Assessment and Evaluation of Opioid-Related Stigma: A Guide for Local Health Departments

The National Association of County and City Health Officials represents over 3,300 local health departments nationwide, providing leading professional resources and programs. Our mission is to improve the health of communities by strengthening and advocating for local health departments.

The Overdose, Injury, & Violence Prevention Team addresses the overdose crisis with a community- centered, equitable, and evidence-based approach. We support local health departments and their partners with funding, technical assistance, mutual learning opportunities, and resource development.

This toolkit was developed in collaboration with Dr. Lawrence Yang, Stigma Lab, LLC.

NACCHO℠
National Association of County & City Health Officials

Table of Contents

Part I: Data Collection

Executive Summary

Opioid-related stigma contributes to the overdose crisis in the United States and harms the health and well-being of people who use drugs. Departments of public health play a crucial role in combatting this stigma at the public, individual, and structural levels.

This guide provides a detailed outline of five *Key Questions* to consider when assessing and evaluating opioid-related stigma in your community. *Key Questions* 1-3 help identify public health goals, determine a group or population of interest, and select the most relevant stigma concepts. *Key Questions* 4 and 5 help identify ways in which to collect data and survey design.

Key Questions consist of:

1. What is the **main public health goal** for understanding or addressing opioid-related stigma in your community?
2. What is the **group or population of interest** (e.g., general public, people who use drugs, healthcare providers) that you wish to collect data from?
3. What **opioid-related stigma concepts** (e.g., public stigma, internalized stigma) are most relevant to consider when reaching that goal?
4. Are there pre-existing **sources of data** or opportunities for **data collection**?
5. Is an appropriate **measure** to assess the stigma of interest currently available?

Careful and rigorous data collection around opioid-related stigma can help inform the development, implementation, and evaluation of anti-stigma campaigns and other projects. See Part II for steps related to data analysis.

Introduction

Stigma toward opioid use, opioid use disorder (OUD), and medications for opioid use disorder (MOUD) ("opioid-related stigma") is prevalent, harms the health and well-being of people who use opioids, hinders access to and uptake of treatment for OUD, and contributes to deaths due to opioid-related overdose (Olsen & Sharfstein, 2014; Tsai et al., 2019; Volkow, 2020). Importantly, although data on overdose deaths are frequently reported, addressing opioid-related stigma has the potential to reduce other negative psychological and health outcomes related to not only opioid use, but also the experience of stigma itself. To continue tackling the overdose crisis and improving the well- being of their communities, departments of public health can develop, implement, and evaluate campaigns and projects to address opioid-related stigma.

To this end, this guide provides five *Key Questions* to consider when assessing and evaluating opioid-related stigma in your community. *Key Questions* 1-3 help identify public health goals, determine a group or population of interest, and select the most relevant stigma concepts. *Key Questions* 4-5 help identify ways in which to collect data and survey design.

1 Key Question 1: What is the main public health goal for understanding or addressing opioid-related stigma in your community?

As with any public health effort, it is essential to first set clear goals. The best allows the data collection to inform your desired goals. For example, if the goal is primarily to reduce stigma (perhaps as a first step to successive, more targeted stigma campaigns), measuring only stigma may be sufficient. But if your goal is, for instance, to decrease stigma associated with OUD treatment seeking, it would be best to include terms related to that specific stigma concept. The same reasoning applies to improving knowledge about opioid use or MOUD (or promoting harm reduction) as it would be best to include measure to assess and improve OUD knowledge (or harm reduction knowledge) as well. To achieve these goals, it is also likely necessary to identify the groups/population(s) of interest (Key Question 2) and the stigma concepts most relevant to your efforts (Key Question 3).

