welfare provision can be reformed in ways that potentially reduce crime, including making more frequent welfare payments or expanding active labor market participation policies, especially those targeted towards young adults.

Military Conscription: Policy makers can consider the structure of the conscription system today. Not every aged 18 youth serves—there is substantial discretion. They should carefully consider both who is chosen to serve (trying to avoid bad apples who can have negative peer effects) and how conscripts are placed together (again, to minimize negative peer effects). They should also consider providing guidance and counseling upon finishing service to aid in labor market entry.

1. Introduction

Economic Framework to Think about Crime Control

There are two main channels through which policy makers can aim to reduce and control crime—criminal justice policies and social policies not explicitly targeting crime. Gary Becker's (1968) economic model of crime provides a simple economic framework to view an individual's decision to commit a crime. In this model, which assumes that individuals make rational decisions, individuals decide whether to commit a crime by comparing the expected costs and benefits from criminal and legal activities. Basically, individuals will commit a crime if the expected utility from doing so is greater than the expected costs. Understanding what affects these expected benefits and costs highlights the various criminal justice and social policy levers available to control crime.

The expected costs of crime are a function of the probability of being caught as well as the severity and probability of punishment: as the probabilities of arrest and/or punishment increase and as the severity of punishment increases, the expected benefits of crime decrease. Thus, any criminal justice policy that affects these factors—e.g., increasing the number of police or the length of prison sentences—would be forecast by Becker's model to reduce crime via deterrence.

Another important component of the expected cost of crime in the economic framework is the associated opportunity costs of crime. What could be earned from working in the legitimate labor market instead? What legitimate earnings would be lost while incarcerated? It is here that many of the social policies discussed in this report are

first relevant: an individual's potential labor market returns are, for instance, a function of educational attainment, health, and labor market conditions and opportunities. Thus, any social policy that increases the opportunity cost of committing a crime can decrease an individual's criminal behavior.

The economic model of crime does of course have its limitations. For instance, an underlying (and sometimes criticized) assumption is that offenders are rational decision makers. Another potential caveat is that policies will only have the intended effect if potential offenders are aware of the reform and update their beliefs accordingly: in other words, it is an offender's subjective or perceived expectations that matter. Finally, there are of course many policies, e.g., abortion laws, outside of the economic model of crime (or at least less obviously connected to it), that can also affect crime. But, this simple framework does provide a uniform starting point to think about many policies and channels.

Social Policies versus Criminal Justice Policies

This report will highlight many channels through which social policies can be used to reduce crime. Of course, whether a policy will be effective in reducing crime (and the above described associated costs of crime) is not the only consideration when evaluating policy options. Clearly another important input is the expected cost of the policy. Though this report will only discuss the impacts on crime in detail, I take the opportunity here to highlight why many economists argue that social policies may be an overlooked and cost-effective crime-control channel (e.g., Cook and Ludwig, 2011).

The first fact to keep in mind is that criminal justice is expensive. The Prison Policy Initiative estimates that in the United States, the direct costs of running the corrections system (which includes prisons, jails, parole, and probation) are more than 80 billion U.S. dollars per year; these are just the direct costs and do not include indirect costs, for instance, on the families of incarcerated individuals. Moreover, incarceration is just part of the criminal justice costs; the other largest direct component is policing, which the Prison Policy Initiative estimates to

be more than 60 billion U.S. dollars per year. [1, 2]

In Sweden, Kriminalvården (the Swedish Prison and Probation Service) was allocated 9.7 billion Swedish kronor in 2020 or approximately one billion U.S. dollars.[3] Though the U.S. direct prison costs are about 80 times that of Sweden, it is important to note that the U.S. general population is about 30 times as large as the Swedish population. And the incarceration rate per capita is reported to be nearly ten times higher in the U.S. than in Sweden.[4] In 2020, slightly more than 10,000 people began probation in Sweden, while about 9,000 were incarcerated.[5] These statistics make clear that Sweden (like other Scandinavian countries) spends a lot of money on their criminal justice systems, with the ambition of providing high quality prison conditions that rehabilitate offenders. In fact, according to a report by the Institute for Public Affairs in Australia, Sweden spent more per prisoner than any other country in 2015, and nearly four times that spent per prisoner in the United States (Bushnell, 2017).

The effectiveness of the Swedish Prison and Probation program is outside the scope of this report. Such an analysis would need to take into account multiple questions and recognize that prisons serve multiple purposes: incapacitation (i.e., preventing crimes by isolating offenders from society), general deterrence as highlighted in Becker's economic model, and rehabilitation with the aim of decreasing future crimes when inmates return to society. Moreover, prison and other sanctions affect more than just the individual incarcerated, but can also have spillover effects onto family members, criminal networks, and victims. Measuring the costs and benefits of incarceration is not trivial and is clearly an important part of this equation. Given that a disproportionate number of offenders in Sweden and around the world

1. https://www.prisonpolicy.org/reports/money.html.

2. They arrive at this estimate by taking 50 percent of the total reported expenditures on policing at the federal, state, and local levels in the US in 2012 by the Bureau of Justice Statistics. This 50 percent number is based on arguments that 50 percent of police expenditures are related to criminal rather than civil law.

3. https://www.kriminalvarden.se/om-kriminalvarden/kriminalvardens-organisation-ekonomi-och-miljoarbete/ekonomi-och-planering/#:~:text=Under%202019%20var%20dygnskostnaden%20i,var%20336%20kronor%20under%202019.

4. https://www.sentencingproject.org/criminal-justice-facts/.

5. https://www.kriminalvarden.se/forskning-och-statistik/statistik-och-fakta/kos--kriminalvard-och-statistik/.

are repeat offenders, prison authorities play a potentially important role in crime control by aiming to reduce recidivism. Rather, the main point to take away from the above discussion is that criminal justice is expensive, and especially so in Sweden.

The second point that I would like to make here is that crime-control via social policies and criminal justice policies differ in a fundamental way. Criminal justice policies explicitly target crime: that is the first-order goal of the policy. But, most of the social policies discussed in this report—e.g., education, early-childhood environment, labor market opportunities, healthcare, and welfare—are not aiming to affect crime as a first-order outcome. These policies have large benefits and social returns themselves—even if crime is unaffected. The fact that crime is also reduced is an oftentimes unintended benefit that makes these policies even more cost-effective themselves.

Philip Cook and Jens Ludwig are two leading economists whose careers focus on how to reduce crime. They have written multiple pieces that discuss the trade-off in the U.S. between more time in prison and other non-criminal justice related policies. In a 2011 book chapter, Cook and Ludwig consider what would happen if U.S. average sentence lengths reverted back to that of the early 1980s: they estimate that this would reduce the U.S. prison population by about 400,000 individuals and related expenses by about 12 billion U.S. dollars. They then consider what would happen if these funds were instead devoted to other policies or programs like policing, early childhood education, and social-cognitive skill development to high-risk youths. Such a large investment in early childhood programs, like the U.S. Head Start program, could generate between 12 and 60 billion U.S. dollars in net benefits to society (some of which include crime reduction). Returns (especially those related to crime) are potentially even higher for investments focused on the high-risk population. Though their discussion is illustrative, it does highlight a number of important points. First, there are trade-offs in criminal justice expenses and spending on other policies. Second, these trade-offs are not completely exclusive; crime can be reduced through policies that are not about prison. Third, there may be higher returns to spending criminal justice money on other social policies targeting the same population.

This conversation of course requires a caveat—and a caveat that I think is pretty large. The U.S. prison population is much larger than

that in Sweden. The marginal prisoner in the U.S. is a much less serious offender than that in Sweden. Another way of saying this is that the least serious offenders in Swedish prisons are generally much more criminal (in terms of the severity of their current offense or criminal history) than the least serious offenders in the U.S. system. The sentence length in the U.S. for almost every crime is longer than that in Sweden. Prison conditions are generally markedly better in Sweden. Given these different contexts, it is not obvious that substituting criminal justice spending to other spending in Sweden will have the same potential for high returns. Rather, the point is to consider whether there are other policies available to control crime than those in the criminal justice system—where a lot of money is spent already. And if Sweden wants to direct more funds towards crime control, where should this money be spent?

The Cost of Crime: Benefits of Policies that Reduce Crime

Regardless of the policy on the table—social policies or criminal justice policies—it is important to have some perspective on the societal costs of crime. How much would society benefit from reducing crime? What are the benefits of a given policy? When would these benefits occur? Do the benefits depend on the targeted population, even holding spending on the policy constant?

Crime imposes many costs on society. Direct costs (e.g., costs of police, prosecution and incarceration) are the easiest to measure. Costs to victims are harder to measure: these costs are typically classified as indirect victim costs (e.g., lost productivity, or long-term physical and mental health consequences) and intangible victim costs (e.g., general pain and suffering of the victim and family). At the macro level, Anderson (2012) estimates that the total societal cost of crime is about 10 percent of U.S. GDP or 1.6 trillion U.S. dollars, the largest share (about 45 percent) of which he attributes to lost life and injury. Underlying these statistics is a literature that tries to estimate the costs of different types of offenses: serious violent offenses are by far the most expensive.[6]

6. Mark Cohen is a significant contributor to this work: Cohen (1988), Cohen (2005), and Cohen and Piquero (2009).

Conversations about the crime reducing benefits of social policies versus criminal justice policies should also consider the timing of these benefits. Social policies, especially those that target youths and early childhood environments, may not yield immediate reductions in crime. For instance, crime may not decrease until treated cohorts age into young adulthood. Criminal justice policies on the other hand may have an immediate crime reducing effect. But, it is also important to keep in mind that the overall crime reduction via such social policies may be quite large if these policies shift an individual's entire crime trajectory—i.e., prevent them from not just committing one crime but from entering a life of crime.

A final dimension of evaluating the crime reducing benefits of a social policy is to consider which individuals should be targeted by the policy. Would the potential to reduce crime be much larger if certain high-risk populations or neighborhoods are targeted? Another way to phrase this question is to suppose that policy makers have a fixed amount of money to spend on policy X, and that this money is not sufficient to give to all localities. Where should this money be spent? Or on which individuals? This question and theme will be raised a number of times throughout this report.

The Structure of This Report

The next chapter (Chapter 2) begins by presenting descriptive statistics that characterize crime trends in Sweden as well as the many ways offenders differ from non-offenders in terms of their socioeconomic and family background characteristics, health and mental health, and other risky behaviors. These statistics serve two purposes—to highlight the comparability of offenders in Sweden and around the world (suggesting we can learn from research conducted in countries other than Sweden) and to highlight correlates of criminal behavior that can potentially be affected by social policies.

Each remaining chapter highlights a separate social policy arena that has been demonstrated to have a causal impact on criminal behavior. These include education (Chapter 3), alcohol (Chapter 4), early childhood environment with a focus on lead exposure, nutrition, and early childhood education (Chapter 5), healthcare (Chapter 6), employment (Chapter 7), welfare (Chapter 8), and military conscrip-

tion (Chapter 9). Each policy discussion will be organized into the following sub-sections.

1. *Channels through which the policy can affect crime:* The policies discussed in this report are not part of the criminal justice system. Rather, the first order outcomes targeted by these policies are not crime related. Thus, each chapter begins with a discussion of why policies targeting these non-crime outcomes may have unintended crime-reducing benefits. Why should we think about the crime effects of such a policy? Through what mechanisms may such a policy affect crime?
2. *Challenges in empirically identifying a causal effect:* I will discuss the challenges in disentangling the causal relationship between a social policy (or the behavior targeted by that policy) and criminal behavior. For a policy to be effective, there must be a causal relationship. Yet, evidence of causality is often hard to come by, as there are many reasons for which correlations may be observed in the real world when there is no underlying causal relationship. For instance, we will see that many criminals also have substance abuse and alcohol related problems. But does alcohol consumption cause criminal behavior? Or is this relationship simply a correlation driven by some omitted variable, such as a poor family background or preferences for risky behavior. The descriptive statistics presented in Chapter 2 highlight the many differences between offenders and non-offenders, and point towards the potential importance of this issue.
3. *Existing evidence of a causal relationship:* For each policy, I will then review what is known in the academic literature on the causal effects of this policy on crime. Given that one does not want to make policy recommendations on the basis of correlation, emphasis is given to research that convincingly estimates the causal effect of the policy on crime. When possible, emphasis is also given to what is known in the Swedish and Scandinavian context. There is, however, a much larger body of research on criminal behavior in the United States; the extent to which these findings can be generalized to Sweden is also considered. Finally, I note here that most (though not all) of the research cited in this report is written by economists. The reasons for this are three-fold. First, economists put a strong emphasis on causal identification—which I believe is

of first-order importance when considering policy recommendations. Second, many of these social policies—education, health, labor markets—are of core interest to economists, and there is a significant amount of research and expertise on these topics. Third, space constraints and my own expertise made the selection of economics papers the natural emphasis.

4. *Potential for Swedish policy reform:* Finally, each policy chapter will conclude with a discussion of the relevant policies in Sweden and the extent to which each social policy is a feasible channel for policy reform in the Swedish context. Oftentimes, these sub-sections will simply include a list of questions that policy makers should ask themselves to assess the potential viability of policy reform in Sweden.

The policies discussed here are far from an exhaustive list of the social policy arenas that can potentially affect crime. A number of other policies—such as abortion, immigration, child welfare/foster care—are subject to active debate in both the popular press and academic literature. The lack of emphasis on these policy arenas from this report is driven by space constraints and is not a statement on what we know about their relationship with crime nor their relevance in the Swedish context. The link between crime and immigration and segregation is, for instance, clearly relevant in Sweden; but, doing justice to this hotly debated topic is beyond the scope of a chapter of this report. In particular, there are many challenges in disentangling the causal effects of immigration on crime and multiple dimensions of immigration and immigration policy that are relevant to the debate (e.g., number of immigrants, selection of immigration, geographic placement of immigrants, employment and educational opportunities of immigrants, and other assimilation-related policies).

2. Descriptive Statistics

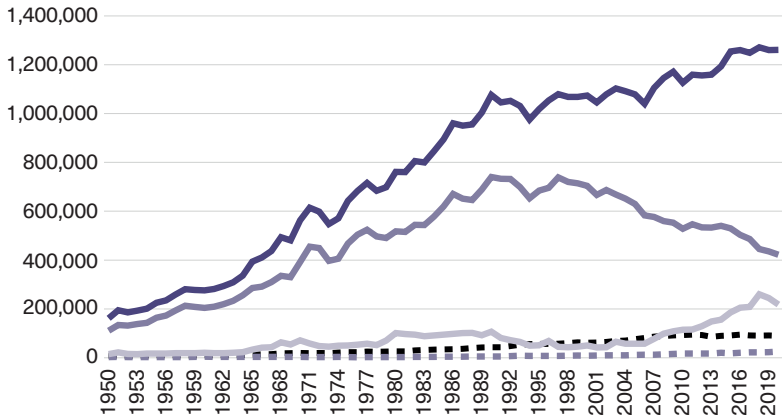
THIS CHAPTER PRESENTS descriptive statistics about crime in Sweden and common characteristics of criminal offenders in Sweden and around the world. These statistics serve two purposes. First, they highlight the severe disadvantage of offenders (e.g., in terms of mental health, education, and employment) and many of the potential channels through which social policy can affect crime. Second, given the limited amount of research on how social policies (today) causally impact crime in Sweden, the comparability of these statistics for offenders in Sweden and around the world suggests that one can learn from high quality research in other countries. To that end, I explicitly provide descriptive statistics from multiple sources, countries, and time periods—the same story of negative selection and disadvantaged offending populations is seen regardless.

Crime in Sweden

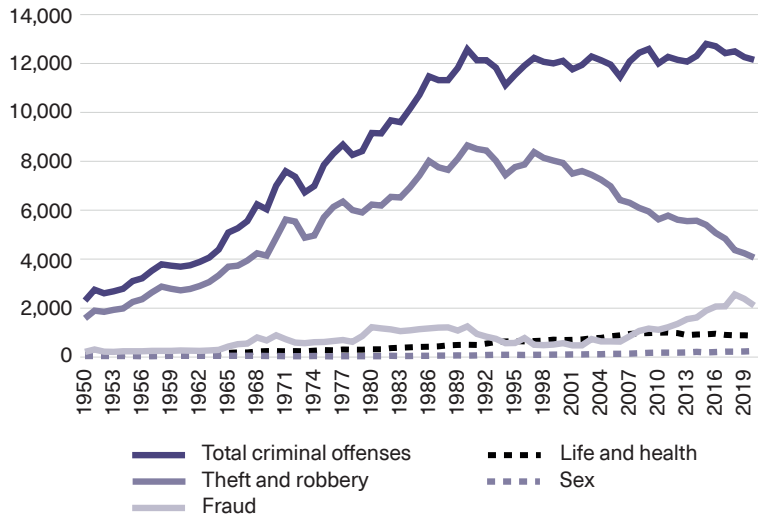
I begin with an overview of Swedish crime levels and trends. Using data on the annual number of reported offenses against the Swedish penal code published by Brå, Panel A of Exhibit 2.1 demonstrates that the total number of reported offenses increased steeply from 1950 to 1990. For the last thirty years, total crime levels have continued to increase but at a flatter trajectory. However, looking at total crime levels does not account for the fact that the Swedish population has also grown tremendously over these 70 years—from around seven million in 1950 to more than ten million today. Panel B of Exhibit 2.1 shows that even when adjusting for the population size, the crime rate increased sharply

Exhibit 2.1 Reported Offenses against the Swedish Penal Code 1950–2020.

Panel A. Reported Offenses.



Panel B. Reported Offenses per 100,000 Population.



Note: Statistics sourced from the Brå website: https://www.bra.se/bra-in-english/home/crime-and-statistics/crime-statistics.html. Note that some offense subcategories are not shown.

