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INTRODUCTION TO RISK
AND BIG DATA

KEY POINTS

· Risk-based policing focuses primarily on places and not people.

· Risk analysis provides evidence-based support for risk narratives about how factors combine to increase the probability of crime occurrence.

· Risk reduction strategies include specific information about where to go and also what to do when you get there.

· Risk-based policing encourages community engagement and multi-stakeholder participation in crime prevention through risk reduction activities.

INTRODUCTION TO RISK-BASED POLICING
IN CRIME PREVENTION

In discussing how crime prevention tactics have evolved, Bratton and Kelling (2012) admit that police too often focus on arresting their way out of crime problems. Still, they advocate that there needs to be a strategy for policing that is problem-oriented, properly resourced in terms of personnel, and targeted at the locations that need the most attention. Bratton and Kelling observe, correctly we believe, that police agencies have become very sophisticated in their problem-orientations, even leading other municipal agencies

in their ways and means. This trend has been tied to the increased training and openness to higher education of police leadership, coupled with commensurate enabling sources of funding (often federal grants), making them receptive to new ideas and better planning. In this context, there is an openness (among at least some police agencies) to experiment and to expand on their missions. This has happened even when they have been confronting severely challenging expectations brought on by major divestments in urban areas after the global financial collapse of the early twenty-first century and discontent with the effects of policing practices on various community populations and constituents. We frame these problems in this book to propose risk-based policing as an effective and sustainable approach to a new policing frontier and social climate, based on evidence and insights from research, policy, and practice.

Risk-based policing considers more than the mere possibility that crime will occur, which has been a long-standing focus of criminology, crime prevention, and policing studies. Risk-based policing advocates addressing the contextual reasons for crime emergence and persistence at particular places. It does not rely on an actuarial count of the numbers of offenders and victims, or the potential that the one will inevitably prey on the other. It seeks to avoid a simplistic view of crime incident clustering that ignores the factors that repeatedly enable these behaviors at certain locations. It considers more than a focus on individual personal characteristics and looks at places that attract or repel criminal behaviors based on certain qualities. These qualities can be identified, operationalized, and compiled to determine their influence on criminal outcomes. Assessment of spatial influences of environmental conditions is not arbitrary, though. It is set in risk terrain models, where vulnerability to crime is diagnosed and charted based on pattern analysis, past experiences, and comparisons to other similar places. Risk provides the metric to be standardized, scaled to different levels of investigation, and contrasted over place and time.

THE IMPORTANCE OF RISK

Risk is a common metric, calculated by everyone who enters a particular landscape. We develop an understanding of how environments can protect or threaten us through visual cues, reputations, and perceptions that form fears, feelings of safety, or insecurity. Environments exhibit identifiable patterns. People size up what a location looks like and then judge it against their memories and assumptions about the causal links between certain environmental features and the likelihood that these will support criminal activity. Obviously, based on experience or knowledge of an area, these perceptions will vary, and may oftentimes be inaccurate. But even initial perceptions matter. Experiences, knowledge, and perceptions will also be different among various stakeholders depending on the roles that they play in these environments. Police see places they patrol through a different lens of risk than do inhabitants, tourists or passers-through. These risk assessments are important in shaping the expectations that each stakeholder forms in interacting with people at various places across the landscape.

Through advances in technology and better data we have been able to articulate the spatial influences that help form these risk perceptions. We have better evidence about how environments link to human behavior. It is this information that risk-based policing embraces to manage resources to mitigate these risks to prevent crime and enhance public safety. Risk terrain modeling (RTM) is an analytical engine for this problem-solving enterprise. It is embedded in a larger ecosystem in which decisions are made about the best ways to deliver services while reducing risks to police personnel and members of the community being served. With RTM, risk-based policing accounts for the insights that police officers and others who live and work in these communities bring to the table. These stakeholders, when encouraged to think in terms of risk governance, identify what (from their experiences) impacts on the quality of life in communities and leads to conditions that are ripe for crime. Their testimonials form an important set of data for law enforcement to aid risk governance and shape the results of RTM into multilateral plans for action.

Efforts by police agencies to reach out to community leaders and other stakeholders have benefited police by improving their relationships with these groups, particularly as they demand more accountability and transparency. But it is important that the information gleaned from these interactions consists of more than just complaints. Community engagement can be an integral part of the mechanism for police to share the burden of public safety with other stakeholders and to implement risk reduction programs in ways that meet everyone's expectations. When community members realize their role in crime prevention, they become partners to help solve existing crime problems and to identify and address emerging public safety threats. This keeps police officers safer, too.