2 Key Question 2: What is the population of interest for your data collection?

Considering the goals of your project and collection of data can help identify your population of interest. This may mean assessing the attitudes of the general public (i.e., public stigma), meaning you could survey a representative sample of a city or county. Or there may be specific subgroup(s) known to face disproportionate rates of opioid use or overdose that your campaign or project seeks to benefit. Specific examples of populations you may want to assess are:

- The general public
- People who use opioids (and their family members)
- Healthcare providers (e.g., medical students, nurse practitioners)
- First responders (e.g., police officers, emergency services/technicians [EMS/EMT])

To illustrate, consider the following three examples. A project could have the main public health goal to improve awareness of MOUD in the general community (population of interest) and to reduce public stigma toward people seeking OUD treatment. Or, the goal could be, among people who are already engaged in opioid-related treatment (population of interest) in specialized programs, to reduce their internalized stigma. As a final example, the main goal could be to address stigma among primary care providers (population of interest) at the first point of contact with patients who have co-morbid physical and pain conditions and who are initiating opioid-related treatment. Selecting the population(s) of interest for examining stigma can help guide the next steps in determining relevant stigma concepts.

3 Key Question 3: What opioid-related stigma concepts are most relevant to reach that goal?

Once you have selected a population of interest, selection of relevant stigma concepts is the next step. Different stigma concepts are most strongly (but often not exclusively) associated with different target populations (i.e., general community; people with OUD [or their families]; health care providers and/or first responders). Common stigma concepts associated with each target population are briefly discussed here to help identify which concepts may be most relevant to your project's public health goal.

General Community

In considering the opioid-related stigma held by general community members (i.e., public opioid-related stigma), you may wish to keep in mind stigma concepts that have been commonly assessed in this group. These include labeling, stereotypes, social distance, attributions of blameworthiness, and treatment stigma.

- Labeling is the form of categorization used to identify people with OUD. Specifically, this refers to "labels" of the condition of OUD that can link a person to the negative stereotypes associated with that label (e.g., calling someone an "addict" versus "a person with OUD").
- Stereotypes are the negative traits or ideas attached to a particular "label" (i.e., OUD). Two examples of prevalent stereotypes for people with OUD are dangerousness (i.e., perceptions of the person doing something violent toward themselves or others) and incompetence (i.e., cannot make their own treatment decisions, cannot manage finances).
- Social distance questions examine people's willingness to be close to people with OUD (e.g., make friends with a person with OUD, work closely with a person with OUD, have a group home for people with OUD in the neighborhood, and have a person with OUD marry into family).
- Attributions of blameworthiness can be measured by assessing respondents' tendency to make blameworthy attributions regarding the causation of OUD (e.g., individuals with OUD only have themselves to blame for their "problem").
- Treatment stigma could be key to measure in public stigma questionnaires; understanding stigma associated with seeking OUD treatment can help gauge how willing the population is in general to seek treatment or how willing the population is in general to view seeking treatment for OUD as shameful.

Please note that a number of these stigma concepts can also be applied to "Healthcare Providers" and "First Responders" below.

People with OUD (or their families)

In considering the opioid-related stigma experienced by people with OUD or their family members (i.e., opioid-related self-stigma), you may wish to keep in mind stigma concepts that have been commonly assessed in these groups. This includes anticipated stigma, internalized stigma, enacted stigma, disclosure/social withdrawal, and treatment stigma.

- Anticipated stigma refers to the expectations of being the target of prejudice or discrimination in the future. An example would be "Employers would not hire me if I were to tell them that I have OUD".

- Internalized stigma is reflected in the degree to which someone with OUD endorses negative views and feelings associated with having OUD; high internalized stigma may be expressed as shame, embarrassment, or alienation.
- Enacted stigma is the direct personal experiences of discrimination as a result of having OUD. This may come from family members, employers, health workers, or others. An example would be "I have been treated unfairly by employers when I have disclosed having OUD."
- Disclosure/Social withdrawal is choosing whether to tell others of one's OUD condition ("Disclosure") or the avoidance of social situations because of one's illness ("Social withdrawal"); social withdrawal can manifest as avoiding getting close to people due to feeling like a burden, out of place, or inadequate. Being unwilling to disclose one's OUD status or showing social withdrawal can negatively impact seeking help or treatment.
- Treatment stigma, when assessed in people with OUD, can also potentially assess stigma towards one's own seeking of OUD treatment as well as negative feelings brought about from the experience of receiving treatment.