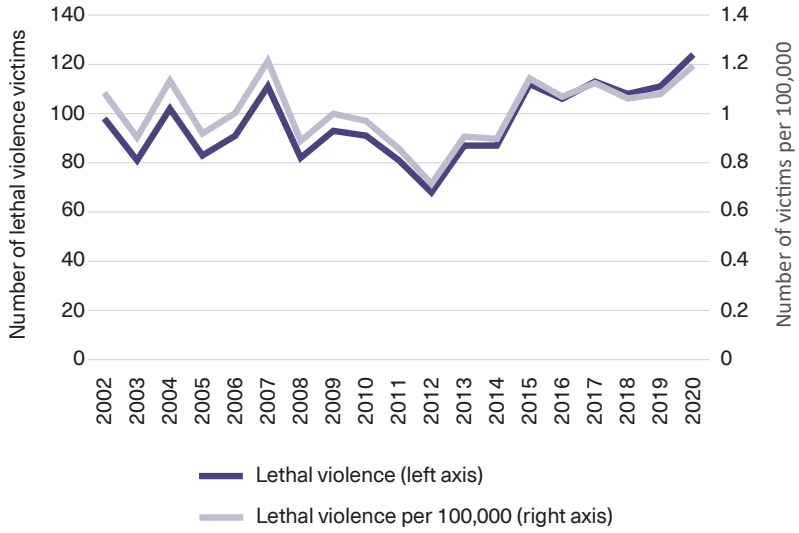
from 1950 to 1990. But, since then, the total crime rate (or the number of crimes per 100,000 in the population) has remained fairly constant.

Looking at total crime levels does mask a number of important trends. The largest sub-category of offenses in Sweden and other countries is property crimes (classified in Sweden as theft and robbery). While the overall growth in crime in the 20th century was driven by rising property crimes, there has in fact been a significant decrease in both property crime levels and rates in the last 30 years. The lack of a decrease in total crime rates reflects increasing crime in other categories, including fraud and violent offenses against life and health (shown here), but also violations of narcotics acts and driving under the influence of alcohol (not shown here). Also not apparent in these nationally aggregated statistics is whether there is a change in the composition of offenses (offense type), the nature of offenses (e.g., neighborhood or degree of violence), and the characteristics of offenders (e.g., age, immigration status, and gang member).

One statistic that has received a lot of media coverage is the lethal violence or murder rate. Exhibit 2.2 plots the number of murders in Sweden since 2002 (with and without population adjustments). The number of murders fluctuated between approximately 100 and 80 until around 2010; annual swings of 20 percent were not uncommon. The number of murders dipped to 68 in 2012 and has increased or remained steady since: there were 124 murders in 2020. Given the sizes of previous fluctuations and other recent highs (111 murders in 2007), it is not yet clear whether this is an anomaly or a trend. If the latter, then it is indeed troubling.

Victimization surveys provide a useful complement to administrative crime reports in painting a picture about crime trends, as well as a population's perceptions of crime. Perceived safety and crime risk can affect individual behavior, even if these perceptions are inaccurate. Moreover, victimization surveys include all crimes, even those that victims choose not to report to the police. Panel A of Exhibit 2.3 presents annual victimization rates reported from 2006 to 2019 in the Swedish Crime Victimization Survey for selected offenses. Violent offenses (threat, assault, and robbery) are at the individual level while property offenses (auto theft, theft from a vehicle, and burglary) are at the household level. Property crimes and especially theft from a vehicle trended down from 2006 until 2014/2015, at which time they

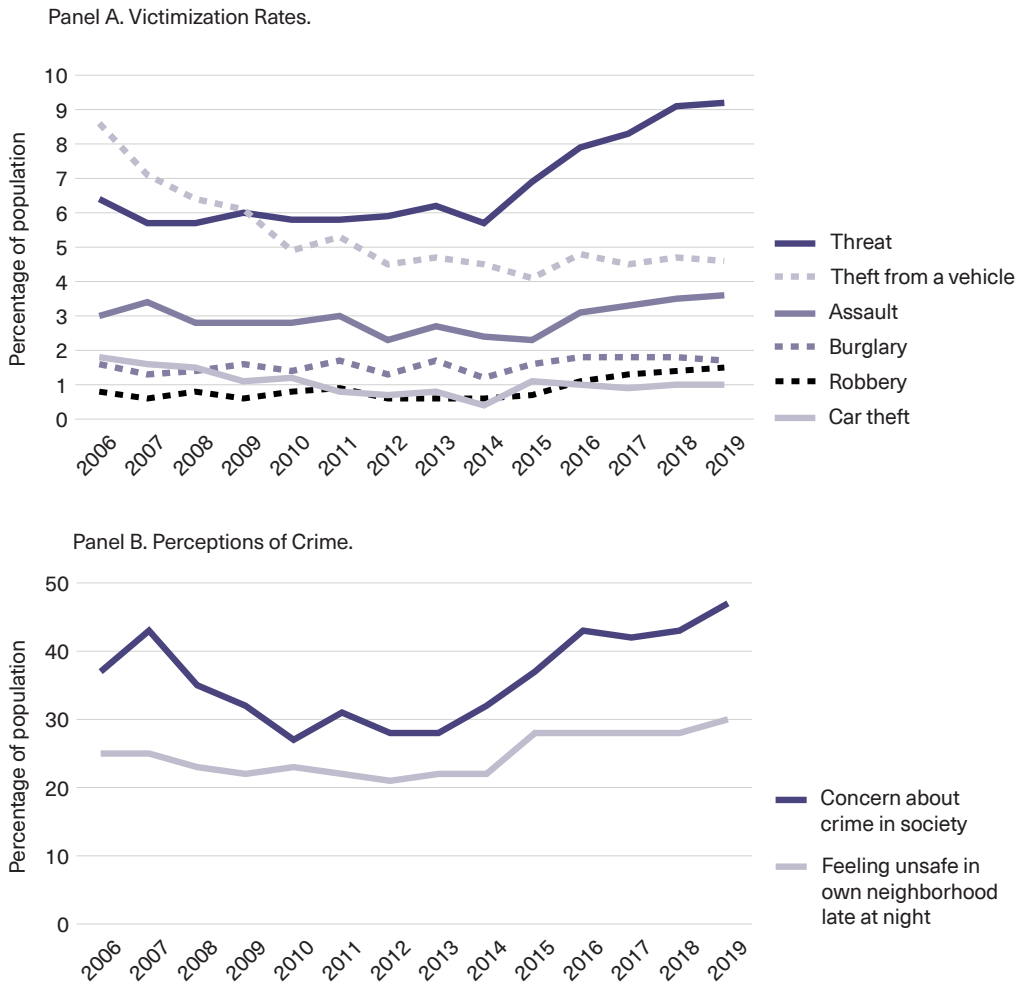
Exhibit 2.2 Lethal Violence in Sweden 2002–2020.



Note: Figure based on statistics from the Brå website: https://www.bra.se/bra-in-english/home/crime-and-statistics/murder-and-manslaughter.html. Brå highlights multiple reasons why one should not use reports but rather these selected confirmed cases. There are many more reports per year but a majority of these cases are not violent but rather suicide, accidental or natural death, multiple reports, and attempts and/conspiracy to commit the act.

leveled off or increased slightly. Violent crime remained fairly stable until 2014, and then started increasing: this is seen most starkly for victimization of threat, which increased from a rate of about 6 percent in 2014 to more than 9 percent in 2019. Increases in assault and robbery are seen around the same time. Panel B of Exhibit 2.3 shows that perceptions of crime and safety are consistent with these patterns: the share of respondents concerned about crime in society starts increasing around 2014 (less than 30 percent in 2013 and more than 45 percent in 2019 report concern) while there is a jump in the share feeling unsafe in their own neighborhood in 2015.

Exhibit 2.3 Trends in Swedish Victimization Survey Responses 2006–2019.



Note: Panel A. Self-reported individual victimization of threat, assault, and robbery, measured as the percentage of the population (aged 16–84). Self-reported victimization of burglary, car theft, and theft from a vehicle, measured as the percentage of victimized households nationwide. Panel B. Feeling unsafe (very unsafe/quite unsafe) in own neighborhood when going out late at night, as well as those who refrain from going out due to feeling unsafe and concern about crime in society (in large extent), also measured as percentage of the population.
Source: Swedish Crime Survey 2020: https://www.bra.se/bra-in-english/home/crime-and-statistics/swedish-crime-survey.html.

Offender Characteristics in Sweden and Around the World

Individuals who engage in criminal activity and interact with the criminal justice system are negatively selected in many dimensions: family background, ability, socioeconomic status, drug and alcohol use, as well as other risky behaviors. This is true in Sweden today, but also in many other countries and contexts. Using a wide range of data sets, this section highlights some of the ways that the criminal offender population is disadvantaged.

Much of my recent work is based on register data from Kriminalvården (the Swedish Prisoner and Probation Services). In Hjalmarsson and Lindquist (2022), we use a subset of these data matched to other Swedish registers to study the effect of more time in prison on mortality. The basic analysis sample includes adults (older than age 18) starting a prison sentence of 48 months or less between 1992 and 2001. Exhibit 2.4 presents descriptive statistics characterizing these individuals (more than 86,000 sentences). The first column shows all offenders, while the remaining three consider those convicted of property, violent, and drug and alcohol offenses, respectively. The average sentence length is 7 months for the whole sample. As in criminal justice populations around the world, most offenders (95 percent of the sample) are male; this ranges from 98 percent of violent offenders to 91 percent of drug and alcohol offenders. 83 percent are Swedish citizens (78 percent of violent offenders) while 77 percent are born in Sweden (71 percent of violent offenders). In the year 2000, just 5.4 percent and 11.3 percent of the registered population in Sweden were foreign citizens or foreign born, respectively, suggesting that this population is over-represented in Swedish prisons.[7]

The middle panel of Exhibit 2.4 presents measures of the socioeconomic status of the prison population. With respect to education, 11 percent have completed just primary school while 37 percent and 42 percent have completed short and long high schools (11 and 12 years respectively). Education status is unknown for the remaining share

7. See https://www.scb.se/en/finding-statistics/statistics-by-subject-area/population/population-composition/population-statistics/pong/tables-and-graphs/population-statistics---summary/summary-of-population-statistics/.

Exhibit 2.4 Selected Characteristics of Adult Offenders Beginning Prison Sentences (48 months or less) between 1992 and 2001.

	All offenders N= 86,109	Property offenders N=27,996	Violent offenders N = 24,908	Drug/ alcohol offenders N = 9,381
Average prison sentence (in months)	7.07	7.57	9.38	11.3
Demographic characteristics				
% Male	95	94	98	91
% Swedish citizen	83	84	78	80
% Born in Sweden	77	80	71	75
Average age at prison start	34.72	33.14	33.36	34.77
Socioeconomic characteristics				
Highest level of completed education:				
% with primary education (9 years)	11	10	11	9
% with short high school (11 years)	37	44	37	38
% with long high school (12 years)	42	38	41	44
% Married prior to incarceration	21	18	23	18
Average number children at sentence	1.12	0.97	1.12	1.05
% Employed in November prior to prison	23	11	26	16
% Receiving welfare in year prior to prison	58	73	58	60
Pre-incarceration health and mental health (measured in the 3 years prior to prison)				
Average nights alcohol ward	0.41	0.39	0.53	0.34
Average nights narcotics ward	0.69	1.09	0.48	1.41
Average nights psychiatric ward	4.2	5.15	5.74	2.83
Average nights other ward	2.55	2.66	2.49	2.47
% Hospitalized in alcohol ward	3	3	4	3
% Hospitalized in narcotics ward	3	5	2	6
% Hospitalized in psychiatric ward	15	18	17	10
% Hospitalized in other ward	29	31	30	26

Note: Summary statistics based on data used in Hjalmarsson and Lindquist (2022).

(disproportionately so for the non-Swedish population). These statistics are striking since about 30 percent of the adult population in Sweden in 2000 had at least some post-secondary education, compared to virtually none of the prison population.[8] At the time of incarceration, 21 percent of offenders were married and offenders had on average 1.12 children—both statistics are substantially lower than for the general adult population. Particularly notable is the disattachment of offenders from the labor market: just 23 percent of offenders were employed in the month of November prior to their incarceration start date and 58 percent received welfare in the year prior to their prison sentence.

Finally, the last panel of Exhibit 2.4 highlights the health status of the criminal justice population using pre-incarceration hospitalization records. This is by no means a perfect measure, as it can only capture health needs serious enough to require overnight stays in the hospital. In the three years prior to incarceration, 3 percent of offenders were admitted at least once to an alcohol ward, 3 percent to a narcotics ward, 15 percent to a psychiatric ward, and 29 percent to another (non-maternity) ward. The average number of days in the wards is quite high: more than 4 in psychiatric wards and 2.5 in other wards.

I have also studied crime in Sweden using the 1953 Stockholm Birth Cohort data, which includes register data matched to survey data for all individuals born in Stockholm in 1953. Exhibit 2.5 shows summary statistics for males who have no convictions versus those with at least one conviction. The sample of convicted individuals are about twice as likely to have criminal fathers, single mothers, and parental mental health problems. They are three times as likely to have alcoholic parents and parents who died before age 72. The convicted population is also twice as likely to have been in foster care.

Similar patterns are observed in the National Longitudinal Survey of Youth (1997), which is an annual survey of a representative sample of youths (aged 12–17) in the United States in 1997. Respondents are asked annually about their criminal behavior as well as many other risky behaviors and school-related outcomes. In Hjalmarsson (2008), I used these data to study how interacting with the juvenile justice system (arrest and incarceration before age 16) affects educa-

8. https://www.scb.se/en/finding-statistics/statistics-by-subject-area/education-and-research/education-of-the-population/educational-attainment-of-the-population/.

Exhibit 2.5 Selected Characteristics of Offenders in the 1953 Stockholm Birth Cohort.

Variable	Unconvicted males (N=5,152)	Convicted males (N=2,567)
% with sentenced fathers	9	17
% with single mother (1964)	7	13
% with alcoholic parent	3	9
% with parental mental health problems	5	11
% with paternal death before age 72	1	3
% with any foster care	2	4

Note: Based on author's calculations from data used in Hjalmarsson and Lindquist (2012), who use these data to study intergenerational criminal correlations.

tion outcomes. Selected statistics are presented below in Exhibit 2.6. Compared to non-arrested individuals, those who are arrested before age 16 are also much more likely to have smoked (80 percent versus 48 percent), consumed alcohol (83 percent versus 65 percent), used marijuana (69 percent versus 32 percent), and used hard drugs (23 percent versus 7 percent). These rates are sometimes even higher for the population committing serious enough offenses to be incarcerated. The population of juvenile offenders is also more likely to have problems in school: 32 percent of those arrested and 43 percent of those incarcerated are suspended before age 12 compared to 13 percent of non-arrested individuals. More than 40 percent of the offender population has to repeat a grade before age 16, compared to 27 percent of the non-offender population. Test scores (which have a mean of zero) measuring math and verbal ability show there is large negative selection in these dimensions. Finally, these individuals are also twice as likely (or more) to engage in other risky behaviors, like sexual intercourse before age 15.

Exhibit 2.6 Selected Characteristics of National Longitudinal Survey of Youth 1997 Respondents by Arrest and Incarceration Status.

Variable	No arrest before age 16	Arrest before age 16	Incarcerated before age 16
Smoke before age 16 (%)	48	80	80
Alcohol before age 16 (%)	65	83	82
Marijuana before age 16 (%)	32	69	80
Hard drugs before age 16 (%)	7	23	27
Suspended before age 12 (%)	13	32	43
Repeat grade before age 16 (%)	27	41	49
Age adjusted math score	33	-398	-724
Age adjusted word score	68	-216	-511
Sex before age 15 (%)	40	80	94

Note: Based on author's calculations from data used in Hjalmarsson (2008).

In summary, this chapter highlights that the criminal offender population faces many challenges: poor family backgrounds and problematic childhoods, engaging in other risky (not necessarily criminal) behaviors, poor health and mental health, weak attachment to the labor market and high reliance on welfare, and low educational attainment. Many of these differences have already arisen when this population is young, and before they are considered of the age of criminal majority. These characteristics are by no means exhaustive: there are likely many other observable (and unobservable) factors on which criminal offenders differ from the general population.

Recognizing the many observable and unobservable differences between the offender and non-offender populations is of utmost importance in the context of this report for two reasons.

› First, most of these differences are in characteristics or outcomes that can be "treated" by social policies. Yet, doing so could only lower crime if these factors are causally related to criminal be-

havior. This chapter highlights that there are many correlates of criminality, but provides no evidence of a causal channel.

› Second, the many correlates highlight one of the main challenges researchers face in identifying the causal relationship of social policies (or criminal justice policies for that matter) on crime. There are many potential unobservable or unmeasurable differences between offenders and non-offenders that are also related to criminal behavior: isolating causal relationships in these correlations is not trivial.

3. Education

CRIMINALS TEND TO have markedly lower education levels than the non-offender population. This pattern is seen in Sweden and around the world.

- 41 percent of U.S. prisoners in 1997 had not completed high school or its equivalence compared to 18 percent of the general population (Harlow, 2003).
- In the U.K. in 2001, 2.6 percent of men aged 21–25 with no educational qualifications were incarcerated—almost nine times the incarceration rate for those with some qualifications (Machin, Marie and Vujić, 2011).
- More than 75 percent of Italian convicts had not completed high school in 2001 (Buonanno and Leonida, 2006).
- In a sample of Swedes born from 1943 to 1954, average years of schooling for convicted males is 10.8 but 11.5 for those with no conviction (Hjalmarsson, Holmlund and Lindquist, 2015).
- As highlighted in the previous chapter, about 30 percent of the adult population in Sweden in 2000 had at least some post-secondary education, compared to virtually none of Sweden's prison population in the 1990s.

