A Process for Identifying Indicators With Public Data: An Example From Sexual Violence Prevention

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Abstract

Despite advances in the sexual violence (SV) prevention field, practitioners still face challenges with identifying indicators to measure the impact of their prevention strategies. Public data, such as existing administrative and surveillance system data, may be a good option for organizations to examine trends in indicators for the purpose of program evaluation. In this article, we describe a framework and a process for identifying indicators with public data. Specifically, we present the SV Indicator Framework and a five-step indicator review process, which we used to identify indicators for a national SV prevention program. We present the findings of the indicator review and explain how the process could be used by evaluators and program planners within other developing topic areas. Tracking indicators with public data, in conjunction with other evaluation methods, may be a viable option for state-level program evaluations. We discuss limitations and implications for practice and research.

Keywords

capacity-building; program evaluation; evaluation practice; performance; measurement (goal attainment); indicators

Introduction

Sexual violence (SV) is recognized as an important public health issue that health agencies should address with the same urgency as other public health issues (Basile, 2003; Smith et al., 2017). In the United States, nearly 1 in 5 women have experienced rape or attempted rape and 1 in 17 men have been made to sexually penetrate someone in their lifetime (Smith et al., 2017). SV involves a range of acts in addition to rape, such as verbal pressure that results in unwanted penetration (e.g., sexual coercion), unwanted sexual contact (e.g.,

fondling), and noncontact unwanted sexual experiences, such as verbal harassment or voyeurism (Basile, Smith, Breiding, Black, & Mahendra, 2014).

Despite many advances in the SV field, there are still challenges with measuring the public health impact of SV prevention strategies within research and practice contexts. SV prevention is a topic area where prevention strategies are emerging and indicators to measure change and impact are not always readily available to practitioners evaluating their prevention efforts. An *indicator* is a documentable and measurable piece of information that can be used to determine if a program or strategy is being implemented as expected and achieving intended outcomes (Centers for Disease Control and Prevention [CDC], 2016b; MacDonald, 2013). Some indicators may be used to measure contextual factors that influence outcomes. We define an SV indicator as a direct measure of SV behavior (perpetration or victimization) or an empirically linked risk, protective, or contextual factor that could serve as a proxy for SV behavior. That is, these are factors that may not be direct causes of SV but have been associated with SV behaviors in empirical studies (CDC, 2019). For example, general aggressive behavior at the individual level and high levels of societal crime and other forms of violence have been associated with higher rates of SV.

Securing resources to measure SV outcomes through surveillance systems is one challenge health agencies face. Developing or expanding surveillance systems is a significant cost, and state and local health departments often have to prioritize limited funding across multiple health issues. Furthermore, some programs, such as CDC's national Rape Prevention and Education (RPE) program, which funds all state health departments to implement SV prevention strategies, have a legislatively mandated percentage cap on using program funds for surveillance activities (Violence Against Women Reauthorization Act of 2013). Yet another challenge is that implementing organizations may not have the expertise, skills, or evaluation partners (e.g., universities) to conduct primary data collection to evaluate the impact of their prevention strategies. They also may not have the ability to hire external evaluators due to budget constraints or other priorities. Improving access to measurable indicators at little or no cost would increase the capacity of public health agencies to track SV program outcomes and demonstrate the impact of prevention strategies implemented in various real-world contexts.

Using Public Data for Program Evaluation

Public data, such as existing administrative and surveillance system data, may be a good option for health agencies and other organizations to examine trends in SV indicators for the purpose of program evaluation. We define *public data* as information previously collected and analyzed, and available online (e.g., in a published report) such as a raw number, percentage, proportion, or rate. Three main advantages of public data, which address some of the potential challenges that practitioners might face, are data are readily available online, there is no cost for data acquisition, and data are already analyzed in a usable format. Because public data can be easily accessed by health agencies, if they know it is available, the utility of using such data to evaluate the impact of public health programs and strategies is worth exploring.

Distinct from our definition of public data, *publicly available data sets* may be accessed by the public but require additional steps to obtain (e.g., through data use agreement) or utilize (e.g., analysis required). Publicly available data sets have been used to evaluate public health programs in areas such as child welfare and chronic disease. One example is the Mother and Infant Home Visiting Program Evaluation–Strong Start, a multiyear large-scale evaluation study using vital records and Medicaid data in combination with a program participant survey to assess the effects of home visiting programs on birth and maternal health outcomes (Lee, Crowne, Faucetta, & Hughes, 2016; Lee, Warren, & Gill, 2015). Researchers note that the use of publicly available data sets allows for access to a vast amount of rich data, ongoing data extraction without participant follow-up, reduction of cost related to data collection, minimization of bias (e.g., recall bias), and the ability to conduct analyses with statistical confidence due to the large sample size (Feeney, Bauman, Chabrier, Mehra, & Woodford, 2015; Green et al., 2015; Lee et al., 2015; Lorden et al., 2016). The use of publicly available data sets for research evaluation illustrates the potential for health departments to use public data for their program evaluations.

Another reason public data may be a viable option for resourced burdened organizations is the movement toward data transparency. Federal initiatives to make existing data available to the public have increased over the past decade. Since the Office of Management and Budget issued an Open Government Directive in 2009, departments and agencies have been working to increase their availability of data to the public (Orszag, 2009). In addition, the Evidence-Based Policymaking Commission Acts of 2016 and 2018 further this effort by recognizing the potential of using existing data to conduct evidence-based research (Evidence-Based Policymaking Commission Act of 2016; Evidence-Based Policymaking Commission Act of 2018). Anticipating a further increase in the availability of public data, identifying indicators and data sources that health agencies and other practitioners could use to meet certain program evaluation and surveillance needs may be a feasible option to addressing the previously mentioned data challenges.

