

Step by Step – Evaluating Violence and Injury Prevention Policies

Brief 6: Policy Evaluation Data Considerations

This brief provides suggestions for implementing Steps 4 and 5 of the evaluation Framework as they relate to policy evaluation. This includes identifying and obtaining data for policy evaluation as well as analyzing data and justifying conclusions based on the results.

Identifying and Selecting Data

It is important to select the most appropriate data elements and measures. Use a logic model to establish clear connections between the data, indicators, and outcomes. The four evaluation standards in **Figure 1** can guide data collection.

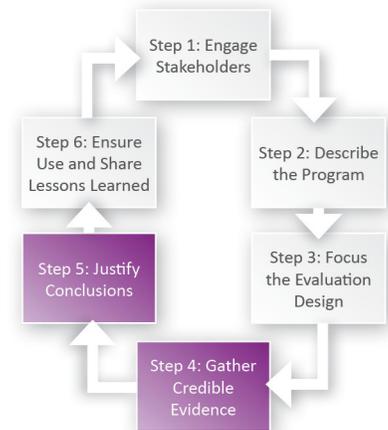


Figure 1. Evaluation Standards to Guide Data Collection

Utility	What do you need to know to answer your evaluation questions?
Feasibility	For what time frame will you collect data, and at what intervals? What is the budget? Do you have funds to collect a sample of sufficient size for the selected design?
Propriety	Are there ethical considerations (e.g., anonymity, privacy) in collection of data?
Accuracy	Is the data objective or subjective? Is the data reliable? Is it internally and externally valid? How large should the sample be?

Types of Data

Quantitative data is numerical data that measures policy outcomes and impacts. Qualitative data is non-numerical information that describes attributes or properties of an object or activity. Data may come from a variety of sources, some of which are listed in **Figure 2**.

Figure 2. Selected Sources of Evidence for an Evaluation¹

Persons	Documents	Observations
Organizational staff	Newspaper articles/media	Meetings
General public	Administrative records	Special events/activities
Partner Organizations	Publications/evaluation reports	Enforcement
Policymakers	Surveillance data	

Utilizing Existing Data

When evaluating a policy implemented on a large scale, the most feasible option may be to use a surveillance system or administrative data. **Appendix P** provides examples of a number of national and state surveillance databases. State and local administrative databases may also provide valuable information for the evaluation. Examples include hospital or emergency room records, department of motor vehicles databases, and law enforcement records. One example, the National Violent Death Reporting System, is a state-based surveillance system linking data from death certificates, medical examiner files, police records, and crime laboratories. Engaging relevant stakeholders during evaluation planning can help identify administrative databases and

¹ CDC. (1999, September). *Framework for program evaluation in public health* (MMWR Recommendations & Reports vol. 48, No. RR-11). Retrieved from <ftp://ftp.cdc.gov/pub/Publications/mmwr/rr/rr4811.pdf>

Selecting Appropriate Time Frames for Data Collection

It is important to consider the time frame for implementation when selecting the range of data. To examine the impact of graduated driver licensing, Chen and colleagues considered the roll-out of the policy and the fact that it could take up to a year for all 16-year-olds to be covered by the law.² They were also concerned that between the time that the law was passed and when it was implemented, teenagers might rush to get licenses that were not subject to the restrictions, which could increase the number of accidents in the months leading up to the enactment of the law. To eliminate these potential confounds they excluded data in their evaluation from the year before implementation.

facilitate access to data.

Working with existing datasets poses unique challenges. Data is not always easy to obtain, nor is it always complete or accurate enough for evaluation purposes. Understanding the strengths and weaknesses of the data in the system will help shape the analysis and determine any additional data that you may need to collect. Because evaluators do not have control over the data (what is collected, when, by whom, and how frequently), the dataset may not contain all of the desired variables.

Accessing Data

Access to data collected by the government is guided by rules, regulations, and legislative authorizations.⁴ Therefore, to gain access to the data, you may need to negotiate a data-sharing agreement. The process for obtaining data sharing agreements and their content vary across federal or state agencies. A number of examples are available. **Appendix Q** provides several resources related to data sharing and data linkage.

Gaining access to datasets may be even more challenging if personally identifiable information is included.⁴ Consider requesting variables that can be used to match datasets but cannot be used to identify the person associated with the record. If there are no pre-existing agreements for sharing data, consider creating standard processes or agreements to facilitate access to data for future evaluations.

