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EXECUTIVE SUMMARY

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Improving Data Infrastructure to Reduce Firearms Violence

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Executive Summary

One of the great policy successes of the last decade is the increasing role of rigorous, objective, and transparent data and research in policymaking. Developing and implementing a data-driven government in which valid and reliable evidence informs solutions to our nation's most pressing health and safety challenges is more critical than ever as those challenges are ever more complex. Nowhere is that data foundation more needed than in the realm of firearms violence. Trustworthy data is a much-needed bridge to effective policymaking that can reduce the number of firearm accidents, suicides, homicides, and assaults. In an age of intense partisanship, shared facts are the cornerstone for building a shared purpose. The shared purpose of modernizing firearms data infrastructure is to improve public safety by reducing gun violence.

In the fall of 2020, Arnold Ventures, a philanthropy dedicated to maximizing opportunity and minimizing injustice, and NORC at University of Chicago, an objective nonpartisan research institution, released the *Blueprint for a US Firearms Infrastructure* (Roman, 2020)[1]. The *Blueprint* is the consensus report of an expert panel of distinguished academics, trailblazing practitioners, and government leaders. It describes 17 critical reforms required to modernize how data about firearms violence of all types (intentional, accidental, and self-inflicted) are collected, integrated and disseminated. This project, which is also supported by Arnold Ventures, takes the conceptual priorities described in the *Blueprint* and proposes specific new steps for implementation.

The first step in building a better firearms data infrastructure is to acknowledge where we currently stand. In *The State of Firearm Data in 2019* (Roman, 2019)[2], the expert panel found that while there are a substantial number of data sources that collect data on firearms violence, existing datasets and data collections are limited, particularly around intentional injuries. There is some surveillance data, but health data on firearms injuries are kept separately from data on crimes, and there are few straightforward ways to link those data. Data that provide context for a shooting—where the event took place, and what the relationship was between victim and shooter—are not available alongside data on the nature of injuries. Valuable data collections have been discontinued, data are restricted by policy, important data are not collected, data are often difficult to access, and contemporary data are often not released in a timely fashion or not available outside of specialized settings. As a result, researchers face vast gaps in knowledge and are unable to leverage existing data to build the evidence base necessary to adequately answer key policy questions and inform firearms policymaking.

[1] Roman, John K. (2020). *A Blueprint for A U.S. Firearms Data Infrastructure*. Chicago: NORC at the University of Chicago.

[2] Roman, John K. (2020). *The State of Firearms Data in 2019*. Chicago: NORC at the University of Chicago.

In the *Blueprint*, the expert panel developed a set of recommendations organized around a reconceptualization of how data are collected and who collects data. The broad themes from the *Blueprint* are as follows:

- Almost all surveillance data in health and criminal justice is generated locally. It is a high-priority to provide information, technical assistance, implementation supports, and funding to state and local governments to improve their collections.
- Comprehensive monitoring of all federal data collections is needed to ensure that important data elements are being collected, data gaps are being addressed, and quality issues are quickly resolved.
- Timely dissemination of key data is important, including the development of guidelines to ensure consistency across collections and that resources are made available to speed reporting for collections with historical delays.
- Improvement is needed in strategic communication about the purpose and use of data to federal agencies, researchers and to the general public.

The current report builds on the *Blueprint* by developing implementation guidance for key recommendations. Where the *Blueprint* included actionable recommendations, such as naming discontinued surveys that should be resurrected, this report develops specific recommendations for implementation. The report is centered on three topics that were the highest priority for the expert panel but that required additional research before guidance could be disseminated. The research findings from that additional investigation are reported here, and recommendations to facilitate implementation are described. The three topic areas are as follows:

- The creation of a nonfatal firearms injury database
- Increasing the quality, availability, and usefulness of firearms data for research and policy
- Practical steps for building state capacity and infrastructure to use data for evidence-based decision-making