Is this relationship just correlational, or is at least in part causal? Does more education cause less crime? Does higher quality education decrease crime? Do school characteristics (e.g., peers, teachers, and vocational nature) causally impact crime? If the answer to these questions is yes, then education policy can have large positive externalities to society in the form of lower crime (for current and future generations).

In other words, for many reasons, governments spend a lot of money on education already. One more justification for doing so may be lower crime rates. In fact, to the extent that this benefits not just the educated individual but also the potential victims and family members, such externalities may imply that societies are underinvesting in education.

Of all of the potential social policies that may affect crime, the academic literature on the causal effect of education is probably the largest. Hjalmarsson and Lochner (2012) review this body of work.

Channels through Which Education Can Causally Impact Crime

Educational attainment can causally impact an individual's decision to commit crime through multiple channels. First, education increases wages. Becker's (1968) economic model of crime highlights that anything that increases the opportunity costs of committing a crime should decrease criminal behavior. Second, schooling not only increases economic returns but may also increase a youth's patience, and lead them to putting more weight on their potential future earnings (Becker and Mulligan, 1997).

These channels highlight reasons why crime might decrease once an individual leaves school, i.e., post-schooling crime. But, schooling can also contemporaneously impact crime. While in school, youths are isolated from society and may be incapacitated from committing crime by being busy and occupied. Of course, while youths are in school, there are also many close social interactions with their peers—to the extent that violent crime is a function of social interactions, some types of crime could theoretically increase. If there is an incapacitation effect of schooling while in school, then this leaves open the possibility for dynamic incapacitation effects (Bell, Costa, and Machin, 2022). Once in the criminal justice system, it is hard to get out, and having a criminal record can have many negative consequences. Incapacitating individuals when young from criminal behavior could feasibly set them on a different (less crime ridden) path in the future.

The Challenges to Identifying the Causal Effect of Education on Crime

Clearly, there is a correlation between education and crime: more educated individuals commit fewer crimes. Identifying whether any of this relationship is causal is complicated by two empirical issues. First, there could simply be unobserved individual characteristics, such as low risk aversion or poor family environments, that both increase the risk of lower education and higher crime outcomes. The second problem is what we call reverse causality: if juvenile crime and interactions with the justice system also effect education outcomes, then it is difficult to disentangle whether education affects crime from the effect of crime on education. Hjalmarsson (2008) and Aizer and Doyle (2015) demonstrate that this is a valid concern.

Causal Evidence of the Education-Crime Relationship

Given the size of the education-crime body of research, I group these studies into three themes. I also highlight here that this is not an exhaustive review of all studies that provide causal evidence of the education-crime relationship.

CONTEMPORANEOUS SCHOOLING AND CRIME: INCAPACITATION EFFECTS

A number of studies provide causal evidence of a contemporaneous effect of schooling on crime. To deal with the identification challenges described above, these papers focus on various interventions that serve as exogenous shocks to school attendance. In other words, these interventions affect whether a child is in school, and there is no reason to expect the shock to affect the crime of that child through any channel other than their presence in school.

Jacob and Lefgren (2003) study the effect of extra days off from school due to teacher in-service days (studiedagar in Sweden). Luallen (2006) takes a similar approach but uses teacher strikes as the exogenous shock. Both Jacob and Lefgren (2003) and Luallen (2006) find mixed effects of schooling on contemporaneous crime. In urban areas, an additional day in school decreases juvenile property crime by up to

30 percent but increases violent crime by a similar magnitude. These findings suggest that being in school incapacitates property crimes, but that the increased social interactions potentially increase violent crime.

Another approach to studying the incapacitation effects of schooling is to consider school reforms that extend mandatory schooling. Researchers studying such a shock then assess whether crime decreases during the additional school year that treated cohorts are forced to stay in school. Anderson (2014) studies changes to the minimum high school dropout age in the United States (the drop out age varies across states) and finds that both property and violent crime arrest rates significantly decrease for 16- to 18-year-olds as a result of minimum dropout age laws. These findings are consistent with an incapacitation effect of schooling but also Becker-like channels in which the additional schooling increases the opportunity costs of crime.

Recent work by Bell, Costa, and Machin (2022) looks at the effect of compulsory schooling law reforms across the U.S. from 1980 to 2010 on both the short- and long-term crime rates of individuals aged 15 to 24. These authors assess how arrest rates for the same individuals change as they get older, i.e., beyond the compulsory schooling years. Like Anderson (2014), they find large incapacitation effects on crime while youths are in school. But, the authors also see that arrest rates remain lower many years later, even though the wages and employment status of these treated cohorts are not improved. These findings suggest that incapacitating youths when young can have dynamic "incapacitation" effects as they get older.

EDUCATIONAL ATTAINMENT (MORE SCHOOLING) AND FUTURE CRIME

There are in fact a number of studies that use exogenous changes in school leaving laws across U.S. states or at a national level to study the effect of these reforms on subsequent crime. Some focus on the post-schooling effect of the reforms on crime—a crime reduction could be driven by a dynamic incapacitation effect (as described above) or by changes in the opportunity costs of crime. Though these channels can generally not be disentangled in this body of work, there is a fairly universal theme and finding that more time in school causally decreases crime.

The first such study was conducted in the U.S. context by Lochner and Moretti (2004): they measure the extent to which an increase in a state's compulsory schooling age increases educational attainment and reduces subsequent crime for treated birth cohorts. Their findings imply that an additional year of schooling reduces state level arrest rates by at least 11 percent, with similar effects for both violent and property crime. An important caveat in this study (and all of these studies) is that these causal estimates do not imply that an additional year of schooling will have this effect regardless of what the baseline is. Rather, the effect is only identified off of those individuals for whom raising the compulsory schooling age is binding in terms of the amount of the schooling attained, i.e., those on the margin of dropping out.

Machin, Marie, and Vujić (2011) study the effect on convictions of raising the minimum schooling age from 15 to 16 in England in 1972. By basically comparing cohorts who turn 15 immediately before and after the reform, they estimate that a one-year increase in average schooling reduces property crime conviction rates by up to 30 percent.

Finally, Meghir, Palme, and Schnabel (2012) and Hjalmarsson, Holmlund, and Lindquist (2015) use the Swedish school reforms in the 1950s in combination with high quality Swedish register data to study this question. Compulsory schooling increased from seven to nine years in Sweden during the 1950s and 1960s, but unlike the UK reform, it was not implemented at a single point in time but rather rolled out across municipalities during these decades. This allows for a comparison of crime outcomes for students who were exposed to two different school systems (7 versus 9 years) but were born in the same years and are working in the same labor markets and environments. Hjalmarsson, Holmlund, and Lindquist (2015) find that one additional year of schooling in Sweden decreased the probabilities of conviction and incarceration for males by about 7 percent and about 15 percent, respectively. Crime is measured after age 18, indicating that these results are not driven by an incapacitation effect contemporaneous with the additional mandated schooling.

Meghir, Palme, and Schnabel (2012) make a further important contribution to our knowledge about the impact of the Swedish school reforms: they study the effect of the reform not just on males affected by the reform, but also on the next generation. They find that sons of fathers who were exposed to the school reform have a 2.5 percent

lower probability of conviction. These spill-over effects highlight the possibility that the social returns to more education are vastly underestimated.

The final paper discussed in this section is also conducted in the Swedish context, and serves as a nice bridge between the above research studying the effect of years of schooling and the below research on the quality of schooling. Specifically, Åslund et al. (2018) study a Swedish reform in the beginning of the 1990s that both extended vocational education from two to three years and included more general theoretical content. The above-described studies focus on just the years of schooling, without saying anything about the content of that education. Moreover, vocational schooling is particularly relevant for the population of potential offenders, who as we saw in the descriptive statistics section rarely go on to higher education. Like the earlier Swedish reforms, this was rolled out across municipalities over time. The authors find that exposure to the reform reduced the risk of property crime for males by about 20 percent. The effects were driven by students at the bottom of the academic distribution, and only present until age 20; most of the effect was seen during the additional third year of schooling, suggesting that incapacitation played an important role.

School Quality and Crime

It is not just years of schooling that matters but potentially also the quality of that schooling. There are, however, many components to school quality, including the quality of the teachers and the quality of the peers, for instance. School quality is not easy to measure. But a handful of studies provide evidence that suggests that school quality may causally impact crime.

Cullen, Jacob, and Levitt (2006) consider the context of school choice in Chicago high schools. These authors find that "winning" a lottery for admission to a Chicago high school results in students choosing to attend schools with higher quality peers. Winners are exposed to peer groups with higher graduation rates and a greater share of above average test performers. This is important because peer quality is commonly accepted to be one component of school quality. Though the authors do not find evidence that winning the lottery improves academic outcomes, they do find that lottery winners are

nearly 60 percent less likely to be arrested and less likely to get in trouble at school.

Deming (2011) also finds that winning a school choice lottery (in a North Carolina district) increases the quality of school attended, especially for high-risk youths. Again, though test score performance does not improve, there is a 45 percent chance reduction in the number of adult felony arrests for high-risk high school lottery winners.

Billings, Deming, and Rockoff (2014) study the end of race-based busing in the same North Carolina school district. Half of the students in this district were re-districted to a new school when school boundaries were redrawn in 2001. These authors compare students who lived in the same neighborhood but were on the opposite sides of the newly drawn boundaries. The result of this policy was increased inequality based on race, i.e., between whites and minorities. Specifically, rezoning led to students attending schools with a greater share of students of the same race as themselves—i.e., they were no longer being bused to schools further away. In terms of crime outcomes, the rezoning of schools in Charlotte, North Carolina significantly increased crime amongst minority males. These results were completely driven by the poor minority males who live in highly segregated neighborhoods.

The most recent contribution to understanding the effects of school quality on crime is Baron, Hyman, and Vazquez (2022). Rather than studying the effect of school quality by utilizing exposure to "better" schools, they use a novel research design that leverages two school funding reforms in the state of Michigan during the 1990s. First, the authors study the 1994 school finance reform, which took control of operating expenditures away from the school districts and centralized it at the state level. The state then sharply increased elementary school spending in low-spending school districts and froze spending in districts with previously high levels of spending. This additional spending improved school quality by reducing class sizes, increasing teacher salary and experience, reducing teacher turnover, and hiring school administers such as a vice-principal who are heavily involved in student truancy and discipline issues. Students in birth cohorts and schools exposed to this additional school funding were found to have short-term test score gains, lower absenteeism rates in middle school, less juvenile delinquency, and less adult arrest. The second research design demonstrates that it is not just operating expenditures that

matter but also capital expenditures. The authors do this by looking at school districts that tried to raise money for capital improvements via local elections: they basically compare the outcomes for school districts in which the election was won (capital was raised) versus those where the election was lost. The authors find that students in school districts and cohorts where the capital was raised are 20 percent less likely to be arrested as an adult. Overall, this study provides new convincing evidence that it is not just the peer composition of school quality that matters, but other dimensions (teacher quality, turnover, classroom size, infrastructure, administrative staff) as well that can be directly impacted by higher school spending.

Potential for Swedish Policy Reform

One of the first lessons of the above education-crime research is that incapacitating youths—i.e., keeping them busy—reduces crime during the period of incapacitation. Moreover, this can set youths on a new lower-crime path in the future. A second lesson is that more schooling causally decreases long-run criminal behavior, i.e., after schooling completion. A third lesson is that multiple dimensions of school quality matter, including operating expenditures, capital expenditures, and the characteristics of the student's peers, including ability and minority/neighborhood characteristics.

Are these lessons relevant in Sweden today? Are there education-related social policy interventions that can be considered as possible crime reduction channels?

- Schooling is compulsory in Sweden until the end of the 10th year of schooling (kindergarten, and years 1–9), when youths are typically 16 years old. This is the most common compulsory schooling age in Europe. Vocational schooling, though not compulsory, has already been increased from two to three years. Further increases to compulsory schooling can be considered. But they may not be the answer (especially if attendance records are poor for the most high-risk students) nor politically feasible.
- Thus, one should ask whether students enrolled in school (compulsory or secondary) are actually attending school. Truant students—not attending school for unauthorized reasons—may be exactly that population at highest risk for crime. How to reduce

truancy in Swedish schools has certainly been debated in the last ten years, and reforms have been implemented, including the reporting of truancy on report cards. School principals are required to inform guardians of truant students. Moreover, the Swedish government may withdraw study allowance for upper secondary students truant for more than four hours in a month. According to Ramberg et al. (2018), almost 8 percent of the Swedish secondary population had their study allowance withdrawn in 2015. *Research evaluating the causal link between truancy (and truancy reforms) and crime is needed. Policies that can increase the presence of enrolled students in school while not disrupting the classroom environment should be considered.*

- The research also shows that increasing spending on schools (operating and capital expenditures) can improve school quality in ways that reduces long-run crime outcomes. It actually even reduced truancy. *Is there a need to increase school spending so as to improve teacher quality, reduce teacher turnover, reduce classroom size, and improve the student environment and resources?*
- We should especially consider whether this is needed in certain high-risk neighborhoods. The above described research in fact highlighted that school quality is especially important for the most disadvantaged, high-risk populations, and that the concentration of minority students together may increase crime risk. *This seems particularly salient with respect to the segregated immigrant populations of youths in Sweden. Is school choice adequately available to these populations and neighborhoods? Is school quality sufficiently high?*
- This research also suggests that incapacitation—keeping idle hands busy—may be important regardless of the context. For youths and young adults not enrolled in school, what are they doing? *Other activities, e.g., summer jobs, that keep youths occupied may also be promising social policy channels to reduce crime.* This idea is revisited in the chapter on employment (Chapter 7). Other organized leisure activities, especially those that occur at peak crime hours (evenings and weekends) could also be channels through which incapacitation could occur. Of course, getting the right youths (i.e., those at risk for or on the margin of criminal behavior) into these activities is not a trivial task.

4. Alcohol Policy

A VARIETY OF STATISTICS demonstrate a clear correlation between alcohol consumption and criminal activity:

- Almost 40 percent of U.S. prisoners were under the influence of alcohol when they committed the offense (Greenfeld, 1998).
- In more than 50 percent of serious violent crimes (assault, threat, robbery, sex offenses) in Sweden, the perpetrator is perceived to be under the influence of drugs or alcohol (Olseryd, 2015).
- The potential role of alcohol is not limited to offending: Swedish victimization surveys find that victims are under the influence of alcohol or other substances in nearly 40 percent of assaults and about 30 percent of robberies and sex offenses (Olseryd, 2015).

These raw statistics are not sufficient to infer that alcohol consumption causes crime. This chapter discusses the causal evidence on the alcohol-crime relationship and whether alcohol related regulations can potentially be used as crime control policies.

Channels through Which Alcohol (Policy) Can Causally Impact Crime

There are two main channels—pharmacological and environmental—through which alcohol consumption can causally be linked to criminal behavior. These same channels can also causally link alcohol and the risk of victimization. Carpenter and Dobkin (2011) and Bindler, Hjalmarsson, and Ketel (2020) discuss these channels with respect to crime and victimization, respectively. Alcohol consumption can affect

an individual's emotional responses as well as their judgement and decision-making abilities; larger such pharmacological effects will be observed with higher levels of intoxication. For instance, at low levels, one may be extra happy, sociable, and with less inhibitions, while more severe physical and mental impairments, as well as potentially aggressive behavior, can appear with higher intoxication levels. The environmental channel refers to how the consumption of alcohol may affect where an individual is, when they are there, and who they are with—i.e., one's environment. Consuming alcohol at a bar, for instance, means that one is in a more crowded environment, often late at night, and with potentially other pharmacologically affected people.

The Challenges to Identifying the Causal Effect of Alcohol on Crime

The above statistics highlight that many offenses occur when individuals are drinking alcohol; but, this does not by itself imply that alcohol consumption caused this criminal behavior. It could simply be that individuals who drink alcohol (or drink alcohol in high quantities) are also more likely to commit crime because of some other omitted characteristic. One such potential unobservable may be, for instance, risk preferences. Another potential unobservable may be family background or education. In other words, there may be some additional factor that is driving both behaviors—alcohol consumption and crime. Such an "omitted variable" could yield a correlation between alcohol and crime, even if there is no causal relationship.

An additional challenge to inferring causality to keep in mind occurs when we think about evaluating alcohol regulation policies. As with most policies, they are not arbitrarily implemented, but typically a response to a societal concern. If that societal concern is crime-related (say domestic violence), then empirical researchers face the challenge of simultaneity bias. How can one disentangle the effect of the alcohol policy on crime from the effect of crime patterns on the existence of the policy to start with? This can also yield a correlation in the data when there is no underlying causal relationship.

Causal Evidence of the Alcohol-Crime Relationship

A number of recent studies provide strong evidence of a causal relationship between alcohol consumption and criminal behavior as well as alcohol consumption and increased risk for victimization. This evidence is all the more convincing because it is found with multiple research designs that speak to a variety of relevant policies. I briefly review the findings of these papers, highlighting those that (i) focus on the minimum legal drinking age, (ii) store opening hours, and (iii) sentencing reforms and related policies.

One research design that has been used to disentangle causality from correlation is a so-called regression discontinuity design around drinking age thresholds. For instance, young adults in the United States get the right to drink alcohol at age 21. A regression discontinuity design essentially compares the criminal behavior (or victimization) of individuals immediately on either side of this birthday cutoff, i.e., just over 21 versus just under 21. If no other rights are discontinuously granted (i.e., there are no unobservables changing at this birthday cutoff) but the right to drink, then any discontinuous jump in crime or victimization behavior can be inferred to be caused by the right to drink. This is indeed what researchers have found in the United States. Carpenter and Dobkin (2015) find that individuals just over 21 are almost 6 percent more likely to be arrested than those under 21. Using a similar research design, Chalfin, Hansen, and Ryley (2019) find a significant increase in victimization risk—for both men and women and violent and property crime—when the minimum legal drinking age of 21 is reached.