Unlike the stigma concepts described in the "General Community" section just above, these concepts are typically specific to people with OUD (or their family members).

Healthcare Providers and/or First Responders

In considering opioid-related stigma among health care providers and/or first responders, you may wish to keep in mind stigma concepts that have been commonly assessed in these groups. First, many of the stigma concepts found in the "General Community" section (e.g., attributions of blameworthiness, social distance) are applicable to and are indeed found in measures in these groups. Furthermore, concepts that are particularly applicable to healthcare providers and/or first responders include professional roles when interacting with people with OUD, preparedness in treating or responding to OUD, attitudes toward harm reduction, and attitudes toward the potential recovery of people with OUD.

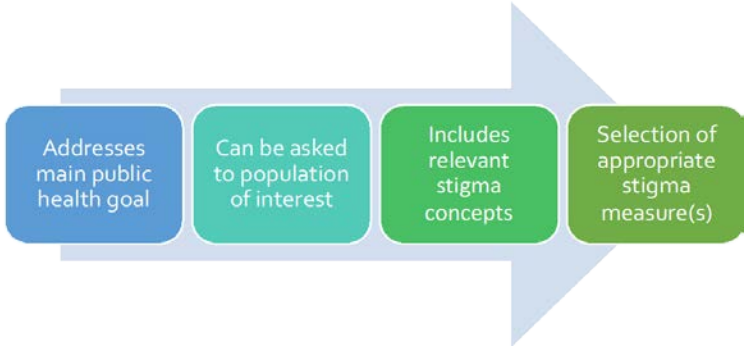
- Professional roles are an important concept for these groups because it is in the context of these provider roles that stigma can be enacted or reinforced. Some relevant domains to consider when thinking about these groups' professional roles in interacting with individuals with OUD include role adequacy (e.g., whether providers feel supported in treating people with OUD), and individual motivation and reward (e.g., providers' willingness and openness to treating people with OUD).
    - Attitudes toward naloxone (and other MOUD) are relevant because the use of these medications can be a major aspect of one's professional role in interacting with people with OUD (e.g., for first responders); this includes measurement of

provider attitudes, beliefs, and knowledge toward the use of naloxone (e.g., impact of providing naloxone on patient behavior) and other MOUD and their prescription.

- Preparedness in treating or responding to OUD can be measured by assessing professionals' perceived preparedness and confidence in treating and interacting with patients with OUD; this can include interactions such as counseling, screening, and initial treatment plans, as well as overall knowledge about overdose.
- Harm reduction attitudes refer to professionals' attitudes (e.g., acceptability) toward harm reduction principles, which are essential and proven public health principles that combat stigma in and of themselves.
- Attitudes towards recovery can probe professionals' understanding of the recovery process in relation to OUD; domains include roles and responsibilities in helping patients with OUD achieve recovery, non-linearity of the recovery process, and expectations regarding recovery.

After identifying which of these stigma concepts are most relevant to the public health goal per the above, it is important to consider that there could be relevant related concepts (these are introduced in the "Healthcare Providers and/or First Responders" section). For example, "Attitudes towards Naloxone" and "Harm Reduction Attitudes" are closely related to assessing stigma in the "General Community", as well as "Healthcare Providers and/or First Responders". Finally, stigma shares commonalities across conditions but may differ in key ways depending on the specific condition examined (i.e., stigma towards substance use disorders generally, prescription opioid use, heroin use, and use of MOUD are each somewhat different and would require adaptation of wording for items). Selecting the concept(s) of interest for examining stigma can help guide the next steps in selecting an appropriate stigma measure and to plan collection of data.