Data Linkage

One technique for expanding the amount of pre-existing data available is data linkage. Linking data from two or more datasets, rather than relying on one dataset, provides a better picture of the various circumstances surrounding an injury event. **Appendix Q** provides resources about data linkage.^{5,6} National systems that

Locating Existing Data Sources

To assess the impact of suicide exclusion periods in life insurance policies on suicide and accidental death rates, Yip and colleagues obtained data from an Australian life insurance dataset maintained by the Institute of Actuaries of Australia. This data allowed them to support the theory that exclusion periods may help to prevent “insurance-induced” suicides.³

- 2 Chen, L. H., Baker, S. P., & Li, G. (2006). Graduated driver licensing programs and fatal crashes of 16-year-old drivers: A national evaluation. *Pediatrics*, 118, 56–62.
- 3 Yip P., Pitt D., Wang Y., Wu X, Watson R., Huggins R., & Xu Y. (2010). Assessing the impact of suicide exclusion periods on life insurance. *Crisis*, 31(4), 217-223.
- 4 Bernstein, A. B., & Sweeney, M. H. (2012). Public health surveillance data: Legal, policy, ethical, regulatory and practical issues. *Morbidity & Mortality Weekly Report Supplements*, 61 (Suppl. 3), 30–34. Retrieved from http://www.cdc.gov/mmwr/preview/mmwrhtml/su6103a7.htm?s_cid=su6103a7_w
- 5 Holder Y., Peden M., Krug E., Lund J., Gururaj G., & Kobusingye O. (2001). *Injury surveillance guidelines*. Geneva: World Health Organization. Retrieved from http://www.who.int/violence_injury_prevention/publications/surveillance/surveillance_guidelines/en/
- 6 Clark D. E. (2004). Practical introduction to record linkage for injury research. *Injury Prevention*, 10(3), 186-191

link state data can be extremely helpful in evaluating injury prevention programs and policies; however, data quality at every level can vary greatly, and incomplete or “unclean” data can make it challenging to generate valid results. In addition, data linkage can be difficult if the datasets have major differences in their coding, formatting, or definitions.⁴ If key variables are missing from any part of the record, you may need to do some detective work and manual linking of local or state records to generate the data of interest. You can also consult an expert about statistical techniques to replace missing data.

Identifying New Data Sources

In some cases, data will not be available, so you will need to understand how to develop data measures and a data collection plan. When deciding what new data to collect, be selective and focus on the critical elements. Before developing a new measure, do a thorough search to see if there is an existing measure. There are a number of sources for injury prevention and control measures, many of which are available on the NCIPC website. For example, the NCIPC provides a summary of assessment tools for measuring violence-related attitudes, behaviors, and influences among youths. The process of measure development should be systematic and thorough. When developing a measure, consider reliability and validity, each of which is discussed in more detail in **Appendix R**.

Data Collection

Once you have identified the types and sources of data to be collected, you should develop a data collection plan. The data collection plan should identify what, when, and how data will be collected and who will do the collecting. Train interviewers and observers so they administer the measure as consistently as possible.⁸ Consider whether internal stakeholders or external evaluators will collect data. In some circumstances, stakeholders will be able to collect the data as part of implementation; in others, additional data collection may need to occur. This extra effort can increase the cost of the evaluation, but it may create more consistency and objectivity in the data collected. The decision to collect data

Comparison of Motorcycle Crash Outcomes in Universal and Partial Helmet Law States

The Crash Outcome Data Evaluation System (CODES) collects data on motorcycle crashes from 18 states (7 with universal helmet laws and 11 with partial laws or no law). CODES links statewide records from crashes, emergency medical services, emergency departments, and hospital discharges. To evaluate the impact of helmet laws, the combined data was used to compare crash outcomes in states with a universal helmet law to states with a partial or no helmet law. Data linkage enabled analyses that demonstrated a relationship between universal helmet laws and helmet usage, medical costs, and types of injuries.⁷

Combining Existing and New Data

To evaluate the influence of written violence policies on work-related physical assault in educational settings, Feda and colleagues combined existing data from the Minnesota Educators’ Survey with information collected about school violence policies. They compared data from participants who had experienced work-related physical assault with participants who had not. They then analyzed the relationship between certain written violence policies and occurrences of assault.⁹

7 Cook L. J., Kerns T., Burch C., Thomas A., & Bell E. (2009). *Motor-cycle helmet use and head and facial injuries: Crash outcomes in CODES-linked data*. Washington, DC: NHTSA Technical Report. Retrieved from <http://www-nrd.nhtsa.dot.gov/Pubs/811208.PDF>

8 Newcomer, K.E. (2009). *Enhancing the usefulness of evidence: Addressing pitfalls to research in real world settings*. [NCCOR Obesity-Related Policy Evaluation Webinar Series]. Retrieved from http://www.nccor.org/downloads/Webinar_3.pdf

9 Feda, D., Gerberich, S., Ryan, A., Nachreiner, N., & McGovern, P. (2010). Written violence policies and risk of physical assault against Minnesota educators. *Journal of Public Health Policy*, 31, 461–477.

internally or externally should be based on the nature of the data being collected, the potential demand on the implementers, and the resources available to conduct the evaluation.