In this article, we describe a framework and a process for identifying indicators with public data for the purpose of conducting program evaluation. Specifically, we present the SV Indicator Framework and the five steps of the indicator review process we conducted for CDC's RPE program. We present the findings of the indicator review, which include descriptive information on indicators and characteristics of data sources included in the review. We also explain how the process could be used by evaluators and program planners within other developing topic areas to identify indicators with public data.

CDC's SV Indicators Project

CDC funds all 50 state health departments as well as four territorial health departments and Washington, DC, through the RPE program, to address SV using a public health approach (CDC, n.d., 2004). The public health approach uses data to describe the problem and identify priority populations, develop and implement prevention strategies, and monitor and evaluate program impacts (Basile et al., 2016; Mercy, Rosenberg, Powell, Broome, & Roper, 1993). In addition to using a public health approach, CDC organizes SV risk and protective factors, as well as strategies to address such factors, within a social-ecological model (SEM)

(Dahlberg & Krug, 2002; Sallis & Owen, 2015). An SEM explains the complex interplay of individual, relationship, community, and societal-level factors that put an individual at risk of SV perpetration or help to prevent SV victimization or perpetration (Dahlberg & Krug, 2002). RPE recipients use the SEM to guide their state-level prevention strategies and their program activities. Recipients fund local health departments, state coalitions, local rape crisis centers, and other community organizations to implement prevention strategies that address SV risk and protective factors across the SEM.

RPE started at a time when little was known about what works to prevent SV (DeGue, Simon, Basile, & Yee, 2012). Today, evidence linking prevention strategies to SV behavioral outcomes is still somewhat limited. DeGue et al. (2014) identified only a few primary prevention strategies with rigorous evidence of effectiveness for reducing SV behaviors in their systematic review of 30 years of research. More recent evaluation studies have added to the evidence for SV prevention strategies (e.g., Coker et al., 2017; Espelage, Low, Polanin, & Brown, 2015; Salazar, Vivolo-Kantor, Hardin, & Berkowitz, 2014); however, there are still considerable gaps in research on the effectiveness of community-level interventions, in part due to limitations in defined community-level measures of risk and protective factors (Armstead, Wilkins, & Doreson, 2018). In 2016, CDC published a technical package called STOP SV, which included strategies with research evidence on SV risk and protective factors, in addition to SV behavioral outcomes (Basile et al., 2016). A technical package is a core set of strategies to achieve and sustain substantial reductions in a particular outcome based on the best available evidence (Basile et al., 2016; Frieden, 2014). While STOP SV advanced what is known about what works to prevent SV, CDC needed to identify outcome indicators for STOP SV strategies that were feasible to measure in practice versus research contexts.

RPE recipients had consistently reported to the CDC program team that there were limited data sources for SV behaviors, particularly perpetration, that they did not know how to assess which state and local data sources had appropriate indicators, and they did not always have the capacity to collect data from program participants. In addition, both CDC and RPE recipients knew there were few known indicators to measure community factors associated with SV. Recipients needed to identify indicators with public data they could use, in addition to conducting primary data collection. CDC's Division of Violence Prevention, therefore, initiated the SV Indicator Project to identify indicators RPE recipients could use for their program evaluation activities as well as CDC's own evaluation of the RPE program.

Method

Process for Reviewing Indicators With Public Data

We developed a five-step process to gather stakeholders, define search parameters and selection criteria, conduct the indicator search, select indicators, and apply findings to public health actions such as program evaluation (Figure 1, Table 1). Step 1, *Gather Stakeholders*, includes identifying stakeholders who can serve as experts on the topic area, the specific program or strategy involved, program evaluation, research, and surveillance, as well as key leaders and decision-makers. It also involves developing a plan and identifying resources needed to conduct the search. Step 2, *Define the Search Parameters and Selection Criteria*,

includes defining inclusion and exclusion criteria for indicator selection and determining search parameters for the external review process. Step 3, *Conduct the Indicator Search*, starts with reviewing any internal program or other known data sources based on search criteria. After obtaining stakeholder input on existing gaps in known data sources, a search of external data sources is conducted based on the defined search criteria. Step 4, *Select Indicators*, consists of stakeholders reviewing indicators and data sources that met the defined inclusion criteria for overall quality and fit with defined outcomes (i.e., face validity), as well as the credibility of data sources. This step may also include developing additional criteria to prioritize "best" indicators, if the indicator search yields multiple indicators for a single outcome or if stakeholder reviews identify issues with some indicators or data sources, for example, data quality or credibility of data sources. Stakeholders can develop additional criteria to prioritize indicators for the end uses and audiences, illustrated as a feedback loop in Figure 1. Step 5, *Apply Findings to Public Health Actions*, can involve integrating findings into practice guidelines, program evaluation, surveillance activities, and research efforts. This step also can include an analysis of the extent to which indicators cover the defined outcomes (i.e., content validity), where there are gaps that need to be filled by other data sources and methods, and the range of indicators, for example, from least to most severe SV behaviors. Because this process is intended for practice settings and is developmental in nature, stakeholder reviews throughout the process provide some rigor in applying criteria and making selections. An organization, however, could incorporate additional checks or more rigorous methods to assess validity, reliability, and credibility, if this fits the organizational values and would ensure findings are used.