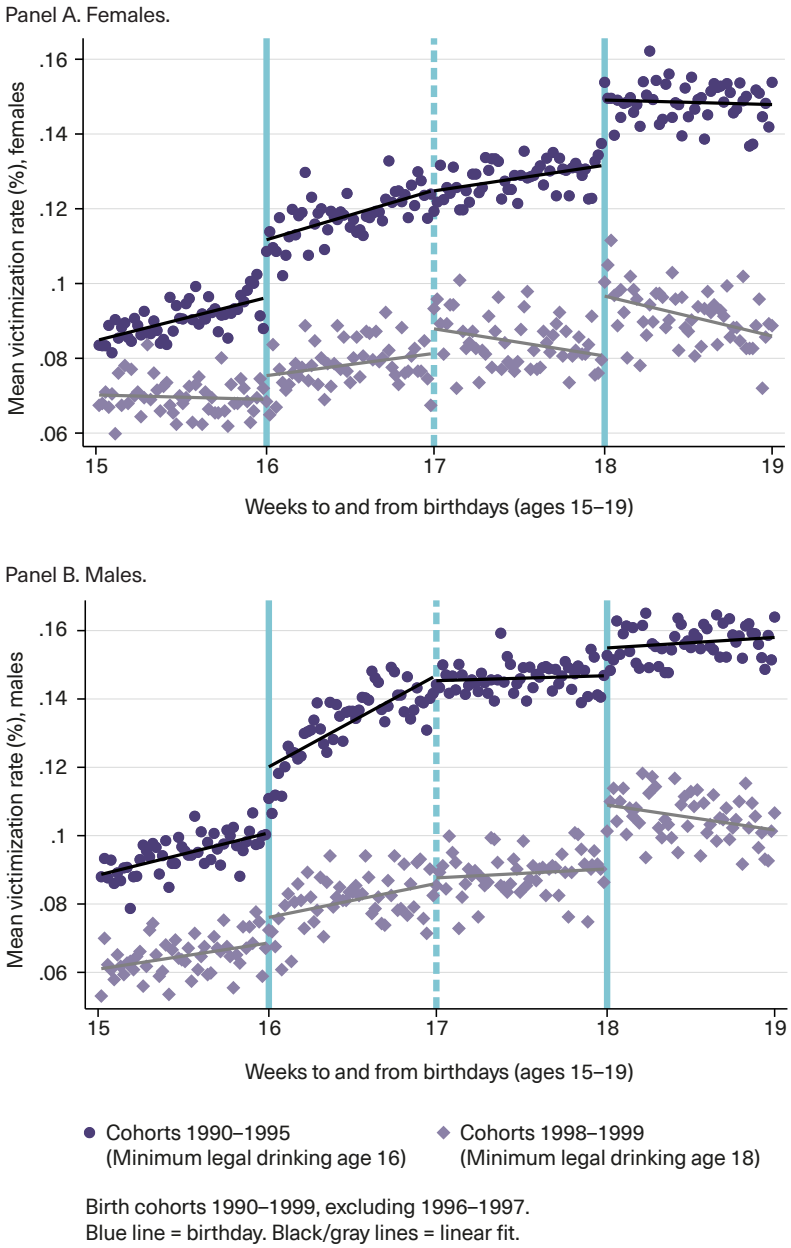
Moreover, this finding is not limited to the U.S. context nor to age 21. Using register data from the Netherlands, Bindler et al. (2021) study the effect of reaching ages 16 and 18, at which point individuals are given rights to *purchase* alcohol. Until 2014, weak alcohol could be purchased at 16 and hard alcohol at 18. In 2014, the purchase age for all alcohol was raised to 18. This study provides convincing evidence that obtaining these rights significantly increases victimization risk, especially for property crimes. In fact, Bindler et al. (2021) find no

discontinuities remaining in victimization at age 16 when the right to purchase weak alcohol is removed from those birth cohorts. This finding (and the regression discontinuity research design more generally) is depicted in Exhibit 4.1, where the round and square markers correspond to birth cohorts who received the right to purchase weak alcohol at 16 and 18, respectively. A natural question to ask is whether it is optimal to give these rights at earlier or later ages: the results of this study suggest that spreading these rights across ages 16 and 18 does not minimize risk. There is still a jump in victimization rates with access to hard alcohol, even after "learning" to drink weak alcohol. It is important to caveat this takeaway, however, with the acknowledgement that the impact on victimization is just one piece of the puzzle. For instance, the gains associated with these rights (e.g., the utility) may offset the costs; and for that matter, the costs of victimization could be different at ages 16 and 18. Bindler et al. (2021) cannot speak to these issues.

Two studies use changes in store opening hours to disentangle how much of the alcohol-crime relationship is causal. One is in the context of the U.S. state of Virginia: prior to 2004, all state- run alcohol beverage control stores in Virginia were closed on Sundays but starting in April 2004, stores in 11 cities or counties were allowed to be open on Sundays. Heaton (2012) uses a so-called difference-in-differences design to disentangle the causal effect on crime of opening stores in these areas on Sundays. Basically, the author compares how crime changed on Sundays in these counties pre and post reform to how crime changed on other days of the week, as well as how crime in these counties changed relative to other counties where hours did not change.[9] Heaton (2012) finds a significant increase in crime as a result of Sunday alcohol store openings: low-level property and public order crime increased by 5 percent and alcohol involved serious crime increased by 10 percent. Grönqvist and Niknami (2014) used a similar design to evaluate the Saturday store openings of Swedish alcohol stores: this occurred in six Swedish counties in 2000. Grönqvist and Niknami note that the Swedish policy may have been a more dramatic alcohol supply shock than in Virginia since it targeted "all types of alcoholic beverages (not just spirits) and targeted the day of the week

9. If anything else changed around this time period, e.g., macroeconomic factors, then this would be controlled for by the comparison to non-treated jurisdictions.

Exhibit 4.1 Discontinuities in the Victimization Risk: By Minimum Legal Drinking Age Cohorts in the Netherlands.



Note: Results based on calculations using microdata from Statistics Netherlands, see Bindler et al. (2021).

with the traditionally highest demand for alcohol." Their findings are consistent with this observation: they find a significant increase in crime of about 20 percent on Saturdays relative to other days of the week in treated counties (i.e., the six counties with Saturday store openings) compared to untreated counties.

Finally, I turn to two papers that provide causal evidence of the alcohol-crime relationship by studying sanction reforms. The first is the adoption of strict zero-tolerance drunk driving laws in the United States for youths under age 21: every U.S. state enacted these laws, which lowered the legal blood alcohol level for young drivers to zero (or near zero, depending on the state). Two key features of these laws are that (i) they were adopted as a response to drinking and driving and not as a response to other crime behaviors and (ii) they only affected young drivers (ages 18–21) and not older drivers (e.g., 22–24 years). Carpenter (2007) finds that these laws led to a reduction in binge drinking for individuals under age 21 but did not affect such behavior for those between 22 and 24. This allowed Carpenter (2007) to use the older than 21 individuals as a control group for those younger than 21: did the reduction in alcohol consumption for the younger group change crime? Carpenter (2007) finds that property crime arrests decreased by about 3 percent for young males (under age 21) but there was no effect for the "untreated" over age 21 males.

The final paper evaluates a program in South Dakota called 24/7 Sobriety: individuals arrested for or convicted of an alcohol-related offense were not allowed to consume alcohol and had to be tested multiple times per day. If one failed or missed a test, an immediate but minor sanction (usually 1–2 days in jail) was enforced. Kilmer and Midgette (2020) use the roll-out of this program across counties of South Dakota to evaluate its impact: being forced off of alcohol led to almost 50 percent lower re-arrest rates in the first 12 months.

The Potential for Swedish Policy Reform

The Swedish government has played an extremely active role in regulating alcohol consumption since the 19th century. And many of the regulations that have been put in place or removed are similar to those highlighted in the body of alcohol-crime research.

CAN (2008) highlights some of the most significant reforms and

demonstrates the diversity in alcohol control policies. For instance, policies concerning the sale of alcohol in supermarkets have changed over time—with medium strength beer sales introduced in 1965 and eliminated again in 1977. As in the Dutch study described above, there have been reforms to the alcohol purchase age in Sweden: it was lowered to 20 from 21 in 1969. The legal age today to purchase and consume alcohol or purchase it from restaurants and bars, however, is age 18. The main regulation in terms of the timing of sales relates to Saturday openings: the 2001 opening reform studied above reversed the introduction of Saturday closures in 1982. Other regulations include rules about the marketing of alcohol and changes in taxes. Generally, Swedish alcohol taxes have been decreasing in recent decades, with for instance, reductions in strong beer taxes in 1997 and wine taxes in 2001. This in part was a result of joining the EU in 1995, when regulations on duty free alcohol trade in the EU were eliminated and quotas on the import of alcohol for travelers were abolished.

One way to measure alcohol consumption is through self-reported surveys. An advantage of survey data (as opposed to alcohol sales data) is that it could capture home production or purchases outside of Sweden (which is especially relevant post-EU). Though there may be underreporting of risky behavior in surveys, a comparison of survey responses across multiple survey rounds should provide information on trends in the relevant behaviors. Guttormsson (2020) presents survey results for contemporary Sweden. A comparison of the age-profile of alcohol consumption from a 2004/2005 survey round to that for 2017/2018 shows that for most age groups, self-reported alcohol consumption is lower today than it was at the beginning of the century, and this reduction is greatest for the youngest ages (i.e., between 17 and 22). The Guttormsson report also shows that the share of survey respondents characterized as high consumers of alcohol decreased since 2004 for most age groups, but again the largest effect is for the youngest group (ages 17–29). Since 2014, about 15 percent of respondents aged 17–29 are classified as high consumers; though this is an appreciable reduction from the nearly 20 percent in 2004, it is still not a small number. Moreover, to the extent that there is a causal effect of alcohol on crime, it is likely to be this population that is most relevant, i.e., young (as it is also at this age range that crime peaks on the age-crime profile) and with the potential for large pharmacological effects.

Research by Karolinska Institutet also finds room for improvement:[10]

> "Nine out of ten Swedes over the age of 17 have had alcohol in the last year. Nearly one in two will drink alcohol every week, and more than one in three will consume the equivalent of a bottle of wine more than once per month or more often."

Most regulations discussed above aim to control alcohol supply or access. Another approach is to try to control alcohol demand. One way to do that is through treatment, such as the 12 step Alcoholics Anonymous program. As described in a 2015 website article, some new alcohol treatment clinics have in fact been introduced:[11] specifically, the County Council Alcohol Treatment Clinic at Riddargatan 1 in Stockholm was introduced in 2012. At the time of the article, other clinics were opened or planned in Stockholm, Skåne and Göteborg.

What have we learned? What alcohol related policies can be considered to reduce crime?

Education and marketing: There is clear causal evidence that alcohol consumption impacts crime and the risk of victimization. But it is less clear that this information has been communicated to youths making the decision to begin drinking. Making clear the potential consequences could potentially alter the behavior of both criminals or possible victims.

Minimum legal drinking ages: It would seem unrealistic to consider changing the legal drinking age, given comparable ages in neighboring countries (and most countries around the world) as well as population preferences. But, given the sharp jumps in crime and victimization upon reaching the drinking age, targeting the risks of alcohol consumption education programs to this age group seems especially relevant. Sweden mandates courses on alcohol and drunk driving when getting a driver's license. Similar lectures on the other risks of alcohol consumption could be incorporated into the education of young adults.

Store opening hours: The Swedish study described above did find an increase in crime resulting from Saturday openings. It is important to

10. This is based on the 2014 STAD survey (Stockholm for the prevention of alcohol and drug abuse). See https://ki.se/en/research/one-drink-too-many.
11. https://ki.se/en/research/one-drink-too-many.

keep in mind that the findings of the above study are partial equilibrium: it is just highlighting one component or potential cost but does not measure other outcomes, like the utility gained to the population. So, it is perhaps not a clear cut policy recommendation to close stores on Saturdays; an alternative off-setting policy response may be to increase policing on Saturdays.

Alcohol treatment (especially targeting young and high-risk groups): The 24/7 sobriety program described above causally reduced criminal behavior. Can such programs be introduced in Sweden? Though alcohol treatment clinics do exist in Sweden, it is less clear whether the population that is at high risk for crime (those who have offended already or who are from low income, low household education, high-crime neighborhoods) accesses these programs. One point of access to 12-step programs is in Swedish prisons—here the "right" population is clearly reached. But, if the goal is to reduce crime, this may be too late given the high recidivism rates. It would be worth pursuing causal evaluations of the non-prison treatment clinics described above on crime. Who accesses such treatment? Does such treatment reduce crime? Or does adherence to such a program for this high-risk population depend on the possibility of certain (minor) punishment included in the 24/7 program? This discussion is also closely related to health and mental health related social policies discussed in Chapter 6.

5. Early Childhood Environment

EARLY CHILDHOOD is a critical stage of physical, mental, and emotional development. The environments that children live in and their associated experiences contribute to the formation of their cognitive and non-cognitive skills. A growing body of research demonstrates the long-term (causal) impacts of early childhood experiences and environments on a wide range of outcomes, including human capital accumulation and labor market participation, health and mortality, and the subject of this report—criminal activity.

With respect to crime, there are two important broad takeaways. First, early childhood environment and experience do causally impact criminal behavior later in life. Second, these effects can be avoided by social policies targeting early life interventions. Moreover, many of the policies studied by academic researchers—e.g., nutritional programs, childhood pre-school investments, and lead abatement policies—are not explicitly aiming to curb criminal behavior. While the immediate aim of such policies may be to improve a child's health and safety, the resulting effects can be broad and persistent. They can even spill over to the next generation. In other words, the indirect returns to investing in a child's health and safety may be much larger than one would potentially expect.

This chapter highlights the causal effects of three early life experiences: (i) lead exposure, (ii) nutrition, and (iii) early childhood education. There are many other potentially relevant early childhood experiences of course, such as a safe environment (at home and in the neighborhood) and parental investments more generally. I highlight lead, nutrition, and early childhood education here, and group these

topics together for a couple of reasons. First, as the following sections make clear, the topics are more related than perhaps they sound at face value. For instance, providing nutritional guidance can be part of the policy response to lead pollution, while nutrition is also part of the early childhood education package. Second, these arenas—pollution and access to nutrition and/or early childhood education—can be reformed via social policies and spending.

5.1 Environmental Pollution: The Effect of Lead Exposure on Crime

SOURCES OF LEAD EXPOSURE AND WHY IT MAY AFFECT CRIME

Recent research demonstrates that early childhood exposure to lead causally impacts juvenile delinquent behaviors and adult criminality. Two premises underlie this relationship. First, lead is toxic to humans, and affects brain development and organ function. Exposure of young children to lead can result in a wide range of physical and mental problems, including impulse control issues, aggressivity, ADHD, learning disabilities, and generally impaired cognitive and non-cognitive abilities. Moreover, children are more susceptible to damaging quantities of lead in their blood than adults given that they are more likely to ingest it (e.g., in the form of paint chips or dust) and because a child's body retains a much larger proportion of ingested lead than that of an adult.[12] The second premise is that these cognitive and non-cognitive problems cause lead-exposed individuals to commit crime as adults.

Exposure to lead in the environment has decreased over time, as countries have recognized both the sources of lead exposure and the potentially severe problems with which it is associated. Historically, one of the largest sources of environmental lead pollution was leaded gasoline. Added to gasoline to boost engine power, the lead content of gasoline was relatively high by the middle of the 20th century. Children were exposed to this lead by directly inhaling the exhaust from cars or by coming into contact with resulting lead deposits in soil.

12. See Reyes (2015) and Grönqvist, Nilsson, and Robling (2020), both of which provide detailed discussions of the various channels through which children ingest lead and the effects of lead exposure on early childhood physical and mental development.

Not surprisingly, more lead was deposited in soil closer to roads, and especially roads with high amounts of traffic. The United States began to phase out leaded gasoline in 1974 as a result of the Clean Air Act: gasoline lead dropped by almost 100 percent in the U.S. between 1975 and 1990 (Reyes, 2007). Similarly, Sweden introduced a phase-out of leaded gasoline in 1970; the levels of lead in the environment, however, in Sweden at the time of this reform were already markedly lower than that of the U.S. (Grönqvist, Nilsson, and Robling, 2020).

Another common source of lead exposure is lead-based paint, which enters a child's body via the ingestion of paint chips or by breathing in dust from deteriorating paint. Though the U.S. banned lead-based paint in 1950 for interior use and in 1978 for all residential uses, it is not yet eliminated from older homes: "The Department of Housing and Urban Development estimates that roughly 35 percent of U.S. homes contain some lead-based paint."[13] Sweden prohibited leaded house paint in 1926; it should thus be of minimal relevance in the contemporary Swedish context (Stroh et al., 2009).

Finally, historically, many lead water pipes were often used when constructing cities in the 19th century. Feigenbaum and Muller (2016) highlight that three metals were used in the pipes for municipal water systems at the beginning of the 20th century: lead, galvanized iron, or wrought iron. In their sample of U.S. cities, 54 percent in fact used lead pipes. Lead from these pipes, especially as they erode, ends up in the water supply and is ingested by people. Though the U.S. banned pure lead pipes, solder, and fittings from the water systems in 1986 and introduced regulations for lead testing of public water supplies in 1991, lead pipes are still part of the U.S. system and a very real source of concern. This was made all to real with the Flint, Michigan water crisis of 2014.[14] Lead pipes have not been eliminated from the U.S. today: according to the Environmental Defense Fund, up to 9.2 million U.S. homes have lead pipes and up to ten million homes get their water through lead pipes.[15] Sweden stopped using new lead water pipes in the 1920s.