Figure 1. Key Questions feeding into measure selection



4 Key Question 4: Are there pre-existing sources of data or opportunities for data collection?

After the first three questions have been answered, collection of data must be planned. First, consider if there are existing sources of data to inform your efforts. These could include national surveys, state surveys, or past surveys in your jurisdiction. You may be able to access relevant data on stigma by contacting the appropriate government agencies. More commonly, you may wish to collect data yourself. For these efforts, it might be possible to leverage an upcoming event or gathering, which can be in-person or virtual (e.g., via Zoom). For example, if you are interested in assessing potential stigma towards MOUD among nurses, there may be a conference or group training at which you could administer a survey. In any case, it is important to fit the method used to collect data with the population of interest.

General Community

For a general community survey, consider administration by phone, online platforms, or social media. Depending on available resources, you may also wish to work with a professional agency (especially to achieve representative samples of your jurisdiction).

Specific Priority Population(s)

To reach a more specific general community population (e.g., hard-to-reach minoritized ethnic or religious groups), it can be extremely beneficial to partner with local organizations (e.g., community agencies or religious organizations) that also work closely with that population; depending on this group's preference, online forms of collecting data (to protect confidentiality) or paper and pencil surveys (for in-person events) could be suitable forms of collecting data.

Healthcare Providers and First Responders

For healthcare providers (e.g., nurses, medical students) or first responders (e.g., law enforcement), establishing a strong relationship and partnering with relevant leadership (e.g., administrative leadership), as well as appropriately motivating participation in training activities (e.g., for healthcare providers, with continuing education units) and making data collection as convenient and brief as possible will be important to successful efforts.

5 Key Question 5: Is an appropriate measure to assess the stigma concepts of interest currently available?

If collecting your own data is desirable and feasible, there may well be existing scales in the scientific literature available for use (please see the accompanying Substance Use Stigma Measures Toolkits for Public Stigma, Self-Stigma, Healthcare Providers, and First Responders for a comprehensive listing of these measures to date). Use of or slight adaptation of existing scales has many advantages. One benefit is that using the exact wording of items has been used (and likely tested) before, meaning that these questions are likely worded in a way that is understandable to participants. It is also likely that these scales—if published in a scientific, peer-reviewed journal—have undergone rigorous evaluation (i.e., psychometric testing). This means researchers have quantified to what degree the measure is reliable (i.e., is consistent across participants) and valid (i.e., assesses what it aims to measure). Lastly, using a scale from the scientific literature also likely means that there is some past research to which you can compare your results. This can be helpful when trying to understand, for example, if public stigma in your community is higher or lower than other regions (e.g., nationwide).

Adaption and Adjustment Considerations

Using a published scale also requires some consideration. You will need to think about the differences between the population in the original study and your population of interest. Any important sociodemographic differences may require changes to the wording of items (e.g., if there is a local phrase in the original scale that may not be understood in your region) or the response categories (e.g., simplifying a 5-point response options to a "yes/no" response scale to ease administration to groups who are less familiar with standardized assessments). Of note, some of the scales in the scientific literature that have been published prior use out-of-date, stigmatizing language like "addict" and "opioid user." Any stigmatizing language should be updated to non-stigmatizing language prior to administration. The accompanying Substance Use Stigma Measures Toolkit includes updated language suggestions.

Adapting from Scales Used for Other Conditions

If an appropriate opioid-related stigma scale cannot be found, it is preferable to adapt a scale originally designed for another stigmatized condition (e.g., mental health disorders or HIV) rather than creating your own scale. Some stigma scales can be easily modified. For example, measuring social distance would simply require replacing the person asked about with a person who uses opioids: "How willing would you be to make friends with [a person who uses opioids]?" Some stigma measures may require more tailoring. For example, if you were

measuring public stereotypes toward OUD among healthcare providers, you would likely have to add additional stereotypes of people with OUD (e.g., asking about the negative stereotype of OUD being an “illegitimate illness”).

If a measure for another stigmatizing condition is being adapted to assess people who use opioids for the first time, best practices are to test the adapted items with a small group of individuals from the group of interest (e.g., 15-20 individuals is desirable; but at least 3-5 individuals will suffice) to assess item wording and comprehension (a procedure known as “cognitive interviewing”). This includes having participants answer the survey questions and respond to questions such as: a) “What do you believe the question to be asking?” b) “What do [specific words and phrases in the question] mean to you”? This is followed by modifications to the items as needed. Then, in analysis, you would ideally assess the reliability and validity of the adapted measure (which is beyond the scope of this guide; please consult your statistician for details).