Important in all of this, as well, is the understanding of what offenders use as indicators of their successful criminal behavior. Many criminals continue to operate in locations where conditions support their illegal activities, such as drug markets, or facilities that can attract illicit behavior, such as bars or convenience stores. Divestment in some cities, compounded by major economic failures, such as the housing foreclosure crisis, have changed the social relevancy of landscape features in many areas and made them high-risk for illegal outcomes. One advance in policing within the last few decades is an operational response to the fact that crimes cluster around other crimes over time, a phenomenon termed hot spots and a practice of hot spots policing. The advancement that underlies risk-based policing derives from an emphasis on the fact that features of the landscape also concentrate and interact, which explains why crime emerges or persists where it does. Hot spots policing, by going to hot spots and making arrests, which consequently increases the intensity of the hot spot, is self-fulfilling. This is offset by a risk-based approach that reduces crime in a way that does not rely on repeated crime occurrences in order to make new deployment decisions. The risk perspective shifts the focus from problem orientation to risk mitigation by considering all aspects of the environment, not just the role of the offender or the cluster of known crime incidents. Focusing on mitigating risk to achieve crime drops means the features that once attracted

illegal behavior become less likely to encourage crime, which results in less attractive behavior settings for criminal offending. Vulnerability to crime is reduced, so the crime reduction is more sustainable and long-term. But, further, because police can measure what contributed to these risky conditions in the first place, they have a better understanding of what works and what does not in responding to and deterring criminal behavior. As a consequence, prevention strategies can be transported to other similar locations within the same jurisdictions, and implemented there with expectations of repeated success. This takes part of the guesswork out of policing and provides more evidence-based validations of best practices.

BIG DATA

Views and opinions of "places" have changed as technology and data have improved. Municipalities now collect more detailed and accurate geocoded information, which permits police not only to describe criminogenic places, but also to better understand the relationships between features of the environment and criminal behaviors. In addition, we can visualize places through tools like Google Street View, which adds real context to places and allows us to search them quickly and easily for cues about illegal behaviors that might be enabled or emerging. We can overlay on these places information about people who use them and how they inhabit them at any time of the day, week or year. We can understand flows of people and concentrations of behavior. With social media and surveys, we can compare real-time and historical perceptions, allowing a better understanding of how people view their places. We can monitor law enforcement activities and police patrols using spatial technologies to help judge resulting solutions to crime problems. Now, the picture related to data is not completely rosy, as there are excesses and distortions that can come with systematically biased, improperly managed, or inadequately analyzed data (Ferguson 2017). But the data revolution has made an important impact on all aspects of life in modern society, and its role in policing has been dramatic. The positive contributions of data to crime prevention and risk reduction provide an important subtext to risk-based policing.

RISK-BASED POLICING

The advent of risk-based policing does not start a new era unrelated to ideas and practices that have led up to this point in time. In considering the issues of crime analysis, risk, and big data, we need to start with an understanding of the origins of policing and its progression to the modern era. Risk-based policing is an evolution, not a revolution, and its impacts are likely to advance policing only if we understand how we have come to the current state of affairs. Basic expectations and responsibilities of police will be documented in our review of the evolution of police up to the current century. This history of policing, presented in chapter 2, is the starting-off point to provide context to our ideas

FIGURE 1
Steps of risk-based policing.

of integrating new information and modern analysis methods into the policing profession and public safety practice. We are hopeful that a consequence of this advocacy will be a shift in attitudes about the role police officers play in managing public safety and solving crime problems through risk governance and strategic partnerships with members of the communities they serve. Ultimately, risk-based policing is as simple as 1–2-3. As shown in figure 1, risk-based policing requires repeated cycles of (1) assessing environmental risks, crime patterns, and event contexts; (2) deploying people and resources to areas that need them most, then implementing risk reduction strategies at these places; and (3) checking for success by measuring desired outcomes in ways that inform the next round of risk assessments and deployments.

The ideas of risk-based policing are well imbedded in the theoretical approaches to crime analysis that criminologists, data analysts, and legal scholars have developed over the years. This lead-up serves as the bridge that we use for turning research into practice. Not only are we committed to explaining the ways in which risk-based policing with RTM can be used for risk governance, but we also strongly believe that we need to get all the elements of the process working correctly, and to address the pitfalls posed by poor data, improperly formulated research questions, and false conclusions. So, we spend some time in this book explaining our efforts at investigating new ways of analyzing data, selecting target areas, developing risk reduction strategies, presenting outcomes, and offering conclusions in ways that can be easily understood and made actionable by police agencies who want to engage in this enterprise.

CONCLUSION

In this chapter, we introduced the concept of risk-based policing, which addresses the contexts in which crime occurs and helps police focus on the underlying factors that contribute to these undesirable outcomes. This approach turns attention away from individuals and the clustering of their activities in hot spots and toward risky places that promote and support criminal behavior. These behavior settings can be defined by the combined spatial influences of environmental features that enhance the probability of crime, measured through the deployment of RTM to analyze the abundant spatial data now available to law enforcement agencies. Through the development of risk narratives, informed by empirical analysis, police can develop strategies for intervention