13. https://blog.gao.gov/2018/06/20/lead-paint-in-housing/#:~:text=The%20Department%20of%20Housing%20and,contain%20some%20lead%2Dbased%20paint.
14. https://www.nrdc.org/stories/flint-water-crisis-everything-you-need-know.
15. https://www.edf.org/health/lead-pipes-threat-kids-across-america.

The above discussion highlights that there are multiple sources of lead exposure, which vary both over time and across geography (even the micro-geography of neighborhoods within a region). As a result, children born in different years are differentially exposed to environmental lead (with less lead for more recent cohorts). Similarly, within birth year cohorts, children born in potentially better off neighborhoods (e.g., further from roads and in newer or remodeled homes) may also be less exposed to lead.

THE CHALLENGE TO IDENTIFYING THE CAUSAL EFFECT OF LEAD EXPOSURE ON CRIME

Once again, the fundamental challenge in identifying whether early childhood lead exposure increases crime is one of omitted variables. Are there unobservable factors that are associated with both lead exposure and risky behavior (including school dropout, juvenile delinquency, and adult crime)? As highlighted above, individuals living in poorer neighborhoods may be more exposed to lead. But, these same individuals may face many other dimensions of disadvantage, including worse schools, nutrition, healthcare, and other pollutants. As highlighted in other parts of this report, each of these factors are also thought to be causally linked to criminal behavior. How then can we disentangle whether the lead-crime relationship is driven by lead exposure or exposure to one of these other environmental experiences that can also affect crime?

CAUSAL EVIDENCE OF THE IMPACT OF LEAD ON CRIME

Recent research by economists has answered this question by utilizing exogenous variation in childhood lead exposure (i.e., factors that affect exposure to lead but are not related to criminality through any other channel) to disentangle correlation and causation.[16] Basically, these researchers find various natural experiments in history, which yield as-if random variation in whether individuals are exposed to lead (i.e., treated population) or not exposed to lead (i.e., control population). As-if random variation in natural experiments implies that individuals

16. Doleac (2017) provides an excellent survey of the challenges and recent solutions found by researchers in studying this question. https://www.brookings.edu/blog/up-front/2017/06/01/new-evidence-that-lead-exposure-increases-crime/.

in these two groups are similar in observable (and even unobservable) dimensions.

Feigenbaum and Muller (2016) study the consequences of lead water pipes in U.S. cities at the end of the 19th century on homicides from 1921 to 1936; in other words, homicide is measured about 20 years after the introduction of the lead pipes, allowing for enough time for those exposed in childhood to age into the peak of the age-crime profile. Simply comparing homicide rates in cities that had lead pipes to those that had iron water pipes is insufficient, as cities with lead pipes could differ in many other ways that can also be related to homicide rates. In fact, the authors recognize that one way that they do differ is how far the cities are (by rail) from a lead refinery or smelter. The authors use this distance as a so-called instrumental variable (i.e., a source of exogenous variation, as described above) for whether a city has lead pipes. This is not perfect to identify the effect of lead water pipes on homicides since the distance from the smelter affects not just the use of lead pipes, but also exposure to lead as a byproduct of the smelting process. To overcome this empirical challenge, the authors utilize the fact that more lead will leach into water that is acidic and essentially compare homicide rates in cities that used lead pipes and had acidic water to those that used lead pipes but did not have acidic water. Homicide rates were more than 20 percent higher in cities with lead pipes and acidic water than those without.

Aizer and Currie (2019) estimate the causal effect of childhood lead exposure in a large sample of individuals born in the U.S. state of Rhode Island between 1994 and 2010. Rather than studying adult crime behavior, Aizer and Currie consider the juvenile outcomes of school suspensions and placement in a juvenile detention center. The advantage of studying such juvenile outcomes is that they are more common than adult crime; moreover, the underlying behaviors may be more minor in nature and thus can inform us on whether lead exposure only leads to serious criminal offenses. This analysis steps away from the city level and studies the differential exposure to lead for individual children who live in the same neighborhood. Variation in exposure is driven by distance from busy roads and birth year. The authors find that higher lead exposure significantly increases, especially for boys, the risk of suspensions from school and detention in a juvenile facility. Moreover, these effects are large: a one unit increase in blood lead lev-

els (relative to mean levels of 3.8 μg/dL or micrograms per deciliter) increases the chance of suspension by 6 percent and detention by 57 percent.

Billings and Schnepel (2018) demonstrate that the harmful effects of lead exposure on crime can be offset by policy interventions. They study interventions in the U.S. state of North Carolina, which based its public health response to lead on guidelines published by the Center for Disease Control. Infants and children are regularly screened for elevated blood lead levels. If two consecutive tests are returned with high blood lead levels (10 μg/dL), a set of interventions (which include nutritional and environmental information, an environmental interview to identify sources of lead, and a referral for cases identified as high exposure risk in the home) are implemented. These interventions are more intense for higher levels of lead. Do these interventions reduce blood levels and improve long-term behavioral outcomes? Comparing individuals who had similar initial blood lead test results but different second test results (above and below threshold of 10), the authors conclude that the answer to this question is yes: anti-social behavior for adolescents (using a summary index) decreased by about 0.18 standard deviations as a result of treatment. Moreover, Billings and Schnepel highlight the potentially high returns to these treatments: they estimate that the return to society for every dollar invested in their studied interventions was nearly 1.80 U.S. dollars.

Finally, the most recent study (Grönqvist, Nilsson, and Robling, 2020) is especially important to the current report for a few reasons. First, it studies the effects of lead exposure on a wide range of outcomes from birth to adulthood, including crime, in Sweden. Like some of the other studies, this paper utilizes variation in lead exposure driven by reductions in leaded gasoline (from the 1970s to 1990s) combined with the fact that pre-existing differences in traffic densities (and initial levels) imply that these national reforms yielded larger reductions in lead exposure in some localities than others. The Swedish context is especially interesting for contemporary policy given that the blood lead levels in Sweden were already markedly lower than in other countries, given the lower population density and earlier bans (1920s) on lead in paint and water pipes. The fact that Grönqvist, Nilsson, and Robling (2020) still find that there are causal effects of relatively low levels of lead exposure on a wide range of outcomes highlights the

policy relevance of lead-related policies and interventions around the world today. Lower exposure to lead improves compulsory school grade point average (GPA) and reduces crime, with stronger effects for boys and children from low-income households. The authors also highlight that these relationships are not linear, and that thresholds in the blood lead levels exist below which these relationships become weaker. Specifically, early lead exposure harms academic performance and criminal convictions from thresholds of 5 μg/dL and 7 μg/dL, respectively. Many children around the world still have blood lead levels above these thresholds.

THE POTENTIAL FOR SWEDISH POLICY REFORMS

Taken together, this research demonstrates a causal effect of childhood lead exposure on adult crime, which exists even at low levels of lead exposure. Moreover, at least one study demonstrates that interventions aimed at offsetting and reducing lead exposure are successful at mitigating (if not eliminating) these potential negative consequences.

Can future crime in Sweden be reduced via social policies targeting lead abatement and interventions designed to off-set exposure? The largest sources of lead pollution in Sweden have already been eliminated: leaded gasoline in the 1970s and 1980s, lead paint and lead water pipes in the 1920s. It would be worth investigating whether there are old lead pipes that have not been replaced. But, for the most part, these reforms imply that the biggest steps have already been taken. For instance, sharp drops in lead released to the air occurred as a result of the gasoline reforms in the 1990s. Today, the main source of lead released into the air is industry.[17] And lead is still used in certain products, such as car batteries. While national levels of lead in Sweden are quite low, this does not rule out the possibility that children living in some neighborhoods, perhaps those closest to industrial areas and lead smelters, still experience too high levels of lead. Stroh et al. (2009), in fact, study exactly this: they assess how the blood lead concentrations of nearly 4,000 Swedish children born between 1978 and 2007 depends on their distance (home and school) from a local lead smelter in Landskrona. Children who were nearer to the smelter had higher blood lead levels, even in recent years.

17. See https://www.naturvardsverket.se/data-och-statistik/industri/bly-utslapp-luft-industri/.

Thus, a first step in evaluating the potential for lead abatement policies as a control for crime is to evaluate whether there are micro-geographies of children at disproportionate risk of high lead exposure. We should pay careful attention to whether there are higher lead levels for children at high risk of crime for other reasons, such as coming from disadvantaged households and living in poor and high-crime neighborhoods.

BEYOND LEAD: WHAT ABOUT OTHER POLLUTANTS?

Another important question to ask ourselves is whether other pollutants—which may be more prevalent than lead—have similar effects. There is certainly research that speaks to this possibility, though the pollutant-crime channels may differ than lead. For instance, some research shows that short-term exposure to air pollution increases contemporaneous violent crime (Burkhardt et al., 2019); this however is not about exposure during early childhood. Moreover, it has been shown in a recent working paper (Taylor, 2022) that exposure to pesticides (in early childhood) in the U.S. leads to adverse health impacts, lower test scores, and higher dropout rates; though this study does not include crime as an outcome, it is of course possible that these health and education impacts also translate into effects on crime. Knowledge about the relationship between pollution and crime is a young and growing research area that we should keep our eye on.

5.2 The Effect of Childhood Nutrition on Crime

WHY MAY CHILDHOOD NUTRITION IMPACT CRIMINAL BEHAVIOR?

This section focuses on how one aspect of childhood environment—nutrition—may impact crime. Though there is very little research on this question, it is one that is recent and shows promise. The potentially important role of childhood nutrition was in fact already highlighted in the previous section: the successful North Carolina lead intervention studied in Billings and Schnepel (2018) included nutritional information. Nutrition in early childhood could affect later criminal behavior through multiple channels. For instance, better nutrition when young can improve other outcomes like educational attainment, which increases the opportunity cost of committing crime; as we saw earlier

in this report, and consistent with Becker's economic model of crime (1968), more education reduces crime. Such a channel would certainly be feasible, as a number of research papers show that increased nutrition improves education (Bütikofer, Mølland, and Salvanes, 2016; Lundborg, Rooth, and Alex-Petersen, 2022). Alternatively, increased nutrition when young can "have lasting effects on physiological functions that result in improved self-control and less aggressive and violent behavior" (Barr and Smith, forthcoming).

THE CHALLENGES TO IDENTIFYING A CASUAL EFFECT OF NUTRITION ON CRIME

There are a number of obstacles to causally identifying whether an individual's level of early childhood nutrition causally impacts later life outcomes, including criminality. First, it is hard to directly measure an individual's level of nutrition. Second, even if one can measure nutrition, poor nutrition will be correlated with many other observable and unobservable individual characteristics that can also affect crime. For instance, children in households with low nutrition may also be living in poorer, high-crime neighborhoods and more likely to be living in poverty. Put simply—how can one disentangle the effect of nutrition from everything else correlated with poor nutrition?

CAUSAL EVIDENCE OF NUTRITION ON CRIME

The main approach used by economists to get around these issues is to study reforms that are meant to shock nutrition. These reforms may include increased nutrition in schools via free school lunches or other meal programs or access to programs that make it easier for families to provide nutrition to their children. Though there are a number of studies on how early childhood access to these programs affect health and education, there is only one studying crime as an outcome. Specifically, this is done by Barr and Smith (forthcoming) in the context of the U.S. Food Stamp Program. The Food Stamp Act was introduced in 1964 as part of the War on Poverty in the U.S.; basically, food stamps allow individuals to buy food at a heavily discounted price. The program was rolled out to all counties in the United States over a 10-year period. Barr and Smith use this roll-out in the U.S. state of North Carolina to estimate the impact of a birth cohort's exposure to the food stamp program on conviction rates later in life for those same birth cohorts.

Individuals born in different months and counties had different food stamp exposure given that the food stamp program was introduced at different times in each county. The authors find that each year of food stamp availability in early childhood (birth to age 5) reduces the chance of a conviction in young adulthood by 2.5 percent, and is driven by a 6 percent reduction in the risk of a violent felony conviction.

Do these results show that increased early childhood nutrition reduces crime? It would be more accurate to say there is evidence that a policy designed to increase nutrition reduced crime—in economics, we would call this the reduced form effect of the policy. One channel through which the food stamp program could reduce crime is through increased nutrition, which was the target of the program. But it is also possible that access to the program acted like a more general income shock to a household, and increased general purchasing power. Parents may have been able to spend more money on their children in general, and more time with them (if they had to work less for instance). Time spent with children could also improve in quality if the food stamp program reduced parental stress and behaviors such as drinking. The authors cannot disentangle these two channels.

There are no studies to date on the causal effects of childhood nutrition on crime in Sweden. But there is a recent study by Lundborg, Rooth, and Alex-Petersen (2022) that studies the effect of nutrition (via a school lunch reform) on a range of other economic, educational and health outcomes. Specifically, they study the effect of nutritional free school lunches that were rolled out to all Swedish primary schools between 1959 and 1969. They find long-term benefits of these programs: lifetime income was 3 percent higher for students exposed to the program throughout primary school. Outcomes such as education also improved. Moreover, the effects are largest for the poorest households. Though the authors did not study crime, it is not hard to believe that such a program also impacted crime, given that the largest effects were for those of the lowest socioeconomic status (where the criminal population is concentrated) and that the program impacted education (which we know to be causally related to crime).

THE POTENTIAL FOR SWEDISH POLICY REFORM

Can such policies—i.e., those that target early childhood nutrition—play an important role in modern day Sweden? After all, the Swedish

school lunch policies were rolled out decades ago and there is a relatively high level of nutrition provided in Swedish schools today. It should be asked whether there are sub-populations in Sweden today faced with challenges of providing adequate nutrition to their children: is there room for policy interventions to alleviate these burdens?

5.3 The Effect of Early Childhood Education on Crime

WHY MAY EARLY CHILDHOOD EDUCATION IMPACT CRIMINAL BEHAVIOR?

This chapter has so far highlighted the potential for a child's environment to impact future outcomes, including criminal behavior. Basically, any feature of that environment that affects the development of a child's cognitive and non-cognitive skills can affect crime as youths age into adulthood. In addition to the physical environment (e.g., lead exposure) and nutrition, early childhood education—i.e., education prior to mandatory schooling—may be especially important. If early childhood education increases total years of schooling or decreases the chance of dropping out of high school, then the education-crime channel discussed in Chapter 3 of this report provides a clear mechanism through which early childhood education can reduce future crime.

This section reviews the academic literature on the causal effect of early childhood education programs on crime in the U.S. context, where the main early childhood education program studied is Head Start.[18] Head Start is an early childhood education program targeted towards young children of low-income families.[19] These programs provide a package of treatments—they are in reality more than "education." While early learning and development, with an emphasis on making sure these children are ready for school, are a core component, these programs also emphasize health (by including health screenings and nutritious meals) and family well-being.

18. See https://www.acf.hhs.gov/ohs/about/head-start.

19. Specifically, Head Start targets children ages 3 to 5 and Early Head Start targets infants and toddlers.

THE CHALLENGES TO IDENTIFYING A CASUAL EFFECT OF EARLY CHILDHOOD EDUCATION ON CRIME

Whether or not a child attends early childhood education varies across households, along with many other household characteristics. In the U.S., for instance, children who attend pre-school tend to live in better neighborhoods and come from wealthier families. This complicates one's ability to separate out the causal effect of program participation on crime from the effect of these other characteristics and/or experiences on crime. Similarly, more early education programs may be located in better quality neighborhoods: the availability of these programs is not random but related to other neighborhood characteristics that may also affect crime.

CAUSAL EVIDENCE OF EARLY CHILDHOOD EDUCATION ON CRIME

Much of the early research on the effects of Head Start and similar programs found mixed evidence regarding the effects. However, as these programs were not randomly assigned to participants and often of small sizes, many studies suffer from imprecision and cannot always be interpreted causally. A number of more recent studies, however, that combine quasi-experimental research designs with larger data sets (that increase precision) are consistently finding beneficial effects of Head Start on education and future crime.

The basic research design utilized in these studies takes advantage of two features of the Head Start program. First, Head Start was not introduced in all counties at once but rather rolled out over time (starting in the 1960s). Second, once it was introduced into a county, only children who were below the appropriate age threshold had access to a program. Thus, a four-year-old would be eligible to participate while a five-year-old in the same county would have just missed accessing the program. These program features allow researchers to compare education and crime outcomes for children born in years that were exposed to the program (i.e., the treatment group) to slightly older cohorts who were not exposed (i.e., the control group). Moreover, researchers can use the variation across communities in the timing of Head Start funding to control for other cohort differences in environments, such as general labor market conditions.

What do the researchers find? Using individual census data, Bailey,

Sun, and Timpe (2021) find that Head Start had large impacts on education outcomes: years of schooling increase by 0.65 years, while the chance of dropping out of high school decreases by almost 3 percent. Significant increases in college enrollment and completion are also seen. Though Bailey, Sun, and Timpe do not find a significant effect on future incarceration risk, this can be because incarceration as measured in the census is an imperfect measure of lifetime crime, i.e., it only captures a snapshot of who is incarcerated at the time of the census. The large effects on education suggest that criminality can feasibly be affected by participation in such early childhood education programs.

Using administrative crime data for the U.S. state of North Carolina that includes all crime convictions, Anders, Barr, and Smith (forthcoming) indeed find evidence that this is the case. These authors study two programs—Head Start for those born in the 1960s and 1970s and Smart Start for those born in the 1980s and 1990s.[20] The authors find that the conviction rate is lowered by about 20 percent in high poverty areas as a result of both programs.