Conclusion

As the nation's overdose crisis continues, your public health department can play an important role in addressing the stigma toward opioid use. This guide seeks to provide details on five *Key Questions* to consider when assessing and evaluating opioid-related stigma in your community:

1. What is the **main public health goal** for understanding or addressing opioid-related stigma in your community?
2. What is the **group or population of interest** (e.g., general public, people who use drugs, healthcare providers) that you wish to collect data from?
3. What **opioid-related stigma concepts** (e.g., public stigma, internalized stigma) are most relevant to consider when reaching that goal?
4. Are there pre-existing **sources of data** or opportunities for **data collection**?
5. Is an appropriate **measure** to assess the stigma of interest currently available?

Through consideration of these *Key Questions*, you can conduct careful and rigorous evaluation around opioid-related stigma. This in turn can help inform the implementation and evaluation of anti-stigma campaigns and other projects to improve the health and well-being of your community.

Part II: Data Analysis

Executive Summary

As covered in Part I, rigorous data collection around opioid-related stigma can help inform the implementation and evaluation of anti-stigma campaigns and other projects.

Part II of the guide provides best practices for analysis of opioid-related stigma data, with a focus on answering questions that can be posed during two commonly- encountered situations:

1. Analyses that take place at a single timepoint (i.e., when measures are used to collect data only once)
    a. Describing characteristics of the sample (i.e., descriptive statistics)
    b. Describing characteristic of the measures (e.g., reliability)
    c. Describing associations between one variable with another (i.e., typically examining what factors are associated with OUD-related stigma)

2. Analyses that take place at two timepoints (i.e., when the same measures are used to collect data at two different times)
    a. Data analyses that can occur at each timepoint
    b. Testing a hypothesis to assess change (i.e., typically OUD-related stigma) over time
    c. Examining changes in OUD-related stigma over time in association with another factor of interest

Introduction

Analyzing questions around opioid-related stigma—which commonly take place through data collection at a single point in time or across two different points in time—can help evaluate anti-stigma campaigns and other related projects. Each situation is suited to answer certain questions, and analyses for each situation have their own set of considerations, as outlined below. Note that this document is meant to conceptually guide the framing of key questions around OUD-related stigma; please be sure to consult with statisticians in the implementation of the recommended analyses, which are only described briefly here.

1 Data Analysis for a Single Point in Time

Describing Characteristics of the Sample

With the example survey in mind, the use of statistical analyses that describe the characteristics of the sample (i.e., "descriptive statistics") helps answer key questions about the sample such as:

1. What are the social and demographic characteristics of the sample/population surveyed?
   To describe the social and demographic characteristics of the sample/population surveyed, descriptive statistics should be conducted for key variables including but not limited to: age, gender, race/ethnicity, and education. For example, knowing the average age (and range of ages) in your sample, and proportion of your sample that belong to differing race/ethnic groups, will give you a clearer idea of what groups the survey results are generalizable to.

2. What is the overall degree or magnitude of stigmatizing attitudes toward opioid- related behaviors in the sample/population? In what domains of stigma can it be characterized as high, medium, or low?
   To describe the overall degree or magnitude of stigma toward opioid use in the sample/population, you can look at responses to each item in your chosen stigma scales: i) separately or ii) as a summed score. In many instances, items assessing stigma are asked using varying levels of "agree" and "disagree" response options (known as a "Likert" scale). One simple way of conveying the magnitude of stigma in a sample/population is to collapse all "agree" responses and all "disagree" responses and calculate the total percentage (and number) of participants who responded in each fashion. As an example, you could convey (hypothetical numbers used) that "75% of

respondents agree" (meaning that 25% of respondents "disagree") with the stigma item "Individuals with opioid use disorder only have themselves to blame for their problem." This is a straightforward way to identify and communicate areas of higher and lower stigma in your sample/population.