Analyzing Data

Once the data has been collected, you must follow certain critical steps before analyzing the data.¹⁰ **Appendix S** provides detail about these steps. It is important to consult the appropriate staff to ensure each of these steps is done correctly. Early on in the analysis planning process, you should consult an internal or external policy researcher or evaluator with appropriate expertise to help you with data analysis. The analysis plan should be appropriate for the evaluation design and provide results that will ultimately answer the evaluation questions. The quality and appropriateness of data analysis techniques can have a significant impact on the acceptability and reliability of the evaluation results. The goal is not to conduct all possible analyses but to conduct the most appropriate data analyses to answer your evaluation questions. Information about analysis of quantitative, qualitative, and mixed-methods data can be found in **Appendix T**.

Justifying Conclusions

Once initial analysis results are available, the team should begin the process of justifying conclusions. In essence, the team is testing and interpreting findings, explanations, and conclusions with a diverse range of stakeholders to ensure that various explanations are considered. This step will also help to address any criticisms about the evaluation findings. Some of the steps and considerations involved are shown in **Figure 3**.^{11,12}

Figure 3. Things to Think About When Justifying Conclusions	
<ul style="list-style-type: none"> ▪ Present analysis results in a way that is meaningful and understandable. ▪ Compare results from different data and methods and perform follow-up statistical analyses or conduct review of data as necessary. ▪ Reconcile inconsistencies between the analyses of various components and methods. ▪ Interpret results within the context of evaluation questions, policy goals, and the logic model. 	<ul style="list-style-type: none"> ▪ Consider findings relative to evaluations of other phases of the policy.¹³ ▪ Compare results with those of other evaluations or research studies. ▪ Consider alternative explanations for the findings. ▪ Consider the influence of external factors such as changes in other policies.

When considering evaluation findings of multiple methods and different policy phases, examine the consistency of results. Consistent results can strengthen confidence in the conclusion. If the results are contradictory, consider the reason for these inconsistencies and determine what conclusion should be drawn. Establish processes up front for reconciling inconsistencies to ensure impartiality.

10 Brownson R.C., Royer C., Chriqui J.F., & Stamatakis, K.A. (2009). Understanding evidence-based public health policy. *American Journal of Public Health*, 99(9), 1576-1583.

11 MacDonald G., Starr G., Schooley M., Yee S.L., Klimowski K., & Turner K. (2001). Introduction to program evaluation for comprehensive tobacco control programs. Atlanta, GA: Centers for Disease Control and Prevention. Retrieved from http://www.cdc.gov/tobacco/tobacco_control_programs/surveillance_evaluation/evaluation_manual/pdfs/evaluation.pdf

12 HM Treasury. (2011). *The Magenta book: Guidance for Evaluation*. London, UK. Retrieved November 10, 2011, from http://www.hm-treasury.gov.uk/data_magentabook_index.htm

13 International Agency for Research on Cancer. (2008). *Handbooks of Cancer Prevention, Tobacco Control, Vol 12: Methods for evaluating tobacco control policies*. Lyon, France. Retrieved from <http://www.iarc.fr/en/publications/pdfs-online/prev/handbook12/index.php>

Brief 7 presents suggestions for summarizing and communicating data to a variety of audiences.

Potential Challenges and Solutions Concerning Policy Evaluation Data Collection and Analysis	
Challenges	Solutions
Lack of access to appropriate data	<ul style="list-style-type: none"> Identify available pre-existing data sources and explore the possibility of data linkage to increase analysis possibilities.
Lack of appropriate measures	<ul style="list-style-type: none"> Conduct a stakeholder discussion to assist with identifying or developing appropriate measures. Reach out to communities that have done similar types of evaluation.
Conflicting results	<ul style="list-style-type: none"> When weighing the results, consider how accurately the methods were implemented, the extent to which data accurately represent the indicator or impact, your confidence level in the logic model and theory of change, the statistical significance and magnitude of findings, the assumptions made by statistical tests, and the match between evaluation methods and evaluation questions.
Lag in availability of data for evaluation	<ul style="list-style-type: none"> Ensure that your evaluation plan factors in availability of data. Partner directly with the agency that collects the data rather than waiting for the data to become publicly available.

Action Steps

- Identify existing data sources or administrative data that might provide policy evaluation data in your state. How can you gain access to the data? Are data-sharing agreements already in place?
- Evaluate the statistical expertise within your agency. Would you need to use outside resources?

Additional Resources

Evaluation Briefs (CDC Division of Adolescent and School Health). <http://www.cdc.gov/healthyyouth/evaluation/resources.htm>

Inventory of National Injury Data Systems <http://www.cdc.gov/Injury/wisqars/InventoryInjuryDataSys.html>