Is exposure to Head Start sufficient to impact long-term outcomes? Does it matter what experiences the child has after the Head Start exposure, i.e., when they are of schooling age? Johnson and Jackson (2019) study the interactive effects of exposure to early childhood education (Head Start) as well as programs meant to increase spending in and the quality of education for kindergarten through year 12 (i.e., K-12). The authors find large, positive long-run effects of both programs but also evidence of a complementary relationship. Specifically, they find that Head Start increased educational attainment and adult earnings while reducing the chance of incarceration for children of low-income families. Likewise, a similar pattern of effects was seen for increased K-12 spending. However, the beneficial effects of Head Start were *only* seen for children who were also exposed to the higher K-12 spending. For investments in early childhood education to be successful, these investments need to be sustained throughout the child's mandatory education as well.

20. Anders, Barr, and Smith (forthcoming) describe Head Start as being designed to focus on the "whole child" by including many wrap around services alongside education. Smart Start helped pay for childcare, improved the quality of early care, provided tools to help parents support their children, and improved access to preventative healthcare.

Finally, researchers have shown that these early childhood education programs may affect not just the outcomes of the current generations, but also that of future generations. Barr and Gibbs (forthcoming) study the outcomes of children whose mothers were and were not exposed to Head Start (given the county that they lived in and the age they were when the program was introduced there). They find significant intergenerational effects: children of Head Start mothers obtained more education and were less likely to engage in criminal activity.

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Taken together, these studies suggest that there are large benefits to early childhood education programs. These returns are not just to the treated individual in the form of better education outcomes and lifetime outcomes but also to society in the form of lower crime rates today and in the future.

Are these U.S.-based findings informative for the Swedish context? Early childhood education in Sweden is certainly different than in the U.S. As highlighted above, the U.S. Head Start program is targeted towards low-income households. But the Swedish pre-school/child-care program is universal. Do universal programs have similar effects?

Dietrichson, Lykke Kristiansen, and Viinholt (2020) survey 26 studies of the long-term effects of universal pre-school programs on child outcomes. These studies use natural experiments and quasi-experimental research designs to tease out causal effects—none of these studies are conducted in the Swedish context, however. The findings are somewhat mixed for outcomes related to performance in school (test scores) and outcomes related to well-being and behavior; the evidence is stronger and more consistent that outcomes such as educational attainment are improved. Only two studies appear to include crime as an outcome: one finds a positive effect (Baker, Gruber, and Milligan, 2015) and the other a negative effect (Smith, 2015). The bottom line is that we do not know as much about the effect of universal pre-school on adult criminality.

Chapter 3 highlighted that multiple aspects of education could be important: it was not just the extensive margin of school attendance that mattered but also the intensive margin of the quality of schooling.[21]

21. In general, the extensive margin is a dichotomous measure of participation or not,

The same may be true in the early childhood setting (though there is less (if any) research on this question). Though there is universal early education available in Sweden, one needs to ask whether there are other margins that can be improved, including the quality. Moreover, given that almost all of the studies find significant effects of programs targeted towards the low-income population and larger effects for the lower socioeconomic status households in the universal care analyses (Dietrichson, Lykke Kristiansen, and Viinholt, 2020), we should also assess the availability, take-up, and quality of care provided in the low socioeconomic, high-crime neighborhoods in Sweden. Is it sufficient?

while the intensive margin measures the intensity of that participation. In the case of schooling, the extensive margin is attending school versus not, while the intensive margin can be some aspect of the quality or length of schooling.

6. Healthcare

THE CRIMINAL JUSTICE population has a wide range of healthcare needs. Some of the most prominent needs relate to mental health; mental health diagnoses are diverse, including early childhood onset conditions (e.g., ADHD), depression and anxiety, and a wide range of substance abuse disorders. Simple statistics, which are not specific to a single country, highlight the potential for a causal relationship between healthcare and crime.

- Nearly 60 percent of all arrestees in the U.S. test positive for some illicit substance at the time of arrest (Bondurant, Lindo, and Swensen, 2018).
- More than one million people with mental health problems are supervised in the U.S. justice system (jail/prison, probation, parole) on any given day (Frank and McGuire, 2010).
- 37 percent of U.S. prison and 44 percent of U.S. jail inmates were diagnosed with a mental disorder prior to incarceration (Bronson and Berzofsky, 2017).
- 60 percent of U.S. prisoners are classified as drug dependent or abuses (Bronson et al., 2017).
- More than 60 percent of U.K. prisoners suffer from personality disorders and 50 percent from depression or anxiety (Burkhi, 2017).
- More than 50 percent of Swedish prisoners had been previously diagnosed with a psychiatric disorder, most commonly a substance abuse disorder (Haglund et al., 2014).

Though substance abuse and mental health issues are quite prevalent, these are not the only health problems associated with the criminal justice population. For instance, many studies document, largely using survey data, that incarcerated individuals have worse health outcomes and behaviors than non-incarcerated individuals; these problems range from fast food consumption and smoking to stress-related illness, infectious diseases and mortality. This body of research is surveyed in Hjalmarsson and Lindquist's (2022) study of the effect of more time in Swedish prisons on mortality.

Finally, many of the studies discussed in this section highlight substance abuse treatment—a natural question is whether this belongs in a chapter on healthcare, or perhaps a chapter on drugs? For the purposes of this report—with an emphasis on social policies—I believe that treatment and healthcare is the right categorization. A broader discussion of policies and laws that affect the supply and/or demand of illegal drugs falls outside the scope of social policies.

Channels through Which (Mental) Healthcare May Affect Crime

If there is a causal relationship between (poor) health and crime, then social policies that increase healthcare access can reduce crime.[22] Health and mental health can affect criminal behavior through multiple channels. First, there are economic channels. If poor health, mental health, or substance related addictions prevent individuals from maintaining employment, then the opportunity cost of criminal behavior is lowered. Similarly, poor health and mental health in juveniles can affect crime by affecting the accumulation of human capital. Second, individuals may self-medicate conditions like depression with illegal drugs (Jácome, 2022). Third, many mental health and substance abuse related health conditions can affect one's ability to use sound judgement in making decisions.

There are a number of reasons to believe that social policies that expand access to healthcare (especially substance abuse and mental

22. One study that explicitly focuses on the health-crime relationship rather than the healthcare-crime relationship is Chalfin, Danagoulian, and Deza (2019), who study the effect of high pollen counts and seasonal allergies on violent crime.

health treatments) are particularly relevant for the population at-risk of criminal activity. These individuals may

- live in communities with less opportunities for treatment, lower quality treatment options, or excess demand for treatment,
- be unable to afford care and treatment, and
- not try to access care, due to a lack of knowledge or education, for instance.

Regardless of the reason, and despite the stark prevalence statistics cited above, it is likely that large shares of these populations are untreated. In the U.S., Bondurant, Lindo, and Swensen (2018) report that in 2014, "85% of those abusing or dependent on an illicit substance did not receive treatment."

Finally, there are multiple opportunities or stages through which healthcare—especially mental health and substance abuse treatment—can be provided: (i) before an individual comes into contact with the criminal justice system (i.e., no crime has been committed), (ii) after a crime has been committed but as an alternative to punishment (e.g., a diversion program), and (iii) after a crime has been committed but in conjunction with or as part of punishment (e.g., healthcare while in prison). Sweden, for instance, has historically placed significant emphasis on high quality prison conditions, including healthcare. But, by then, one has to ask if it is too late: does providing access to these services before a criminal act is committed prevent that crime? This section will emphasize studies of the relationship between crime and healthcare access outside of the criminal justice system.

The Challenges to Identifying a Causal Effect of Healthcare on Crime

Why is it hard to identify the relationship between healthcare access or treatment and crime? One of the main problems is—once again—omitted variable bias. When studying individual data, for instance, researchers run into the problem that individuals with low health or healthcare access are also disadvantaged in many other ways (e.g., low education, low socioeconomic status, live in high-crime neighborhoods) that also affect crime. Is it the individual's health or healthcare that affects crime, or is crime affected by these other factors with which

health and healthcare access are correlated? Similar problems exist at community levels: which communities have treatment centers and what other non-healthcare services are provided in those communities? Doleac (2018) provides a nice review of these issues as well as a number of U.S. studies that demonstrate a causal relationship between healthcare (especially substance abuse treatment) and crime. The following section highlights these articles as well as some more recent academic works.

Causal Evidence of the Impact of Healthcare on Crime

One type of healthcare service particularly relevant to this population is treatment for substance abuse, which includes drugs and alcohol. (As such, this section is clearly related to the Chapter 4 discussion of alcohol-related policies, including treatment.) Bondurant, Lindo, and Swensen (2018) study the effect of expanding access to substance-abuse treatment centers on local crime rates. These centers can reduce crime if such treatment reduces drug use. Drug use can be potentially causally linked to crime through multiple channels, including pharmacological effects that increase aggression, financially motivated crimes committed to support drug habits, and violence in the drug market. At the same time, such facilities could potentially increase crime (or at least geographically shift it) if they bring potential perpetrators into contact with potential victims—in fact, it is often an argument like this that leads to neighborhoods lobbying to not build such facilities. Bondurant, Lindo, and Swensen (2018) provide an empirical answer to this question: how does the expansion of treatment facilities affect local crime rates? In other words, they do not measure directly the effect on the treated individual, but rather the effect on the local crime rate. The authors do not compare crime rates in locations (U.S. counties) with and without substance abuse treatment centers, as there may be many other unobservable differences across areas. Rather, they identify the causal effect of treatment facilities on crime by utilizing within-county variation in treatment centers that arises from the opening and closing of facilities. While such a strategy is not without its empirical concerns—namely that trends in crime or drug use drive the opening/

closing decision—the authors provide evidence that supports their research design. This analysis finds that additional treatment facilities significantly reduce serious violent crime (homicide and aggravated assault) and financially motivated crime (robbery and motor vehicle theft) but there are no effects on the more common and less serious crimes of simple assault, burglary, and larceny.

Besides the availability of treatment facilities, another constraint faced by the population at high risk for crime is the cost of healthcare and treatment. In the US, this is closely related to the lack of health insurance in this population. Low-income populations in the U.S. largely obtain healthcare through a public insurance program called Medicaid. Eligibility criteria were historically fairly restrictive, however, leaving large shares of the population—especially single young men—uninsured. In recent years, access to Medicaid has been expanded, at least in some states. Researchers have begun to take advantage of these reforms to study how access to healthcare services affects crime rates.

Wen, Hockenberry, and Cummings (2017) study the expansion of Medicaid access through a federal matching program introduced under the Bush administration in 2001, which enabled states that applied and were approved for the program to expand access to Medicaid benefits. These expanded benefits primarily targeted low-income adults without children. The authors find that this expansion reduced the rates of robbery, aggravated assault, and larceny, i.e., both violent and property crime. What channel underlies this finding? The authors find an approximate 20 percent increase in the number of individuals receiving substance abuse treatment. To the extent that this reduced substance use, this is one potential channel. The findings of Wen, Hockenberry, and Cummings (2017) are also supported by Vogler (2020), who studies a later expansion of the Medicaid health insurance due to the Affordable Care Act. The author finds that violent crime decreased by about 5 percent in states that expanded access compared to those that did not.

The above studies highlight that there does indeed appear to be a causal link between healthcare access and crime rates and that healthcare related to the treatment of substance abuse plays a particularly important role. Jácome (2022) provides one of the most recent academic evaluations. She uses linked administrative data (e.g., Medicaid records

and criminal records) in the U.S. state of South Carolina to study the effect of losing access to Medicaid on an individual's criminal behavior. Specifically, and as alluded to in the above studies, public health insurance via Medicaid is available to low-income children in the U.S. but generally not available to low-income single (childless) adults. Jácome takes advantage of the rule that individuals enrolled in Medicaid lose their eligibility on their nineteenth birthday. She compares what happens to the criminal behavior of enrolled men who lose their coverage (treated group) to the path taken by eligible but non-enrolled men (control group). Jácome's study pushes the frontier in multiple ways. First, it is worth noting that these kinds of linked records are rare in the U.S., as opposed to Sweden where such linked registers form the foundation of many empirical studies. Thus, in contrast to the first set of studies that focus on neighborhood crime rates, Jácome studies the criminal behavior of individuals who do and do not have healthcare access. Second, these micro-data allow Jácome to focus on a particularly high-risk population—those with problematic mental health histories. While there is a lot of overlap in these two sub-populations—substance abusers and mental health patients—the latter has not been studied directly in the academic literature. Jácome (2022) finds that the loss of Medicaid coverage for treated men results in a 15 percent increase in the risk of incarceration in the next two years. Moreover, the results are completely driven by the population of men with mental illness, and are particularly strong for those who were using behavioral health services right before their 19th birthdays. In other words, these individuals relied on Medicaid to access mental health medications; the loss of this treatment increased criminal behavior. Effects are seen across all broad categories of crime: property, violent, and drug offenses.

Another paper that explicitly considers mental healthcare is Landerso and Fallesen (2021). This analysis is conducted in the Danish context—thus with a healthcare framework closer to that of Sweden. Specifically, Landerso and Fallesen study the effect on short and long run crime outcomes of the decision to admit individuals for treatment in psychiatric hospitals in Denmark from 1999 to 2001. As the decision to admit someone is not random, but rather a function of the severity of the case or need for treatment, the authors search for exogenous variation in this decision. They use the contact intensity at the hospital in the week before the individual makes contact— hospitals with high

contact intensity will have less capacity and have to turn away some potential patients. The authors find that admission to psychiatric hospitals reduces an individual's crime—though they suggest that much of this effect is due to incapacitation, i.e., crimes that cannot be committed while the individual is isolated from society.

Finally, Deza, Maclean, and Solomon (2020) study the effect of local access to mental healthcare providers on crime in the United States using a panel of U.S. counties. The authors utilize variation over time, and within counties, in the number of county mental healthcare offices. They find evidence that more mental healthcare offices reduce county crime rates, though the effects are modest in size.

The Potential for Swedish Policy Reform

The above studies find causal evidence that

- mental healthcare treatment outside of prison decreases crime,
- substance abuse treatment outside of prison decreases crime, and
- policies that make these services more accessible or affordable decrease crime.

While many of these studies are based on the U.S. context, where healthcare and health insurance drastically differ from that in Sweden, there is little reason to believe that the main finding—healthcare treatment decreases crime—is U.S. specific. The Swedish prison population is after all as negatively selected in terms of their health as their U.S. counterparts. But, while there is clearly room to improve healthcare affordability and access in the U.S., this begs the question of whether the same can be said in Sweden, which has a universal healthcare system for all citizens and legal residents.

But, is the access to and/or utilization of healthcare equal for all sub-populations? Is the quality of care sufficient in high-crime neighborhoods? Does it meet the needs of increasingly heterogeneous population, with an increasing share of immigrants who may not speak sufficient Swedish to communicate with medical professionals? Are the fees associated with medical visits a constraint for the low socioeconomic status populations at high risk of crime? Universal healthcare does not mean immediate care: do queues in the system prevent those with mental health issues from getting the urgent care they need?

Finally, universal care does not mean that everyone asks for help: are these populations undertreated? The answers to these questions are necessary to assess the viability of using healthcare related policies as a means of controlling crime.

7. Employment

Channels through Which Labor Market Policies May Impact Crime

Labor market conditions and experiences can causally impact crime through multiple channels. As a starting point, let us again consider Becker's (1968) economic model of crime, in which potential offenders weigh the expected benefits of crime with its expected costs, including opportunity costs. These opportunity costs are typically thought of as the returns to working in the legitimate labor market: how much would being convicted/incarcerated cost an individual? Thus, in theory, anything that increases returns to legitimate labor should decrease crime. More tangibly, an individual's returns in the labor market depend on their wages and employment status: higher wages and increased employment should decrease crime through such a channel. Moreover, given the age distribution of offenders, one can imagine that wages and employment opportunities for teens and young adults are particularly relevant.

Employment can affect criminal behavior through multiple other channels as well. First, like schooling, individuals who are working are kept busy: engaging in the act of work itself can incapacitate individuals from criminal activity during that time. Second, the income earned from employment can decrease the need for illegitimate income. Third, being unemployed can affect an individual's mood (e.g., depression and anger), which can potentially lead to violent behavior.

This chapter focuses on the causal effect of employment on crime, and gives extra attention to youth employment and related programs.

However, as noted above, unemployment is just one aspect of the labor market. For instance, a number of researchers have also studied wages (not discussed here) and found evidence that wages do impact crime (Gould, Weinberg, and Mustard, 2002; Machin and Meghir, 2004; Grogger, 1998).

Challenges to Identifying a Causal Effect of Unemployment on Crime

Despite these intuitive and strong theoretical predictions, causal evidence of the unemployment-crime relationship is difficult to identify in the empirical literature. When studying individual level data, researchers are faced with the typical confounders of omitted variable and simultaneity bias. With respect to the former, as seen earlier, many criminal offenders are unemployed, but they also have low education outcomes and high propensities for other risky behaviors. This makes it hard to disentangle whether unemployment, for instance, causes crime, or whether some other factors, such as education or risky behavior, contribute to both unemployment and criminal activity. With regards to simultaneity, another problem is identifying the direction of the effect: unemployment can affect crime, but criminal behavior (and the associated criminal records and time out of the labor market when incarcerated) can also affect employment status and opportunities. Similar challenges are faced when using aggregate community level data. If studying the effect of local unemployment rates or minimum wages on crime rates, one has to recognize that communities that differ in terms of their labor market characteristics also likely differ in many other dimensions.