An alternative is to examine stigma by creating sum scores of items; this would require summing participants' responses to all items in each stigma scale (for ease of interpretation, typically higher stigma scores indicate more stigma). The sum score could then be used to characterize the level of stigma in the sample/population. Determining whether this sum score is high, medium, or low would typically require comparison with other studies and sample populations (see below). Using sum scores, while not as easily interpretable as using single items, has the advantage of using all of the items to derive a sum score, thus having greater rigor. Summed stigma scores are also typically used to test statistical associations with other variables, as well as to assess how well (or "reliably") the scale measures stigma (below).

3. What proportion of the sample/population endorses key attitudes that are strongly associated with OUD-related stigma (i.e., endorses support for harm reduction programs)?
   Determining the proportion of the sample/population that endorses key attitudes that are strongly associated with OUD-related stigma (e.g., who affirmatively endorse harm reduction programs) follows a similar process to that outlined above with stigma measures. Per above, you can calculate the percentage (and number) of participants who "agreed" (versus "disagreed") with each item to present findings in a straightforward manner. In doing so, for example, it may become clear that certain types of harm reduction programs have more or less support in your community (e.g., that distributing naloxone is preferred to opening syringe-exchange programs in one's neighborhood). When using summed scores of these key attitudes, these summed scores can be used to examine statistical associations with OUD-related stigma (e.g., to see whether increased support for harm reduction programs is associated with reduced OUD-related stigma).

4. How might the sample/population differ from other samples/populations surveyed in other studies?
   It is also informative to compare the characteristics of your sample/population with results found in other studies' samples/populations. This helps gauge whether your population has any specific characteristics, experiences, or attitudes that you might

wish to investigate further. For example, if your sample has a substantial percentage of people who have had close personal relationships (i.e., known as "interpersonal contact") with people with OUD compared to populations represented in other studies (e.g., one nationally representative study reported this to be 38.8%; Taylor et al., 2021), this could prompt further examination of how the subsample of respondents who had interpersonal relationships with people with OUD (vs. those who do not) might differ in endorsement of stigma and other key attitudes (e.g., support for harm reduction programs).

Describing Characteristics of the Measures

is best practice to also assess how well (e.g., how "reliably") scales assess concepts of interest (e.g., stigma) when items are summed. The most straightforward way to do this is to calculate a reliability metric (known as Cronbach's alpha, a statistic that reflects how closely associated the responses to items in a scale are to one another; please consult a statistician on how to calculate this metric). One way of thinking about reliability is that if a person reports highly stigmatizing attitudes on one scale item, then that person also should be more likely to report highly stigmatizing attitudes on other scale items. In general, you want to see an alpha that is above .70 (see Table 1), and at bare minimum, an alpha that is above .60. If a scale's alpha is below .70 (and especially if it below .60), then you should question how useful the scale is in assessing the concept (e.g., stigma) in your sample/population, and consider using another scale to assess that concept in the future (Note: just because a scale shows an acceptable Cronbach's alpha in one sample/population does not mean that it will show an acceptable Cronbach's alpha in your sample/population, especially if your sample is very different from previous samples or if you have adapted scale items).

Table 1. Benchmarks for Scale Reliability (or Cronbach's alpha)

Cronbach's alpha	Meaning
Below .60	Unacceptable reliability
.60 to .70	Minimally acceptable reliability
.70 and above	Acceptable reliability

Describing Associations Between One Variable with Another

With the same example survey in mind, examining and describing associations between one variable with another (i.e., typically OUD-related stigma) helps answer questions such as:

1. Are there associations between certain social and demographic characteristics and stigma? (e.g., are people who have had close interpersonal relationships with people

with OUD more likely to show less OUD-related stigma?)
2. Are there associations between certain social and demographic characteristics and other key stigma-related concepts (e.g., are older people less likely to support harm reduction programs)?
3. Are there associations between OUD-related stigma and other key stigma-related concepts? (e.g., are people who show greater OUD-related stigma less likely to support harm reduction programs)?