Creating a Nonfatal Firearms Injury Database

The most glaring issue in building a U.S. firearms data infrastructure is the almost total absence of data on firearms-related injuries. In *Comprehensive Data on Gun Violence: Current Deficits, Needed Investments,* Philip Cook outlines the scope of the problem. Firearms injury data serves two purposes. Surveillance of firearms injuries would provide data on trends and patterns. It would also yield rich information about any underlying crime, which would better inform policy development, planning, and needs assessment. There are comprehensive sources of data on fatal shootings in public health (the National Violent Death Reporting System (NVDRS)) and in criminal justice (the Supplementary Homicide Report (SHR)) that provide trends and pattern data, as well contextual information for decision-making. However, there is no analog for nonfatal firearm injuries. In public health, there are three potential sources of data that draw

principally from emergency department data. There are limitations to each data source as the foundation for a nonfatal injury database and Cook details the improvements that would be needed—and the prospects for those improvements—for each. Cook also considers the challenge of developing a nonfatal database from police records, which provide rich data about the criminal incident but that lack pertinent information about whether an injury was from a shooting. Finally, Cook describes the challenges to national crime statistic data collection and reporting resulting from the ongoing transition by the Federal Bureau of Investigation (FBI) to a new way of collecting crime statistics and how that problem must be resolved before a nonfatal firearms database can be developed from police sources.

In, *Improving the Capacity of Hospital Emergency Department Data Systems to Track Nonfatal Firearm Injuries*, Catherine Barber examines how to build a firearm injury surveillance system from existing public health data. Barber notes that almost all shooting victims who are medically treated receive care in an emergency department, and that the coding system used for hospital billing already has the capacity to identify gunshot wounds. Three data systems could, through relatively modest tweaks, be used to greatly enhance monitoring, prevention and response to firearm injuries. The National Emergency Department Sample (NEDS) and the statewide emergency department databases from which it draws offer a rich source of firearm injury data. The challenge, however, is in the way firearm injuries are coded: currently far too many intentional injuries—mostly assaults--are coded as accidents. By contrast, the National Electronic Injury Surveillance System (NEISS) accurately records the cause of the injury but because of some problems with its sample design and small size, it yields imprecise estimates. The system could be substantially improved with additional funding for a new sample design and a larger number of reporting hospitals. Perhaps the most intriguing data source is the National Syndromic Surveillance Program (NSSP) which collects electronic health record information in near real-time on over 70% of emergency department visits nationally to track issues like disease outbreaks. The challenge with NSSP is that it is a new source of firearm injury data, with a pilot program (FASTER) having been launched this year in ten states. Barber concludes that investments should be made in all three systems, as each provides a slightly different perspective on firearms injury surveillance and that these improvements could likely be completed within three years.

In *Measuring Gun Violence Using Police Data*, Susan Parker describes the importance of police data as a unique source of information about gun violence. Police data measure the full scope of violence committed with a firearm, from threats to assaults to shootings -- even if no one is injured during a crime. Police record data on the location, circumstances, and perpetrators of gun violence, detail that is not tabulated in public health sources. However, the incumbent data system for national crime surveillance, the Uniform Crime Reporting (UCR) Program's Summary Reporting System (SRS) does not differentiate shootings from other criminal firearm use and gathers only monthly aggregate counts of crimes within a law enforcement agency's jurisdiction. The SRS replacement, the National Incident Based Reporting System (NIBRS), provides much richer incident-level data, such as the circumstances, relationship between victims and perpetrators, and other contextual information for each reported crime. While a handful of states

have for decades fully implemented incident-level NIBRS reporting, many states lag far behind. California and Illinois -- and by extension the Los Angeles Police Department and the Chicago Police Department -- do not report data to NIBRS in 2020 nor are they expected to in 2021. In contrast, more than 85% of law enforcement agencies annually report to the SRS. Despite this substantial reduction in the number of reporting agencies, NIBRS replaced the SRS on January 1, 2021 leading Parker to question whether NIBRS reporting is sufficient to generate reliable crime surveillance data. Parker notes that while several relatively small fixes, some already underway, would dramatically improve NIBRS measurement of gun violence, those issues are secondary to the larger problem of low NIBRS adoption. Parker offers several recommendations with the potential to address these substantial problems, which likely require a major review of NIBRS and federal police data collection systems.