Causal Evidence of Labor Market Policies on Crime

UNEMPLOYMENT AND CRIME

The first studies to try to identify the causal effect of unemployment on crime used panel data sets of annual regional (municipality, county, or state) crime and unemployment rates. In other words, these studies used variation in unemployment rates *within* regions over time as the source of identification rather than that across regions. The first of

these studies by Raphael and Winter-Ebmer (2001) is conducted in the U.S. context using state level panel data from 1971 to 1997. These authors find that increases in unemployment rates led to large and significant increases in property crime rates; the evidence is much weaker with respect to an unemployment-violent crime relationship. Öster and Agell (2007) find a similar pattern in Sweden using a panel data set of Swedish municipalities from 1996 to 2000. During this period, the unemployment rate in Sweden decreased from almost 12 percent to less than 7 percent; for young adults (less than 25), the unemployment rate decreased from about 21 percent to less than 9 percent. In the Swedish data, significant positive relationships are seen between unemployment rates and burglary, auto theft, and drug possession, but not violent crime. Moreover, these authors also find no evidence that youth unemployment is a particularly relevant predictor of crime. This conclusion is not, however, supported by research in other countries, or further Swedish research using individual data (rather than aggregated municipality data).

Specifically, Fougère, Pouget, and Kramarz (2009) study the effect of youth unemployment rates on crime in a panel of French counties (départements) in the 1990s. These authors in fact find that increases in youth unemployment causally increase burglaries, thefts, and drug offenses. Grönqvist (2011) uses individual data from Swedish administrative registers and focuses on a sample of males aged 19 to 25. Using these data, Grönqvist's main research design is to look at the relationship between changes in an individual's unemployment experiences and their criminal activity. The advantage of this design is that it controls for everything about the individual that is constant over time—even if this trait cannot be observed in the data. Grönqvist (2011) finds large effects of unemployment on property crime and smaller (but in contrast to the existing research, significant) effects on violent crime. One possible explanation for the differential finding in individual versus aggregated data is that aggregate analyses are plagued by general equilibrium effects. Higher unemployment rates, for instance, can affect crime through multiple channels, such as regional spill-overs, crowding out of criminals due to increased supply, and decreasing available goods to steal (in other words, unemployment does not just affect the supply of offenders but also the supply of potential victims). Finally, another interesting finding of the Grönqvist paper is

that an incapacitation channel may play some role: using data on the timing of the crime (weekday versus weekend), he finds suggestive evidence that unemployment increases the time available for criminal behavior.

Thus far, the above studies find causal evidence of an effect of unemployment on property crime, including for youths, who are disproportionately represented in the offender population. I conclude this section with a discussion of one more aspect of the unemployment-crime relationship that is particularly relevant for youths. Bell, Bindler, and Machin (2018) argue that the unemployment rates faced by youths when they leave school and enter the labor market are particularly relevant for the crime paths on which these individuals embark. That is, there can be important dynamic effects of unemployment on crime. Imagine that youths who exit school into a poor labor market are more likely to commit a crime (as seen in the previous studies). These youths may accumulate criminal capital and experience, which decrease the costs of future crime. These youths may also lose human capital by having a criminal record (e.g., if prison prevents the accumulation of labor experience or firms discriminate against workers with criminal records), making future employment less likely and/or wages lower. Using U.S. and U.K. data, Bell, Bindler, and Machin find evidence of such dynamic effects: leaving school during a recession significantly increases the chances of a *life* of crime.

SUMMER YOUTH EMPLOYMENT PROGRAMS (SYEP)

As highlighted above, crime is disturbingly over-represented amongst youths. The age-crime profile peaks in the late teens and early adulthood; moreover, youth are twice as likely as adults to be perpetrators of violence (Modestino, 2019). A new wave of youth employment programs that provides summer jobs for youths has seemingly found success in reducing violent crime. These programs could impact crime rates through multiple channels: incapacitating youth by keeping them busy during the idle summer months, improving outside opportunities and increasing the opportunity cost of crime, improving other behaviors that are related to crime (such as responsibility and attitudes towards society), and providing income that reduces the need for crime.

Heller and Kessler (2017) find that 27 of the 30 largest U.S. cities had summer youth employment programs; these programs vary in

size, ranging from about 75,000 per year in New York City to 25,000 in Chicago and 10,000 in cities like Los Angeles, Washington DC, Detroit, Baltimore, and Philadelphia. Kessler et al. (2021) report that these programs cost about 2,000 U.S. dollars per youth. Much has been learned about the potential success of these programs as channels through which crime can be reduced by evaluating three programs—Chicago, Boston, and New York—in which randomization is used to assign youths to the treatments. Such randomization allows one to isolate the effect of the treatment—a summer job and/or a behavioral therapy—from selection bias related challenges. In other words, it allows the researcher to disentangle the effects of the programs on crime from the effects on crime of other differences between youths who do and do not participate (such as risk preferences, motivation, and family background).

Exhibit 7.1 highlights the findings from the evaluations of these summer youth employment programs. Heller (2014) conducted the first such evaluation in Chicago. The effects are strikingly large: there is a 43 percent reduction in violence for both youths who received 25 hours of paid employment and youths who received 15 hours of work plus ten hours of therapy. What mechanisms underlie these effects? It is not just the therapy itself, but must be something about the job, given that the effects are also seen for those without therapy. Moreover, most of these effects accrued after the program was completed, suggesting they are not just a mechanical result of incapacitation (though this does not rule out a dynamic incapacitation story as discussed in the education chapter). Davis and Heller (2020) replicate this analysis for a follow-up cohort in which eligibility was expanded to youths both in and out of school: similar effects were seen for both groups of disadvantaged youth, even those who are more disconnected from society (no longer enrolled in school). They also show that this drop in violence occurs even though there is no observable schooling improvements or formal employment in these years.

Similarly large effects on violent crime were seen in a subsequent evaluation of the Boston program by Modestino (2019). In this program, property crime decreased by 29 percent. Once again, incapacitation does not appear to be the primary channel as most of the effects occur post-program. Even though the effects are not immediate, Modestino does find using survey data that the program yielded short-term

Exhibit 7.1 Overview of Summer Youth Employment Programs (SYEP) Effects on Crime.

City	Program details	Effects
Chicago (Heller, 2014)	Randomized control trial (RCT) in 2012 of 1,634 disadvantaged high school youth. Youth assigned to control group, jobs-only (25 hours per week of paid employment), or jobs plus cognitive behavioral therapy (15 hours of work +10 hours therapy).	43 percent reduction in violence over 16 months, mostly after the 8-week intervention ends. No effect on property crime. Both treatments—jobs only and jobs plus therapy—were equally effective.
Chicago (Davis and Heller, 2020	2012 RCT plus follow up 2013 RCT with similar 6-week program but expanded eligibility to include out-of-school youth.	42 percent reduction in violence (in school youth). 33 percent reduction in violence (out of school youth). 26 percent reduction in violent-crime arrest, even when removing program (incapacitative) period.
Boston (Modestino, 2019)	The Boston SYEP reaches 10,000 youth per summer and connects them to 900 local employers. Youths work 25 hours per week for six weeks at minimum wage and receive 20 hours of job-readiness training (e.g., help preparing for interviews, job applications, how to search for jobs, and conflict resolution). Analysis based on sample who applied in 2015 through the non-profit Action for Boston Community development, who uses random assignment given the large number of applications.	35 percent reduction in violent crime. 29 percent reduction in property crime. Most of the effects are post-program.
New York City (Kessler et al., 2021)	163,447 youth who applied to NYC SYEP from 2005 to 2008. Computerized lottery assignments spots given oversubscription. Large program with both high- and low-risk youth (at risk = past arrest).	17 percent reduction in chance of arrest during the summer. 23 percent reduction in chance of felony arrest during the summer. Effects driven by subsample (3 percent) with a prior arrest. Effects are still large 5 years out but no longer statistically significant.

changes in attitudes and behaviors that could be related to crime, including an improvement in participants' attitudes towards the community as well as social skills and behavior (e.g., managing emotions and asking for help).

Finally, Kessler et al. (2021) evaluated the New York City program. Though the sample is large, it is not as high risk as those in Chicago for instance. Just 3 percent had an arrest prior to the program. And it is just for this sub-sample that the authors find an effect. The chance of felony arrest is reduced by more than 20 percent for this high-risk subsample: in this case, the effects are seen during the program and while they remain large over time, they are not statistically different than zero.

Taken together, this new body of work provides strong evidence that summer jobs programs for youth—and especially those for high-risk youth—reduce violent crime. Though the channels through which these effects occur are still unclear, the research suggests it is more than a pure incapacitative effect and it is not just driven by the therapy sometimes attached to the program.

Potential for Swedish Policy Reform

The above bodies of research provide evidence of a causal link between employment and crime for youths and young adults. Lower unemployment rates do decrease crime, but mainly only property crime. Summer jobs targeted towards disadvantaged youths also decrease crime (violent and property), and have effects that last beyond the program. Keeping out-of-school youths (either during the summer or beyond schooling ages) employed appears to help keep them out of trouble—incapacitation appears to play some role. This is important to keep in mind in a country like Sweden where welfare plays such an important role. Even if welfare can insure against some of the challenges of unemployment, i.e., lower income, it does not necessarily eliminate other channels through which employment can affect crime, such as incapacitation. I also note, however, that the summer jobs research shows that incapacitation is not the only channel that matters.

The large and significant impacts described above suggest that it is worth considering whether there is room for reform in the Swedish context and whether unemployment trends can be a contributing fac-

tor to the recent rise in Swedish crime rates.

A starting point to answering this question is to study recent trends in youth unemployment. Exhibit 7.2 presents the unemployment rate in the last two decades, as reported on the Statistics Sweden website, for male youths aged 15 to 24. Panel A compares the 15–24 male unemployment rate to that for other age groups, while Panel B shows the unemployment rate for 15–24-year-olds who are born in Sweden versus those who are foreign-born. A number of patterns stand out:

- Unemployment has been trending up from 2018 to 2020 for young adults; this was especially true during 2020, and could be driven by coronavirus-related shocks.
- Even pre-corona, unemployment rates are still very high in Sweden for young adults: More than 18 percent of 15–24-year-olds were unemployed in 2018, whereas 6.5 percent of 25–34-year-olds and less than 5 percent of 35–64-year-olds were unemployed.
- The unemployment rate for those who are foreign born is particularly high, and above 30 percent even pre-corona in 2018.
- The youth unemployment rate appears more volatile and sensitive to shocks compared to that for other age groups. This is particularly concerning given the above research on the crime scars of recessions for youths first entering the labor market.

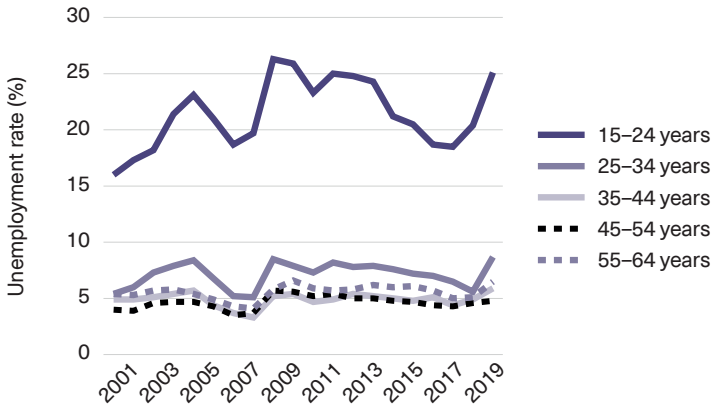
Even at the national level, these figures suggest that there is room for Swedish policy targeting youth unemployment as a channel to reduce crime. However, a deeper look into these statistics should be had first. In particular, one should ask whether youth unemployment rates in high-crime neighborhoods or for high-risk populations are particularly poor and/or getting worse?

The Swedish government does appear to recognize the potential importance of summer jobs for youths, though this has not been linked to its potential effects on crime. Specifically, the government set aside 180 million Swedish kronor in 2021 to create municipal summer jobs for young people as a response to the high (corona-related) unemployment rates.[23] Moreover, the government aims to target those in socioeconomically disadvantaged households. Based on the above de-

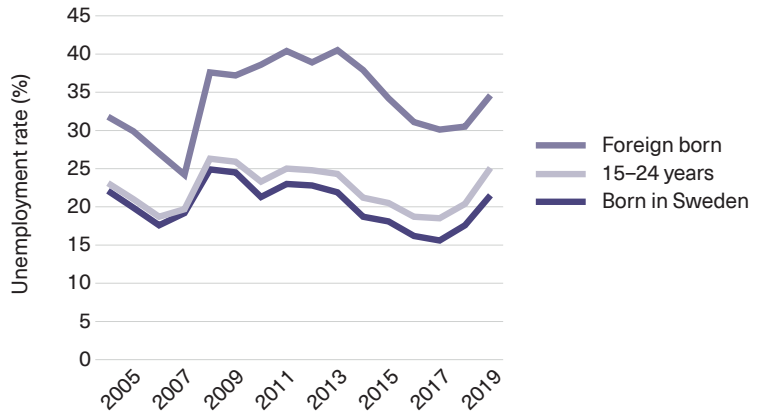
23. https://www.regeringen.se/artiklar/2021/04/regeringen-tillfor-180-miljoner-kronor-till-sommarjobb-for-unga/.

Exhibit 7.2 Trends in Swedish Male Unemployment.

Panel A. Swedish Male Unemployment Rate by Age Group 2001–2020.



Panel B. Swedish Males Aged 15–24: Unemployment Rate by Region of Birth 2005–2020.



Note: Author calculations using data from Statistics Sweden website: https://www.statistikdatabasen.scb.se/pxweb/en/ssd/START__AM__AM0401__AM0401A/NAKUBefolkning2Ar/.

scribed summer jobs research, a number of policy related steps seem worth considering:

- *Further expansion of Swedish summer jobs programs.* Funding was increased due to high unemployment rates attributed to corona. But, unemployment for young adults was already quite high, even pre-corona. One should consider sustaining summer jobs funding, and even increasing it, even after the jobs market recovers from corona.
- *Further targeting of the Swedish summer jobs programs towards those at high risk of crime.* Though there is already some targeting, one can consider refining the selection criteria to youth who are at the highest risk.
- *Outreach to high-risk communities.* The first selection criteria is that one applies for and searches for such a job. Trying to get high-risk disadvantaged youth into these programs, even if they do not apply on their own initiative, may be worth considering.
- *Expand the summer jobs programs to include features besides employment, such as mentorship, behavioral therapy, and job search training.*
- *Conduct evaluations of the existing Swedish summer jobs programs.* To the best of my knowledge, the Swedish summer jobs program has not been evaluated. What is the causal effect of this program on education outcomes, labor market outcomes, and crime outcomes in the short and medium term?

8. Welfare

Channels through Which Welfare Policies Can Affect Crime

As shown in Exhibit 2.4, 58 percent of Swedish prisoners received welfare payments in the year before their prison sentence. This statistic is even higher—73 percent—for property offenders sentenced to prison. In other words, there is a strong relationship between welfare receipt (one potential proxy for poverty) and criminality. Whether or not welfare can be used as a policy lever to control crime, however, depends on whether there is any causal relationship.

Welfare policies can be causally linked to crime through multiple channels. To the extent that welfare provides necessary income for individuals who cannot work or cannot find work, then welfare receipt can reduce crime by alleviating these financial pressures. However, one common concern is that welfare receipt or dependence provides a disincentive for individuals to be engaged in the legitimate labor market. This can increase criminal activity through two channels. First, if income from welfare is less than what could be earned in the labor market, then Becker's economic model of crime would predict an increase in crime: the expected benefits of crime will outweigh the expected costs more often. Second, individuals who are supported via welfare and not employed may be more likely to commit crimes given the increased amount of free time. In other words, unemployed welfare recipients would not be incapacitated by their jobs—a finding highlighted in previous sections.

Sweden is clearly a country with a high level of welfare provision.

The relevant policy question is not really whether more welfare should be provided, but perhaps *how* welfare should be provided. The following sections will discuss two aspects of welfare provision that have been causally linked to crime: the timing and frequency of benefit receipt and activation policies. If welfare recipients are incapable of smoothing their income from one payment to the next, then the financial pressures that may contribute to an individual's decision to commit crime may vary over the payment cycle. Such consumption smoothing may be particularly challenging for poor individuals who may be less likely to have access to credit cards or savings. Activation policies, which require individuals to participate in job training, education, and/or community service, can affect crime by incapacitation, changing future work options, and/or disincentivizing welfare participation.

Challenges to Identifying a Causal Effect of Welfare on Crime

Individuals who are on welfare are negatively selected in many dimensions that are related to crime, including educational attainment, family background, neighborhood characteristics, and drug and alcohol use. Thus, as with many of the other factors discussed in this report, omitted variable bias is the main challenge faced by empirical researchers aiming to disentangle whether any of the welfare-crime relationship is causal. However, to the extent that having a criminal record makes it harder for one to obtain legitimate employment and increases dependence on welfare, simultaneity is also a relevant challenge. In other words, it is hard to disentangle which direction the relationship goes: does welfare receipt cause crime or does crime cause welfare receipt?

Evidence of the Causal Effects of Welfare on Crime

A number of studies consider the link between welfare and crime by focusing on the timing of welfare payments, which are usually dispersed on a monthly basis. Most of these papers are in the U.S. context, but look at a wide range of welfare programs and benefit types.

Foley (2011) considers whether the amount of time from the date of welfare receipt affects the rate of criminal activity. He studies a sample

of cities in which at least 10 percent of the population participates in the Food Stamp Program, which provides funds that can explicitly be used in food stores. This is not the only form of welfare provided, but is the most common. Other welfare programs in these cities include TANF (Temporary Aid for Needy Families) and SSI (Supplemental Security Income). There is variation across the cities in terms of the timing of payments—some are in the first 10 days of every month, for instance, while others are at later dates or staggered dates throughout the month. Foley finds that crime is higher after the first ten days of the month in jurisdictions with early in the month welfare payments relative to other jurisdictions.

A more recent paper by Carr and Packham (2019) studies the relationship between the schedule of SNAP (Supplemental Nutrition Assistance Program) disbursement and crime. The question is similar to the Foley paper, but the research design and data are quite different. Identification comes from a reform in Illinois that substantially increased the number of SNAP distribution days and from an Indiana policy that assigns SNAP benefit days by last name (a type of staggering). Determining the day of receipt in this way breaks any potential link between individual characteristics (unobserved or observed) and welfare receipt, as the first letter of one's last name is not linked to such characteristics. Consistent with Foley (2011), Carr and Packham find that crime increases in the last week of the benefit cycle due to resource constraints.