Associations between 1) certain social and demographic characteristics and stigma; 2) certain social and demographic characteristics and other key stigma-related concepts; and 3) OUD-related stigma and other key stigma-related concepts can be examined in a straightforward way using standard statistical tests (e.g., chi-squares, correlations, t-tests, one-way analysis of variance; please consult a statistician to conduct these tests, as certain tests should only be used in certain conditions). Per above, it is most common to sum scale scores (rather than using individual items) before examining associations between variables.

These analyses can yield important implications for public health programs, such as:

1. When examining whether certain social and demographic characteristics are associated with stigma, if a particular subgroup (e.g., older respondents, or respondents from a particular racial/ethnic group) shows higher levels of stigma, this group may require more targeted stigma programs.
2. Similar implications can be drawn when examining whether certain social and demographic characteristics are associated with key stigma-related concepts (e.g., harm reduction); for example, if a particular subgroup (e.g., older respondents, or respondents from a particular racial/ethnic group) shows lower levels of harm reduction, this group may require more targeted education programs regarding the benefits of harm reduction for people with OUD.
3. Finally, examining whether there are associations between OUD-related stigma and other key stigma-related concepts can point to public health action. For example, if higher stigma is associated with less support for harm reduction programs, it may signal that anti-stigma campaigns for OUD should be conducted prior to implementing harm reduction programs in the community.

2 Analyses That Take Place at Two Timepoints

Tracking potential changes in stigma over time, particularly before and after an anti-stigma program or activity, requires measuring stigma at two or more points in time (i.e., a longitudinal approach). By repeating the survey at more than one time point, you can track changes in a variety of measures—for our example survey, this includes potential changes in opioid-related stigma and support for other key related stigma concepts (e.g., support for harm reduction programs). A longitudinal approach can be used to: a) track trends in opioid- related stigma and key related concepts over time; or b) evaluate the impact of an anti-stigma program by administering surveys prior to and then after the program. For this section, we will illustrate possible analyses with the scenario of administering the sample survey (which measures sociodemographic characteristics, opioid-related stigma, and support of key stigma-related concepts such as acceptance of harm reduction programs) before and after a three-month long anti-stigma campaign.

(Note: Sampling considerations are of key importance, beyond the scope of this guide, and should be discussed with an experienced statistician, epidemiologist, or professional survey company. Here we simply note that for focal anti-stigma programs [e.g., a small, in-person program for a group of nurse trainees], you may be able to more easily administer the survey pre- and post- intervention to the same respondents which will make analyses more straightforward. For other, larger scale anti-stigma programs [e.g., a community-wide campaign], it is more likely that you will administer pre- and post- surveys to a different [preferably representatively selected] sample of individuals. The statistical test used will differ depending on whether respondents are the same at pre- vs post- assessment; be sure to consult with your statistician.)

Data Analyses that can Occur at Each Timepoint

First, it is recommended to analyze the data that is collected separately at each of the two timepoints. As outlined earlier, this includes calculating initial (i.e., descriptive) statistics, assessing the rigor (i.e., reliability) of measures, and examining associations between variables of interest (e.g., stigma and attitudes towards harm reduction). This will help answer questions such as:

1. What are the social and demographic characteristics of the sample or population surveyed at each time point?
2. What is the overall degree or magnitude of opioid-related stigma in the sample at each time point?
3. What are the overall attitudes towards key opioid-related concepts (e.g., harm

reduction) at each time point?
4. By examining the social and demographic characteristics of the sample/population at each time point, how might the sample/population surveyed differ from samples in other studies?

The utility and implications of these questions are outlined above under Section I: Data Analysis for a Single Point in Time.

Testing a Hypothesis to Assess Change Over Time

A likely goal is to examine whether there are differences in the measured variables (i.e., stigma) across the two time points. This will help you answer questions such as:

1. Are the social and demographic characteristics of the sample/population surveyed at each time point meaningfully (i.e., statistically) different from one time point to the next? For example, is the sample at the first time point more highly educated than the sample at the second time point? (If so, these differences will need to be controlled for by a statistician when examining the following two questions)
2. Is the overall degree or magnitude of opioid-related stigma in the sample at each time point meaningfully (i.e., statistically) different?
3. Are the overall attitudes towards key opioid-related concepts (e.g., harm reduction) at each time point meaningfully (i.e., statistically) different?