Step 1: Gather Stakeholders

CDC's Division of Violence Prevention established an internal SV indicator work group consisting of practice, surveillance, research, and program evaluation experts across the Division. The work group initially was formed to address the needs of RPE program recipients and CDC's program team to measure outcomes for RPE program strategies. The work group identified data needs, defined search criteria, and provided ongoing input and review throughout the process. Program and evaluation staff members provided input on the program priorities and goals and helped the group think strategically about what types of indicators would serve future program evaluation goals for the next funding cycles as well as addressing current needs. Research and surveillance staff provided their subject matter expertise on SV, shared their knowledge of measurement and data sources, and served as expert reviewers throughout the process, along with program staff. Although the work group was internal to CDC, its members considered recipients to be an important stakeholder group and the primary end user for the indicator review findings. Recipients were updated on the work group's progress and provided feedback at different points in the process.

Step 2: Define the Search Parameters and Selection Criteria

The work group first examined two systematic reviews of SV behavioral outcomes and risk and protective factors (DeGue et al., 2014; Tharp et al., 2013). In addition, we reviewed the World Health Organization report on violence prevention, SV Chapter, which also includes a review of SV-related outcomes (Dahlberg & Krug, 2002). The work group identified 20 SV outcomes, which included SV behavioral outcomes and risk and protective factors. We

used the SEM as an organizing framework for SV risk and protective factors for SV and to guide the review and selection process (Bronfenbrenner, 1977; Sallis & Owen, 2015). Figure 2 illustrates how SV risk and protective factors as well as SV behavioral outcomes were organized within the SEM. As stated earlier, CDC and the RPE program commonly use the SEM to help explain the complex factors that put an individual at risk of SV perpetration or victimization and create the conditions to prevent SV. Subject matter experts on the work group reviewed the framework to ensure that the risk and protective factors were organized appropriately and to assess whether there were any additional factors that needed to be added based on new empirical research. At the time of the review, there were no additional risk or protective factors identified. The resulting CDC SV Indicator Framework (Framework) was used to guide the search of public data sources and the selection of indicators.

Inclusion criteria for indicator selection were (1) fits within the Framework—that is, an identified risk or protective factor or SV behavioral outcome, (2) measures a modifiable factor (i.e., can demonstrate changes overtime), (3) data available publicly at the state level on an ongoing basis (e.g., annually), and (4) the data collected were clearly defined by the data collector. This last criterion was important for the work group to determine the extent to which an indicator measured the defined outcomes and the populations included in the sample.

Exclusion criteria for *data sources*, and by extension indicators from these data sources, were (1) did not provide public data, (2) did not provide data at the state level, and (3) did not have indicators that fit within the Framework. We also excluded data sources that had publicly accessible data sets but required steps for acquisition (e.g., data use agreement) or analysis (e.g., data file available for download), sources that did not conduct ongoing data collection (e.g., onetime survey data), and sources that only provided data for one or a few states or only collected non-U.S. data. This last criterion was important because RPE is a national program with 55 recipients, and CDC sought to identify indicators that could be measured across all recipients.

Step 3: Conduct Indicator Search

We conducted a search of data sources (e.g., administrative data, surveillance systems) from the fall of 2015 through spring 2016 based on the defined search parameters described in Step 1. As a starting point, we reviewed several resources to identify potential data sources including indicator databases (e.g., Health Indicator Warehouse), peer-reviewed literature, evaluation studies, government data systems, and other established indicator projects (e.g., Healthy People 2020). We also gathered input from work group members and external subject matter experts in SV on potential data sources. Because this was not a traditional literature review where key search words could be entered into defined search engines, we used an iterative process that combined expert input and review with online searches to increase our coverage of public data sources.

In total, 76 public data sources were reviewed and 26 were included in our indicator review. Sixteen data sources were excluded because they did not provide state-level data, five data sources were excluded because they required users to download or request a data file

for analysis, and two sources did not have indicators that fit in the Framework. The SV indicators work group determined that another 27 excluded data sources would not meet the RPE programs' data needs, for example, only had data for a few states.

Step 4: Select Indicators

We reviewed the 26 data sources to identify and select indicators that could be used as measures of SV. Indicators meeting the minimum inclusion criteria (described in Step 1) were reviewed by the SV indicators work group during the spring of 2016 for final selection. Work group members provided input on data quality, gaps in data sources, and additional considerations for RPE recipients' indicator selection. Administrators of data sources were contacted, when necessary, to obtain additional information on data collection methods. The work group also decided that they did not have enough information to determine which indicators were the "best performing" or would best measure RPE program strategies given the early developmental stage of RPE's evaluation activities. Work group members, therefore, did not create additional prioritization criteria to pare down the list of identified indicators.

Step 5: Apply Findings to Public Health Actions

CDC's Division of Violence Prevention applied a number of public health actions primarily intended to accelerate RPE recipients' ability to identify, select, and track indicators. We developed an MS Access database for RPE recipients with all indicators and data sources, as well as descriptions of each and search variables (e.g., SEM level, data collection intervals). We also developed guidance on selecting appropriate indicators that align with prevention strategies and outcomes for recipients' program evaluation, informed by other indicator guidance (CDC, 2016b; MacDonald, 2013). The indicator database was shared with the research and surveillance units within the division to inform their work (e.g., research funding opportunities), as well as future pilot work to identify a core set of SV indicators that could potentially be tracked by all RPE recipients. In 2016, the RPE program initiated 2-year supplemental funding for 12 of its recipients to pilot the usability of the SV indicator database and guidance for the purpose of tracking their state SV indicators. The pilot also assessed how useful these resources were in measuring state-level outcomes recipients included in their evaluation plans (Ottley et al., 2019). In 2018, the indicators and data sources included in the database were reviewed and updated, and in 2019, CDC launched an online search tool as part of its existing online portal Veto Violence.