Both of the studies highlighted thus far focus on in-kind transfer programs (food). Another study by Watson, Guettabi, and Reimer (2020) asks a similar question with respect to a universal cash transfer program—the Alaska Permanent Fund Dividend—that provides an annual unconditional lump-sum payment. These authors find that substance abuse incidents increase in the four weeks following a payment while there is an 8 percent decrease in property crime.

Taken together, these papers demonstrate a link between the timing of welfare payments and criminal activity, especially property crime. The results suggest that more frequent payments to help recipients smooth their consumption, or other financial training programs, could reduce crime.

Another relevant aspect of welfare policies is the associated eligibility requirements. Bratsberg et al. (2019) study the impact on youth crime

of a Norwegian reform that tightened activation requirements for those receiving social assistance. Since activation requirements were not tightened at the same time nationally, but rather varied across municipalities, the authors can compare changes in crime after the reform for those living in treated municipalities to the change in municipalities where treatment is yet to occur or never occurs. The activation requirements included a bundle of treatments, including community service, work or training programs, work-related counseling and active job search. Youths were forced to regularly show up early in the morning (as if to a job). The authors find exposure to the reform significantly reduced all types of crime—property, violence, drugs—for youths with a disadvantaged background. Effects were large: The probability of committing a crime decreased by 35 percent. In terms of the dynamics of the effects, there is some evidence of contemporaneous incapacitation effects but also evidence that crime rates are reduced through age 25. To the extent that the additional activation requirements pushed individuals out of welfare, there is no evidence of an increase in crime for these individuals.

The effect of active labor market policies on crime has also been studied in the Danish context by Fallesen et al. (2018). The researchers take advantage of a 1987 reform in the municipality of Farum, which introduced immediate active labor market participation (ALMP) requirements for all individuals who did not have unemployment insurance but received welfare benefits. For these individuals, after the reform, ALMP was required from the very first day that they applied for welfare benefits. This meant that they had to show up for "work" at 7AM, Monday to Friday, similar to the Norwegian context. Since active labor market policies did not change in the rest of Denmark, the authors can compare the change in crime rates for men without unemployment insurance in Farum to the change in the rest of Denmark; this allows them to control for any other societal changes that may also affect crime rates. As in Norway, Fallesen et al. (2018) find that the tougher activation requirements reduce property crime.

There is one study that I am aware of in the Swedish context on the effect of stricter active labor market policies on crime. Specifically, Persson (2013) estimates the effect of being exposed to a mandatory activation program on an individual's criminal behavior, taking advantage of variation across the districts of Stockholm in whether and when

these programs have been implemented. In contrast to the Danish and Norwegian studies, Persson does not find evidence that these activation programs reduce crime.

Potential for Swedish Policy Reform

There are many kinds of welfare benefits paid out in Sweden, and the level of welfare benefits is certainly high relative to the rest of the world. This does not mean that there is no room to reform welfare in ways that can affect crime. The above studies highlight two potential channels to consider.

The first is the timing and frequency of benefits. To the best of my knowledge, these are generally paid out in Sweden on a monthly basis, leaving room for the possibility that more frequent payments could help recipients smooth consumption and decrease crime. Alternatively, one could consider financial training programs that teach participants how to manage their money and smooth consumption themselves; such a skill would also be valuable when/if individuals leave welfare for employment. Note however that the effects of such a program on crime have (to the best of my knowledge) not been studied.

Second, given the findings of the Norwegian and Danish activation studies, it is also worth considering whether activation policies—especially those geared towards youths—can be strengthened in Sweden too.

9. Military Conscription

A RECENT ARTICLE in The Economist is subtitled: "The draft, though still controversial, is making a comeback."[24] Many countries have abolished the military draft since the early 1990s, including France in 1996, Spain in 2000, Italy in 2004, Sweden in 2010, and Germany in 2011. But after the Russian invasion and annexation of parts of Ukraine in 2014, the need for conscription is again being debated and even reversed or expanded (e.g., Lithuania, 2015; Qatar, 2013; UAE, 2014; Kuwait, 2017; Norway (to women) in 2013).

In Sweden, mandatory conscription of male citizens at age 18 dated back to 1901. The number of men placed into service started to decrease after the end of the Cold War and the fall of the Berlin Wall. By 2010, Sweden adopted an all-voluntary military service, but due to insufficient numbers and the new state of international affairs, reinstated mandatory conscription in 2017 for male and female Swedish citizens born in 1999 or later. Conscripts are required to test, though a large share today do not serve in the military.

Channels through Which Military Conscription Can Affect Crime

Military conscription can theoretically impact crime through multiple channels. Like schooling (or prison), conscripted individuals are largely incapacitated from the rest of society while serving in the military. Such

24. See https://www.economist.com/international/2021/09/30/the-military-draft-is-making-a-comeback.

crime incapacitation could also affect future crime (post-conscription) by putting individuals on a new crime trajectory. Future crime could also decrease if conscription (i) extends a conscript's social networks or provides skill training that leads to improved employment outcomes or (ii) promotes democratic values and discipline. Others argue, however, that a desensitization to weapons and exposure to violence (especially during wartime conscription) can increase crime. Intense exposure to a new peer group while conscripted can also have positive or negative effects, depending on the characteristics of the peer group.

Challenges to Identifying a Causal Effect of Military Conscription on Crime

Yet disentangling the causal effect of conscription on post-service behavior (whether it be crime or something else) is challenging given the "selection" process into conscription. Whether it is a volunteer system or one based on a series of tests (as is the case in Sweden historically), individuals who serve in the military are likely to be different from those who do not serve on many observable and unobservable dimensions.

Evidence of the Causal Effects of Military Conscription on Crime

To overcome this potential selection bias, many researchers studying the causal effects of conscription on crime rely on variation in the chance an individual serves driven by the draft lottery. Yet, not all countries—including Sweden—have such lotteries. Together with Matthew Lindquist, I have studied the effect of conscription in Sweden during the 1990s on post-service crime by taking advantage of the random assignment of potential conscripts to an officiator at the draft-board testing center (Hjalmarsson and Lindquist, 2019). During the 1990s, conscription was already downsizing in Sweden, and not all who tested actually served; this put a lot of discretion in the service decisions into the hands of the officiators. We capitalize on the substantial variation across officiators in their tendency to assign conscripts to service to identify the causal effect of service on crime. We find that military service (during the 1990s in Sweden) significantly increased the probability of post-service conviction by 32 percent, which is driv-

en by those with disadvantaged backgrounds (criminal history or low education fathers). Though there is some evidence that conscription also incapacitates crime (i.e., while conscripted), this effect does not appear to persist until post-service. Why did conscripts commit more crime after military service? We argue in Hjalmarsson and Lindquist (2019) that two channels may be at play. The first is that we see a negative impact on the labor market outcomes of disadvantaged young men. The second is that we see evidence suggestive of negative peer interactions.[25]

How do our findings in Sweden compare to other countries? The conscription-crime literature contains fairly diverse findings. Studies of Vietnam veterans in the U.S. find that conscription increases violent crime,[26] though a comparable effect is not seen in Australia (Siminski, Ville, and Paull, 2016). Galiani, Rossi, and Schargrodsky (2011) find that peacetime conscription in Argentina increased property crime, while Albaek et al. (2017) find a reduction in property crime in Denmark conscripts born in 1964 (including incapacitation). Vincent Lyk-Jensen (2018) studies more recent Danish cohorts born in the 1970s and 1980s, and finds no crime inducing effects.

The heterogeneity of these estimates can be driven by many factors. Conscription experiences clearly vary from wartime to peacetime but also across countries and time periods; as highlighted by the above-mentioned Economist article, there are also drastically different views of conscription across countries today. Crime is measured at different ages across the studies, and the effects of conscription could change over the lifecycle. Even the different methods used to identify the causal effect could yield different conclusions, as the average and marginal individuals "treated" could differ across studies.[27]

25. Some evidence that conscription in Sweden increases post-service crime is also seen by Almén (2020), who studies a 2004 reform that further downsized the military.
26. See Rohlfs (2010); Lindo and Stoecker (2014); Wang and Flores-Lagunes (forthcoming).
27. In other words, the natural experiments used in the various studies rely on that part of the variation in conscription exposure that is as-if random; but the group of individuals for whom this as-if random variation exists may come from different parts of the distribution across contexts.

Potential for Swedish Policy Reform

What can we learn from the above studies? Is mandatory military conscription a "social policy" tool that can be used to straighten out delinquent youths and reduce crime? The above research—and especially Hjalmarsson and Lindquist's (2019) paper on Sweden—suggests that the answer is no. Of course, countries do not have mandatory military conscription with the express purpose of reducing crime, but rather to defend a nation. But, policy makers tasked with deciding conscription policies should be aware of the potential unintended consequences of military conscription and how conscription can potentially be structured to avoid such negative unintended effects.

In Hjalmarsson and Lindquist (2019), we highlight two policy recommendations that follow from the analysis of *why* military conscription negatively affected crime. It is important to keep in mind, however, that conscription in Sweden today—and the characteristics of the conscripts—differs substantially from the environment studied in Hjalmarsson and Lindquist (2019).

Conscription officiators should try to avoid hiring "bad apples" who could have negative peer influences on their fellow conscripts. Moreover, they should try to avoid grouping the most negatively selected individuals together, as such negative peer influences can reinforce each other.

To dampen the negative effects of service on the labor market outcomes of disadvantaged youth, the Swedish military should consider aiding in the provision of post-service job placement and/or study counselling services.

10. Conclusions

THE MANY DIMENSIONS in which criminal offenders in both Sweden and the rest of the world are different from non-offenders have been highlighted throughout this report. Demographically, there are definitely sub-groups that are over-represented in offender populations: males, immigrants and minorities, and youths and young adults. Offenders have significantly less educational attainment, and demonstrate problem behaviors while enrolled in school. Offenders score lower on tests measuring cognitive ability. Offenders are severely unattached to the labor market and utilize welfare benefits at high rates. Offenders are more likely to come from troubled homes, with parents who are criminal and have alcohol and/or mental health problems, and be placed in foster care. Offenders are more likely to engage in other risky behaviors, like alcohol and drug use. Rates of mental health diagnoses are especially high in the offender population; and there may be many more cases that are undetected.

Taken together, these statistics paint a clear picture. The population of potential criminals is negatively selected in many dimensions: family background, health, education, employment, substance use, and welfare use. Yet, all of these dimensions have one thing in common—they can be "treated" by social policies. If these factors are not just correlates of criminal behavior, but also causally linked to crime, then such social policies can also be used as tools to control crime. Moreover, these unintended benefits may imply that we often underestimate the returns to such social policies.

I conclude by listing (in bullets below) the many social policy channels through which crime can be reduced that are highlighted in this

report. Yet, though these conclusions are based on high quality empirical research, they are not all based on contemporary Swedish data. There is always the question of whether the findings from earlier time periods or other countries generalize to Sweden today. That said, these causal relationships raise a number of important questions and potential policy reforms that should be considered by Swedish policy makers.

Education

- Schooling has crime reducing (incapacitative) effects.
- More education also reduces crime in the future, including for the next generation.
- Higher quality schooling (better peers and more spending on schools) reduces crime, especially for the most disadvantanged, high-risk populations.

Further increasing the number of years of mandatory schooling is not a feasible policy solution. But, mandatory schooling does not mean that all youths are actually attending school: truancy is a recognized problem in Sweden. Policies that can increase the presence of enrolled students should be considered, especially if this can be done without lowering the quality of the classroom environment for those in school already. Nor does mandatory schooling imply universal high quality schooling. Policy makers should also assess the quality of schooling for those most disadvantaged neighborhoods in Sweden, and consider policies that allow for increased operating and capital expenditures.

Alcohol

- Alcohol consumption is causally related to criminal offending and the risk of victimization.
- Crime increases in response to policies, such as expanded store opening hours, that increase alcohol consumption.
- Crime is reduced with stricter drunk driving or other alcohol offense related sanctions, including monitoring of alcohol consumption.

Alcohol consumption can be regulated via a wide range of policies. Changing the minimum legal drinking age is unrealistic. But a more feasible approach is to increase education and marketing campaigns that communicate the crime and victimization risks of drinking to young adults about to gain the right to drink. Policy makers should consider the extent to which alcohol treatment programs are available throughout society, and especially for the most disadvantaged populations at highest risk of crime. Program availability and program take-up are not the same thing: policy makers should consider mechanisms to "nudge" high-risk individuals into these programs if such programs are underutilized by high-risk populations. Ideally, this is done before crimes are committed and not once individuals are already in prison.

Early Childhood Environment

- Policies that reduce early childhood exposure to lead pollution reduce crime.
- Early childhood policy interventions designed to offset harmful exposure to lead pollution reduce crime.
- Improved early childhood nutrition reduces crime.
- Participation in early childhood education programs can reduce future crime of both the participating generation and their children.

Swedish society already emphasizes high quality early childhood conditions. With respect to the environmental characteristics discussed here, lead pollution today is minimal, there is universal daycare, and there are school lunch programs. Yet, clearly the existence of a national policy does not imply that all individuals in Sweden are exposed to the same environment. Thus, these studies do raise a number of questions that should be asked in the Swedish context. Are there micro-geographies of children at disproportionate risk for lead exposure? This may be neighborhoods near certain kinds of factories or places where old lead water pipes have not been replaced. Are there sub-populations faced with the challenge of providing adequate nutrition for their children? How does the quality of early childhood education and daycare vary across neighborhoods? Is there sufficient availability, take-up, and quality of care in the low socioeconomic, high-crime neighborhoods of Sweden?

Healthcare

- Mental healthcare treatment outside of prison decreases crime.
- Substance abuse treatment outside of prison decreases crime.
- Policies that make healthcare more accessible or affordable decrease crime.

Sweden has a universal healthcare system. But, again, this does not mean that access to and/or utilization of healthcare is equal for all population groups. Is the quality of care sufficient in high-crime neighborhoods? Does it meet the needs of an increasingly heterogeneous population, with an increasing share of immigrants who may not speak sufficient Swedish to communicate with medical professionals? Are the fees associated with medical visits a constraint for the low socioeconomic status populations at high-risk of crime? Universal healthcare also does not mean immediate care: do queues in the system prevent those with mental health issues from getting the urgent care they need? Finally, universal care does not mean that everyone asks for help: are these populations undertreated? Can we find a way to get high-risk individuals into mental health and substance abuse treatment before they commit a crime? These populations may indeed receive high quality care once they are in prison—but clearly one would rather prevent the crimes from occurring in the first place.

(Youth) Employment

- Summer jobs for youths reduce crime, including violent crime.
- Employment (more generally) reduces crime, especially property crime.
- Youths who entered the labor market during recessions are scarred for life, and set on a path of higher crime.

The unemployment rate for young males in Sweden—and especially those of immigrant background—is troublingly high, and much higher than for the rest of Swedish society. Reducing the unemployment rate for population groups with high risks of crime would seem an important policy goal. Sweden does have a summer jobs program. The effects of this program on crime should be evaluated, and policy

makers should consider expanding the program by increasing funding, targeting and outreach to youths in high-crime neighborhoods and other high-risk youths, and the emphasis on non-work aspects of these programs (e.g., mentorship, job search training, and therapy).

Welfare

- Increasing the frequency of welfare distribution days can reduce crime by assisting recipients in consumption smoothing.
- Stringent active labor market participation polices can decrease crime.

Policy makers can consider whether the structure of welfare provision can be reformed in ways that potentially reduce crime. One possibility is making payments on a more frequent basis than monthly in order to aid welfare recipients in smoothing their consumption. Alternatively, this goal could potentially be achieved via financial literacy and training courses. Another possibility is to expand active labor market policies, especially for youths and young adults.

Military Conscription

- Military conscription does not appear to causally reduce post-service crime, though there is some evidence of an incapacitation effect.
- There is in fact some evidence that conscription even *increases* post-service crime.

The effects of conscription on crime are clearly not first-order when deciding whether a country should have a conscription system. But these unintended effects (costs) are important to keep in mind when designing what that system should look like: Who should serve? Who should be grouped together in units? What services should be provided conscripts to support re-entry into post-service life?

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Concern about crime is high in Sweden today. And the immediate and natural response of policy makers tasked with reducing crime is to focus on criminal justice policy levers. Should the number of police be increased? Should the tasks of the police change? Should sanctions be harsher? Should prison capacity be expanded? All of these are important and relevant questions, and there are many research papers that definitely show that many such policies can reduce crime. The purpose of this report is not to suggest that these levers cannot reduce crime, but rather to highlight that a wide range of social policies provide alternative (potentially less expensive) routes through which the same goal can be achieved.

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Policy makers around the world can aim to reduce crime through two types of complementary polices—criminal justice policies (e.g., police and sanctions) and social policies (e.g., education and labor market) that do not explicitly target crime. The latter are an often-overlooked policy response.

This report discusses the potential of seven non-criminal justice policy arenas—education, alcohol, early childhood environment, healthcare, employment, welfare, and military conscription—as crime control channels. For each policy arena, the report highlights both the theoretical mechanisms through which crime can be affected and the extent to which this theory is supported by empirical evidence.

Criminal justice populations are negatively selected in many dimensions, including worse childhood environments, education, employment, and health outcomes. Whether or not social policies targeting these factors can reduce crime depends on whether these factors actually cause crime or are simply correlated with criminal behavior. Careful attention is paid throughout the report to this distinction, and research that uses natural experiments and quasi-experimental research designs to convincingly disentangle correlation and causation is highlighted.

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