Increasing the Quality, Availability, and Usefulness of Firearms Data for Research and Policy

Firearms research has long been limited by a perceived prohibition on federal agencies to fund research related to the use of firearms. An amendment to the 1996 Omnibus spending bill (widely known as the Dickey Amendment) required that “none of the funds made available for injury prevention and control at the Centers for Disease Control and Prevention (CDC) may be used to advocate or promote gun control.” An amendment to the 2003 federal spending bill (widely known as the Tiahrt Amendment) similarly restricted the Bureau of Alcohol, Tobacco, Firearms and Explosives from sharing firearms trace data. While those policy restrictions have been lessened in recent years, the market for firearms research remains substantially constrained.

For the last three decades, these policy restrictions have severely limited the number of research projects about firearms and public safety. By the mid-2010s, there were only a handful of researchers dedicated to the study of firearms violence. Similarly, these restrictions limited federal, state, and local agencies’ experience sharing data on firearms and requesting research proposals to study firearms-related questions. In addition, while some of the prohibitions on research have been lifted, a cloud remains over this field of research. Further, the deep partisan division about the general role of guns in contemporary American society creates a culture of mistrust around even the most rigorous and transparent studies. Combined, these factors have created a lack of researcher and funder capability and capacity to study firearms.

Better research on the relationship between firearms ownership, storage, and use and suicide, assault, homicide, and accidental injury is critical to formulating a more coherent public policy that maximizes public safety. Addressing this constraint on the research market requires improvements related to both production and use of data. Demand may be considered as researcher interest in studying firearms-related questions—it can be increased in several ways, but perhaps most efficiently by increasing the quality and comprehensiveness of existing data, which effectively lowers the cost of conducting research. In the chapters that follow, two approaches are considered. One is the use case of the NVDRS, a valuable source of data to

understand the relationship between firearms and mortality that is a model for structuring other firearms-related data. The other is the Criminal Justice Administrative Records System (CJARS), which is a novel effort at the University of Michigan to integrate a wide swath of criminal justice data and, to integrate those data with wage and other data. On the supply side, the most productive approaches are to coordinate federal government activities related to firearms research and data collection, and one approach to doing so is considered below.

In *Studying Firearm Fatalities Using the NVDRS*, Steve Marshall describes the usefulness and limitations of an effective surveillance system that has recently been expanded to all 50 states. To develop the NVDRS, several obstacles apparent in less mature firearms data systems were overcome, including the need to standardize reporting to account for the variation between states in how law enforcement and medical examiners respond to and record information in violent death investigations. Efforts by the CDC to implement quality control procedures have generally been successful. As Marshall demonstrates, a large body of scholarship about the nature of violence has been produced using the NVDRS. Research facilitated by NVDRS data is increasing rapidly and is likely the single most important source of data currently available to understand the relationship between firearms and violence. Marshall makes five key recommendations to continue building the success of the NVDRS, including increased support for researchers, mechanisms for more timely data releases, release of quality metrics, and critically, and investment in improving the NVDRS and strengthening the underlying local and state systems that contribute data to the NVDRS. Those improvements align with the recommendations for improving the NVDRS in the Parker paper—indeed, implementing the NVDRS recommendations concurrent with basic investments in NIBRS would be the most efficient approach to improving that collection.

In *Expanding Capacity and Capabilities to Monitor and Research Guns in the United States*, Michael Mueller-Smith addresses the problem of increasing researcher demand for firearms data through a series of recommendations to address challenges in integrating data. Using CJARS as a model integrated research repository, Mueller-Smith recommends that designers of integrated systems take a strategic approach to data collection, building upon prior efforts to build momentum by tackling specific measurement goals rather than solving all policy questions simultaneously. Mueller-Smith describes four solutions for aggregation problems, as follows: 1) to use machine learning to scale data collected for operational rather than research purposes; 2) use strategies to integrate multiple sources into a single structure while avoiding duplication and pooled events; 3) creating an organizing framework for data with inconsistent definitions and data layouts and inadequate identifiers; and 4) diversifying means of accessing the data, to improve access for diverse audiences.