Findings

We identified 134 indicators for the 20 outcomes defined in the SV Indicator Framework, which were SV behaviors and related risk and protective factors. Indicators came from 26 data sources (e.g., Youth Risk Behavior Surveillance System [YRBSS]), which included 14 data collectors (e.g., CDC). Only 12% ($n = 16$) of the indicators measure SV behaviors directly, including measures of perpetration ($n = 9$) and victimization ($n = 7$). The majority of indicators fell within the individual level of the Framework. Fifty-three indicators (40%) measure individual behavioral risk and protective factors (e.g., alcohol and drug use, sexual risk behaviors, and general aggression). Indicators at the relationship-level

(17%) measure factors related to intimate partner violence, child maltreatment, family relations, and social support. Indicators measuring community-level factors (33%) largely measure socioeconomic factors, with fewer indicators measuring other factors such as community violence and community connectedness. The number of indicators found across the Framework is summarized in Table 2.

Sixty-nine percent (*n* = 92) of indicators have data released within 2 years of data collection, and 21 of those 92 indicators have data released within a year (data not provided in Table). Seven percent (*n* = 10) of indicators have data released 3 years after data collection activities. We were unable to classify nearly 24% (*n* = 32) of indicators into a data release category due to either (1) undergoing a data collection redesign or (2) has an inconsistent timeline for the release of data.

Forty-three percent (*n* = 58) of the 134 indicators are within data sources that do not provide data at the local level (e.g., collected at city, county, or school levels). Of the 76 indicators that do provide local-level data, 33 indicators only provide data for some large metropolitan cities, and 21 indicators provide data by county. Only one indicator provides data by zip code. Eighteen indicators provide college-/university-level data, by school(s) and by one or more schools within a state. Five indicators have data for K–12 schools, both by individual school(s) and by school district. Of the indicators that have local-level data, 30% (*n* = 26) have data at more than one local level (e.g., school district and individual schools).

Indicators by data sources are described in Table 3. YRBSS provided the most indicators that met our criteria (*n* = 19), followed by the Office of Postsecondary Education (OPE; *n* = 17) and the National Survey on Child Health (NSCH; *n* = 14). The remaining 23 data sources had between one and nine indicators that could be used to measure SV factors. Nearly a quarter of data sources identified in this project are administered by CDC, including the YRBSS, National Intimate Partner and Sexual Violence Survey (NISVS), and the Behavioral Risk Factor Surveillance System. Other large data collectors include the U.S. Department of Education, Census, Federal Bureau of Investigation, and Substance Abuse and Mental Health Services Administration.

Discussion

We conducted a five-step systematic process to identify SV indicators with ongoing public data in order to improve RPE recipients' and other SV practitioners' ability to measure the impact of their prevention work. The process combined online searches with expert input and review to increase the rigor of the methodology. Search parameters were defined based on the RPE program goals, program evaluation needs, and end users, which were state health departments that had identified a need for indicators with public data sources. We identified a total of 134 SV indicators from 26 data sources.

Our findings highlight several strengths of public data available to measure outcomes of SV prevention strategies. First, very few sources collect a majority of the SV indicators with public data. This potentially helps to reduce the burden on SV practitioners gathering information to inform both program development and program evaluation. Second, recent

data collection changes among several sources have led to a broader and more expansive inclusion of indicators related to SV. In 2014, for example, the OPE expanded data collection on SV perpetration of nonforcible and forcible rape to include things such as fondling, incest, intimate partner violence, and stalking. Similarly, although published following the completion of our search, in 2017, NISVS also released new state-level data reports providing a broader scope of SV victimization measures (Smith et al., 2017).

In addition, most data are available to the public within 2 years of data collection, which allows health departments to track trends and inform program planning and decision-making. Several data collectors are also planning to decrease the lag between collection and public release. For example, the NSCH, which provides data on family relationships, community and school involvement, and community violence and safety, has changed its data collection from every 4 years to annually starting in 2017.

Most indicators we identified have the potential to be utilized for multiple purposes. While few indicators measure SV behavior directly, we found many indicators of SV risk and protective factors or conditions. Practitioners and researchers can use the wide variety of indicators spanning the Framework as short-term and intermediate outcomes to assess the impact of prevention work. Measures of risk and protective factors may be particularly important for community- and societal-level prevention strategies that may not show immediate impacts on SV perpetration or victimization outcomes. For example, community-level strategies addressing gender equality may not result in immediate changes in SV rates, but they may influence more proximal indicators such as the ratio of income inequality within a state.

Practitioners also can use data sources identified in this review for program planning, for example, to select priority populations and prevention strategies. Programs also may benefit from tracking multiple indicators within a state or community to get a picture of what is happening in the broader context where a prevention strategy is being implemented. A program intending to increase community connectedness as a way to reduce SV, for example, may also choose to track changes in the physical environment and economic stress because these factors also may contribute to changes in SV within the community.