In the event that you wish to assess whether your anti-stigma program shows change in key outcomes, you can examine whether scores for stigma and other key stigma-related variables are: i) improved at time 2 vs. time 1; and ii) show statistically significantly differences when comparing time 2 vs. time 1. If your outcome of interest is negatively valenced (e.g., stigma), then you would want to see a decrease at time 2. If your outcome of interest is positively valenced (e.g., support for harm reduction programs), then you would want to see an increase at time 2. As noted prior, if there are meaningful (i.e., statistically significant) differences in social and demographic characteristics between your two samples at time 1 vs. time 2, you will likely need to also statistically control for these differences (please consult your statistician regarding this).

Examining Changes in OUD-Related Stigma Over Time in Association with Another Factor of Interest

Finally, it may be possible that your anti-stigma program shows effectiveness, but only for groups who show certain characteristics. Accordingly, you can focus upon answering questions such as:

1. Are there associations between having certain social and demographic characteristics and changes in stigma? For example, are reductions in stigma only shown among groups who are more highly educated or those who have had close prior interpersonal relationships with people with OUD?
2. Are there associations between social and demographic characteristics and change in key stigma-related concepts (e.g., support for harm reduction programs)? For example, are increases in support for harm reduction programs only shown among groups who are younger or who are from urban areas?

The most straightforward way to explore questions such as the above are to split the time 1 and time 2 samples into groups reflecting the relevant social and demographic characteristics (e.g., those who have had close interpersonal relationships with people with OUD vs. those who have not). You could then examine changes in stigma and other key stigma-related concepts among these two groups separately (that is, first among the group who has had close interpersonal relationships with people with OUD; then the group who has not). Finding effects among one group but not the other might point toward some groups being more reached or influenced by your anti-stigma program or more impacted by the content. (More complex analyses can also be used to examine for such effects; please consult with a statistician.)

Conclusion

Measuring stigma at one point in time and conducting analyses can be used to examine the levels of stigma that exist in the group or population of interest, examine rigor (i.e., reliability) of the measure used, and examine associations between variables of interest, including stigma. Measuring stigma at more than one timepoint (e.g., before and after an anti-stigma project), on the other hand, can help you understand differences that may be observed across both timepoints, whether observed changes are meaningful (i.e., show statistical significance), and whether the intervention may have been more or less impactful for particular subgroups. Rigorous, conceptually driven data analysis can inform and improve efforts to understand and address impacts of opioid-related stigma in your community.

References

Olsen Y., & Sharfstein J.M. (2014). Confronting the Stigma of Opioid Use Disorder—and Its Treatment. *JAMA*, *311*(14), 1393-1394. https://doi.org/10.1001/jama.2014.2147

Taylor, B. G., Lamuda, P. A., Flanagan, E., Watts, E., Pollack, H., & Schneider, J. (2021). Social Stigma toward Persons with Opioid Use Disorder: Results from a Nationally Representative Survey of U.S. Adults. *Substance Use & Misuse*, *56*(12), 1752–1764. https://doi.org/10.1080/10826084.2021.1949611

Tsai, A. C., Kiang, M. V., Barnett, M. L., Beletsky, L., Keyes, K. M., McGinty, E. E., Smith, L. R., Strathdee, S. A., Wakeman, S. E., & Venkataramani, A. S. (2019). Stigma as a fundamental hindrance to the United States opioid overdose crisis response. *PLoS Medicine*, *16*(11), e1002969. https://doi.org/10.1371/journal.pmed.1002969

Volkow N. D. (2020). Stigma and the Toll of Addiction. *The New England Journal of Medicine*, *382*(14), 1289–1290. https://doi.org/10.1056/NEJMp1917360