The last paper on increasing the quality, availability, and usefulness of firearms data for research and policy considers the strategy for developing firearms data, where the goal is to facilitate increased coordination among federal agencies. In particular, as Potok details in *Creating a Federal Gun Violence Interagency Working Group*, an expert panel made a number of recommendations to create a national strategy around firearms data and research. Key

elements include establishing clear and consistent priorities for firearms data and research; integrating public health, crime, and firearms data; and, reducing constraint on data sharing across agencies and the release of data to researchers and the public. Potok offers four recommendations to address these concerns, centered on the development of an interagency federal workgroup chaired by the Chief Statistician of the U.S. That workgroup would focus on data quality and coverage improvements and leverage a number of statutory mandates within the federal government, specifically the Evidence-Based Policymaking Act of 2018. Potok recommends that the workgroup coordinate with other federal workgroups, in particular the Equitable Data Working Group, and that a federal advisory committee be created as well. Further, Potok recommends that the centerpiece of the interagency's mission be the creation of a pilot project that highlight the diversity of data collected across systems and the value of integrating those systems and reporting. The Potok paper aligns with the Mueller-Smith recommendations that targeted policy questions that create momentum are the most productive means to build a cross-sector firearms data system, rather than a one-sized solution to all policy problems.

Practical Steps for Building State Capacity and Infrastructure to Use Data for Evidence-Based Decision-Making

The final paper in the collection addresses the foundational challenge for all firearms data improvements: How to build local and state capacity. While some data that can be used to inform key firearm research, such as the Healthcare Cost and Utilization Project (HCUP) billing data or electronic health records, are not recorded and reported by local governments, most critical data in this field originate at the local level. Each of the other papers in this collection describes a particular challenge about the variability in data quality. Whether data are generated by local law enforcement for use through the NIBRS or from local medical examiners for use through the NVDRS, consistent and accurate data collection and reporting at the local level—where data are input and collated—is critical to the success of any national firearms research database or surveillance system. In *Practical Steps for Building State Capacity and Infrastructure to Use Data for Evidence-Based Decision-Making*, Nancy Potok and Nick Hart create a roadmap for state and local governments to improve their data systems and structures. At the heart of their recommendations are the lessons learned from the creation of an evidence ecosystem in the federal government, built on recommendations from the Commission on Evidence-Based Policymaking. Those lessons include guidance on empowering data leaders, creating transparency, using local priorities to guide the development of the ecosystem, creating cross-agency strategies, and prioritizing transparency. Critical to this process are the federal-state partnerships and the insight that development of effective partnerships is bi-directional, with guidance from the states no less important than guidelines from the federal government.

Conclusion

After reading these recommendations it would be natural to ask: What is the highest priority if we want to reduce gun violence? There are no easy answers to this question. In the short term, speeding release of federal data collections is likely the quickest means to spur researcher demand. Modest improvements in the three healthcare data collections is likely a much shorter route to the development of a national nonfatal firearms injury database. However, neither of these solutions alone solves the long-term problems of low quality and high variability in local and state data input and reporting. Solutions to that problem requires a much larger and longer-term investment. Similarly, a focus on health data for the nonfatal firearms database omits critical data that could only be captured from police data—critical information about assaults and robberies with a gun where no one is injured. And a shorter-term focus would put aside what is likely the biggest concern in this collection, namely, the giant step backwards in national crime statistics reporting, including firearms crime, that the United States will confront directly in 2022 when the insufficiencies of NIBRS become clear. The best recommendation then is from the papers that recommend focusing on one data problem at a time and to build momentum within a careful strategic framework.