Findings also underscore a few significant gaps in using public data to measure and track outcomes of SV prevention work. First, limited perpetration data are available. Although we identified nine indicators measuring SV perpetration, there are limitations with public data sources. One limitation is that states vary in their reports to national data collectors. Furthermore, public data measuring perpetration rates are only available from official reports (e.g., police and administrative records), which significantly underestimate the true rate of SV, as the majority of incidents are not reported (Wolitzky-Taylor et al., 2011; Ybarra & Mitchell, 2013). In addition, there is a need for perpetration data on the various types of SV perpetration in addition to rape. The field would benefit from the development of innovative methods to address the underestimation of SV perpetration and identify methods to capture the numerous types of SV. Second, we did not identify public data for several known SV risk and protective factors included in the Framework (e.g., problem-solving skills, gang involvement). Although there is a current push for the expansion of public data,

health agencies may need to consider additional options for tracking indicators, including publicly accessible data sets that require data use agreements and possibly analysis, as well as primary data collection, for some prevention strategies. Last, while our focus was on state-level data, we documented the lack of data collected and reported at the local level. Many prevention strategies implemented by health departments are implemented in community settings rather than across the entire state. State-level data would not necessarily demonstrate the impact of a prevention strategy within a community, and this is an ongoing challenge for RPE recipients' program evaluation efforts.

Limitations

Although this review resulted in numerous indicators, there are notable limitations to this approach. First, because the priority was for the work group to identify indicators that did not require primary data collection or analysis—that is, public data, our results were limited and in particular did not include additional indicators we identified but excluded from the reported results. Some sources that were excluded due to requiring additional steps to obtain data (e.g., downloading a data file) may be of value to health departments, particularly those that have the expertise to manage this process. There may be other valuable data sources for individual states that were not included in our findings, such as state-specific surveys or surveillance systems, because they did not meet the purpose of the SV indicator review. We also did not rate or score indicators using additional criteria such as content validity (e.g., coverage of the range of SV behaviors from less to more severe), frequency of data collection, sensitivity to change, reliability of the measures, and credibility to stakeholders. Although the work group considered applying additional criteria to identify the "best performing indicators," we ultimately decided that this was a first and formative phase. The work group, therefore, decided to first examine the utility and feasibility of RPE recipients tracking indicators with public data to measure the outcomes of their selected strategies during the current funding cycle before determining the best indicators. As such, the list of indicators should be considered a preliminary list based on the best available information at this time. In practice, RPE recipients have been able to use the SV indicator database to identify an initial set of indicators and then, in some cases, identified some additional (e.g., state-specific) data sources they could access for similar indicators. For example, one state that does not participate in CDC's YRBSS data collection conducts their own state-level "Health Youth Survey." This search was limited to address a specific resource gap for the national RPE program and could have been expanded or narrowed for another purpose or gap. This points to the importance of Step 2 in the Framework—Define Search Parameters and Selection Criteria.

We also found that within the year of our review, some data collectors implemented or planned changes, which points to a need for ongoing monitoring of updates. In particular, changes in data collection methods and online locations for data reports may present challenges for practitioners that rely on public data for ongoing evaluation. Changes in any public data being used for program evaluation may result in methodological challenges while assessing program outcomes. Last, public data are only one part of demonstrating the impact of SV prevention strategies. Practitioners, therefore, would likely need to combine tracking indicator data with other evaluation methods to show overall the contribution

of their programs to changes in rates of SV. We also recognize that, while the risk and protective factors included in the Framework have empirical support, selected indicators are not necessarily the same measures used in previous studies. Future work is needed to determine the extent to which these indicators are useful to measure the impact of prevention efforts.

Despite these limitations, this review underscores the importance of research and surveillance efforts for programmatic supports. Our findings suggest that a significant amount of data to measure indicators of SV is already available for use by public health agencies that may have limited capacity and resources for data collection. Perhaps, the most significant impact of the SV indicator review to date is that the review findings and related guidance were incorporated in the most recent funding cycle, which started in 2019. For the first time, all RPE recipients are implementing strategies from CDC's STOP SV technical package and tracking state-level indicators using public data. This significant advance in the RPE program will likely influence the SV field overall and potentially contribute to practice-based evidence (Green, 2008) on the implementation of prevention strategies in state and local contexts. It also is an opportunity to examine how useful the identified indicators with public data are to state program evaluations.

The methods and process used here could also be replicated to identify indicators with public data to measure other health outcomes. Indicators with public data available could potentially be used for both programmatic activities (e.g., decision-making) and evaluation activities (e.g., developing a baseline). Current and future requirements for open access to data collected from the public could increase data-informed decision-making at the state and local level. It also has the potential to increase available evidence for what works to prevent various health outcomes by providing a low-cost, low-burden method to conduct evaluation of prevention strategies.

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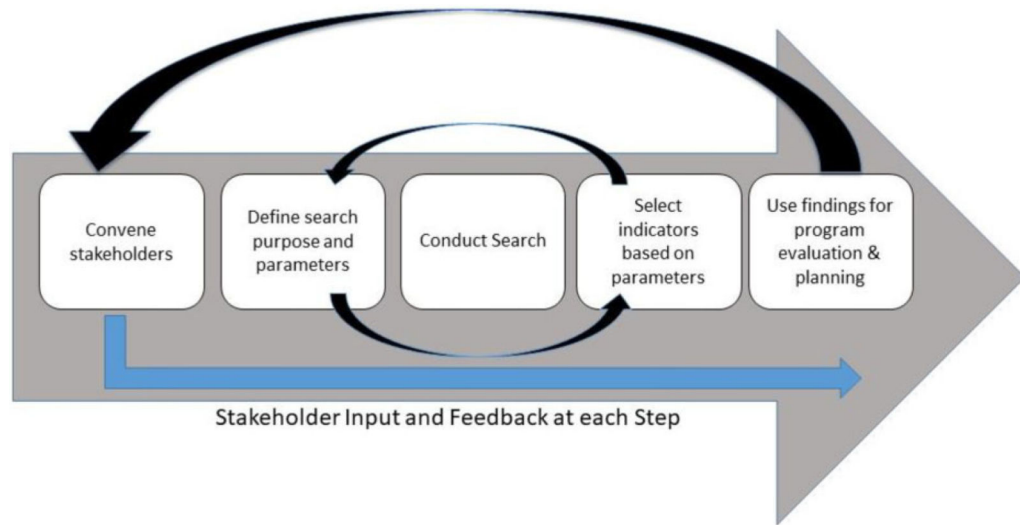
Figure 1.
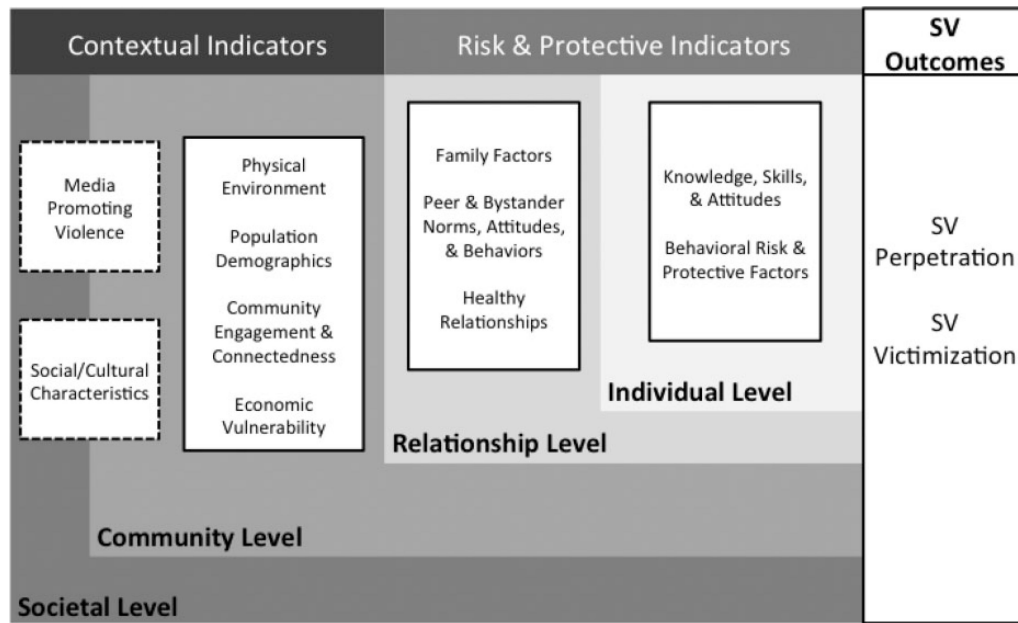Process for identifying indicators with public data.

Figure 2.
Centers for Disease Control and Prevention Sexual Violence Indicator Framework. Dashed border indicates the indicator across the social-ecological model levels. [+]Framework informed by empirical work (Basile et al., 2016; Tharp et al., 2014).

Table 1.

Five Steps to Identifying Indicators With Public Data.

Step	Purpose	Key Actions	RPE Example
1. Gather Stakeholders	Convene a group of individuals who can provide input on indicator search parameters, selection and use, and feedback at each stage, as well as influence use of indicators for evaluation and planning	Identify stakeholders who can serve as experts on topic area, program/strategy, evaluation, research, and surveillance Identify key leaders and decision-makers Develop a work plan and identify resources needed to conduct the search	CDC formed an SV indicator work group with practice, research, evaluation, and surveillance staff who have SV expertise and experience with the RPE program CDC hired a fellow to conduct online searches, coordinate the process, and manage work group member reviews
2. Define the Search Parameters and Selection Criteria	Align the indicator search with the program/strategy priorities, goals, and outcomes	Define inclusion and exclusion criteria for indicator selection Determine search parameters and external review processes Develop prioritization criteria (optional)	The SV indicator work group defined inclusion criteria for indicators: must fit within the SEM, must have public data, must measure an outcome that is modifiable, and must have data for all or most states. The work group also identified exclusion criteria for data sources The work group determined that the end users would be RPE recipients and CDC staff and the primary end use would be to increase tracking of state-level SV indicators
3. Conduct the Indicator Search	Identify indicators with public data that meet search parameters and selection criteria	Identify and review available information, such as stakeholder expert knowledge on indicator data sources and internal organizational documents Conduct external search	The work group used their own knowledge and external SV experts to identify known data sources and search parameters The fellow conducted online searches for additional sources. After several iterative cycles, work group members decided they had reached saturation for public data sources
4. Select Indicators	Determine whether to use all indicators or prioritize "best" indicators	Use criteria to include or exclude indicators Develop additional criteria to prioritize Identify stakeholders to review indicators (validity check)	The fellow organized the list of indicators by SEM levels and applied inclusion criteria Work group members reviewed the indicators and data sources for completeness, data quality, and credibility
5. Apply Findings to Public Health Actions	Use indicators to measure program/strategy context and impact as well as planning efforts	Determine the strengths and weaknesses of available indicators as well as the extent to which they address program goals and outcomes Incorporate indicators in program evaluation and planning Identify additional uses such as surveillance and research	The fellow conducted an analysis to assess which risk and protective factors were most covered and gaps. The fellow developed a database and guidance documents to facilitate recipient use of indicators, and the program team conducted webinars and provided training to recipients. Indicators were also shared with the Division's research and surveillance staff Twelve RPE recipients were funded to use state-level indicators with public data in their evaluation activities

Note. RPE = Rape Prevention and Education; CDC = Center for Disease Control and Prevention; SV = sexual violence; SEM = social-ecological model.

Table 2.

Distribution of Indicators Across the SV Indicators Framework.

SV Indicator Framework Level	Number of Indicators	%
Outcome level	16	12
SV perpetration	9	
SV victimization	7	
Individual level	53	40
Alcohol and drug use	12	
School engagement	2	
School disciplinary problems	7	
General aggression	8	
Sexual behavior	4	
Mental health and suicidal behavior	13	
Bullying	7	
Relationship level	23	17
Child maltreatment	6	
Family factors	6	
Unhealthy intimate relations	4	
Social support	5	
Community level	44	33
Physical environment	3	
Connectedness and engagement	9	
Community violence and safety	10	
Economic vulnerability	13	
Occupational status of women	6	
Cultural acceptance	3	

Note. Percentages may not equal 100. Some indicators were classified into multiple framework levels. SV = sexual violence.

Table 3.

Indicators by Data Source Identified in the SV Indicators Project.

Data Source	Number of Indicators	Indicators
Youth Risk Behavior Surveillance System[a]	19	Percentage of adolescents ever forced to have sexual intercourse Percentage of adolescents who have experienced sexual dating violence in the past year Percentage of past month binge drinking among adolescents Percentage of adolescents who have been offered, sold, or given an illegal drug on school property in the past 12 months Percentage of physical fighting among adolescents in the past 12 months Percentage of past month weapon carrying by adolescents Percentage first sex before age 13 among adolescents Percentage of adolescents engaging in sex with multiple partners Percentage of adolescents who did not use a condom during last sex Percentage of adolescents who felt sad or hopeless in the past 12 months Percentage of adolescents who seriously considered attempting suicide in the past 12 months Percentage of adolescents who made a suicide plan in the past 12 months Percentage of adolescents who attempted suicide in the past 12 months Percentage of adolescents whose suicide attempt resulted in medical treatment in the past 12 months Percentage of adolescents bullied on school property in the past 12 months Percentage of adolescents cyberbullied in the past 12 months Percentage of adolescents experiencing physical dating violence in the past 12 months Percentage of students who miss school due to safety Percentage of past month weapon carrying by adolescents on school property Percentage of adolescents bullied on school property in the past 12 months
Office of Postsecondary Education[b]	17	Number of incidents of forced sexual offenses reported by colleges and universities Number of incidents of nonforcible sexual offenses reported by colleges and universities Number of incidents of rape reported by colleges and universities Number of incidents of fondling reported by colleges and universities Number of incidents of incest reported by colleges and universities Number of incidents of statutory rape reported by colleges and universities Number of arrests for drug abuse violations reported by colleges and universities Number of drug abuse violations that resulted in disciplinary action reported by colleges and universities Number of arrests for drug abuse violations reported by colleges and universities Number of liquor law violations that resulted in disciplinary action reported by colleges and universities Number of aggravated assault reported on college campuses Number of arrests for weapon carrying reported by colleges and universities Number of weapon carrying violations that resulted in disciplinary action reported by colleges and universities Number of domestic violence incidents reported by colleges and universities Number of dating violence incidents reported by colleges and universities Number of stalking incidents reported by colleges and universities Number of hate crimes occurring on college campuses
National Survey on Child Health[c]	14	Percentage of children ages 6–17 engaged in school in the past month Percentage frequency of children bullying others in past month Percentage of children 6–17 who have an adult mentor Percentage of children with two or more adverse childhood experiences Percentage of days that all the family members in the household eat together in 1 week Percentage frequency of parent attendance at child's activities Percentage of children who have witnessed domestic violence Percentage of parents who feel their neighborhood is safe for children Percentage of parents who feel their child's school is safe Percentage of children a victim or witness to community violence Percentage of children ages 6–17 who have participated in organized activities outside of school Percentage of time children ages 12–17 have been engaged in community service or volunteer work in the past 12 months Percentage of children living in supportive neighborhoods Percentage of time children worked outside of the home for pay
Current Population Survey[d]	9	Percentage of days individuals ate dinner with any other household members Percentage of days individuals interacted with family or friends Percentage of persons living in poverty Percentage of households with food insecurity Percentage of households with very low food security Percentage of residents who have volunteered during the past 12 months Percentage of individuals who vote in local elections Percentage of individuals who have contacted or visited a public official to express opinion Percentage of time individuals and neighbors do favors for one another

Data Source	Number of Indicators	Indicators
National Child Abuse and Neglect Data System[e]	7	Rate of child protective services response per 1,000 children Rate of child abuse or neglect per 1,000 children Percentage of child abuse or neglect cases reporting child sexual abuse Percentage of child abuse or neglect cases reporting child physical abuse Percentage of child abuse or neglect cases reporting child emotional abuse Percentage of child protective service nonvictims exposed to caregiver domestic violence Percentage of child protective service victims exposed to caregiver domestic violence
National Survey on Drug Use & Health	7	Percentage of past-month binge alcohol use among adults Percentage of past month binge alcohol use among minors Percentage of past month illicit drug use among adults Percentage of past month illicit drug use among minors Percentage of adolescents with past-year major depressive episode Percentage of adults reporting thoughts of suicide Percentage of adults with past-year major depressive episode
American Community Survey[f]	6	Ratio of income inequality GINI inequality index Percentage of households with severe housing cost burden Percentage of households with housing cost burden Male to female median annual earnings ratio Female wage gap
Behavioral Risk Factor Surveillance System[g]	6	Percentage of past month binge drinking among adults Percentage of adults who are heavy drinkers Percentage of adults ever tested for HIV Percentage of adults who have ever had a form of depression Percentage of adults who report inadequate social support Percentage of adults with disabilities who report adequate social support
Uniform Crime Rate[h]	6	Rate of forcible rapes estimated to occur in the past 12 months per 100,000 Number of forcible rape arrests in the past 12 months Estimated rate of aggravated assault per 100,000 Number of aggravated assault arrests in the past 12 months Rate of violent crime per 100,000 people Number of hate crimes reported to legal authorities
National School Climate Survey[i]	5	Percentage of students hearing anti-LGBT remarks at school Percentage of students reporting prejudice verbal harassment Percentage of students reporting prejudice physical harassment Percentage of students reporting prejudice physical assault Percentage of students who report that harassment or assault incidents reported to school authorities results in effective intervention
National Intimate Partner & Sexual Violence Survey	4	Percentage of individuals who have ever experienced SV other than rape by any perpetrator Percentage of individuals who have ever experienced rape, physical violence, and/or stalking by an intimate partner Percentage of individuals who have ever experienced SV Percentage of individuals who have ever experienced stalking
Census of Juveniles in Residential Placement[j]	4	Rate of sexual assaults committed per 100,000 juveniles in residential placement Rate of truancy committed per 100,000 juveniles in residential placement Rate of aggravated assault committed per 100,000 juveniles in residential placement Rate of violent crime index committed per 100,000 juveniles in residential placement
County Business Patterns[k]	4	Number of liquor stores Rate of liquor stores Number of on-site alcohol consumption establishments Rate of social associations per 10,000 persons
Healthcare Cost & Utilization Project[l]	4	Number of hospital patients admitted for suicidal behavior and/or thoughts Number of hospital patients admitted for suicidal ideation Number of hospital ED visits for suicidal behavior and/or thoughts Number of hospital ED visits for suicidal ideation
Common Core Data: American Public School Data[m]	3	Number of students enrolled in the free lunch program Number of students enrolled in the reduced price lunch program Percentage of students enrolled in the free or reduced price lunch programs
Civil Rights Data Collection[n]	3	Percentage of in school suspensions Percentage of out of school suspension Percentage of expulsions

Data Source	Number of Indicators	Indicators
Consolidated State Performance Report[o]	2	Number of out of school suspensions by incident type Number of expulsions by incident type
U.S. Equal Employment Opportunity Commission[p]	2	Number of employer discrimination charges filed based on violation of the Equal Pay Act of 1963 Number of employer discrimination charges filed
Common Core Data[m]	1	Percentage of students who dropped out of high school
Local Area Unemployment Statistics[q]	1	Percentage of individuals above the age of 16 who are estimated to be unemployed
National Center for Education Statistics[m]	1	Percentage of students completing college by gender
Small Area Health Insurance Estimates[r]	1	Percentage of persons who are estimated to be uninsured
Small Area Income and Poverty Estimates[r]	1	Percentage of children estimated to be living below the poverty line
Survey of Business Owners[s]	1	Number of women owned businesses
State Performance Reports	1	Percentage of students who graduated high school
Women's Legislative Network	1	Percentage of women in state legislature

Note. Total number indicators may not match Table 2. Some indicators were classified into multiple framework levels. SV = sexual violence; HIV = human immunodeficiency virus; LGBT = lesbian, gay, bisexual, and transgender; ED = emergency department; GINI Index is a statistical measure of distribution.

[a] Centers for Disease Control and Prevention (2016c).

[b] Office of Postsecondary Education, Campus Safety and Security Analysis Tool (2016).

[c] Data Resource Center for Child & Adolescent Health (2016).

[d] The Corporation for National & Community Service (2016).

[e] Children's Bureau, An Office of the Administration for Children and Families (2016).

[f] American Association of University Women (2016) and National Women's Law Center (2016).

[g] Centers for Disease Control & Prevention (2016a).

[h] U.S. Department of Justice, Federal Bureau of Investigations (2016).

[i] GLSEN, Inc. (2016).

[j] U.S. Department of Justice, Office of Juvenile Justice & Delinquency. (2016).

[k] U.S. Census Bureau, American Fact Finder (2016).

[l] Agency for Healthcare Research and Quality (2016).

[m] National Center for Education Statistics (2016).

[n] U.S. Department of Education (2016a).

[o] U.S. Department of Education (2016b).

[p]U.S. Equal Employment Opportunity Commission (2016).

[q]U.S. Department of Labor (2016).

[r]U.S. Census Bureau (2016b).

[s]U.S. Census Bureau (2016a).