

Introduction to Legal Mapping

Full Script

Slide 1

Welcome to the Public Health Law Academy's training called **Introduction to Legal Mapping**. This training is brought to you by ChangeLab Solutions and the Centers for Disease Control and Prevention's Public Health Law Program. Special thanks to the Policy Surveillance Program of the Center for Public Health Law Research at Temple University Beasley School of Law for its contributions to the content development for this training.

Slide 2

The content developers of this training want to remind you that the information provided in this training is for informational purposes only and does not constitute legal advice. ChangeLab Solutions does not enter into attorney-client relationships. ChangeLab Solutions is a nonprofit organization that educates and informs the public through objective, nonpartisan analysis, study, and research. The primary purpose of this discussion is to address legal and policy options to improve public health. There is no intent to reflect a view on specific legislation.

Slide 3

Further, while every effort has been made to verify the accuracy of these materials, legal authorities and requirements may vary from jurisdiction to jurisdiction. Always seek the advice of an attorney or other qualified professional with any questions you may have regarding a legal matter.

The contents of this presentation have not been formally disseminated by the Centers for Disease Control and Prevention and should not be construed to represent any agency determination or policy.

Slide 4

Individuals who work as public health practitioners, lawyers, and policy experts in the field of legal epidemiology need measurable skills to move their careers forward. CDC's Public Health Law Program developed the Legal Epidemiology Competency Model in 2018 to help reflect the practice and guide practitioners' career trajectories.

This module of the Public Health Law Academy will cover the four tasks listed on this slide to build skills for entry-level (tier 1) professionals in the field of legal epidemiology. These four tasks are not the objectives for this course; they are general legal epidemiology competencies. The four tasks are

- Identifying opportunities for legal mapping to inform the process, nature, and impact of policies and laws on public health;
- Developing policy surveillance or legal assessment studies to address specific research questions;
- Analyzing laws, policies, and political and programmatic priorities using evidence-based or empirical guidelines (including health-related principles or trends, stakeholder or special interests, and other key developments or concerns); and
- Validating and synthesizing results that compare and contrast meaningful variations in law and policy related to health.

This training is intended for individuals who are not in management or supervisory positions and who directly implement legal epidemiology research tasks such as collecting, analyzing, and coding data.

Slide 5

This training is the second part of a three-part series on legal epidemiology. The first training introduced and discussed legal epidemiology, which is the scientific study and deployment of law as a factor in the cause, distribution, and prevention of disease and injury in a population.

Today, we will build on the ideas discussed in the first training and explore a specific process for practicing legal epidemiology. That process is called *legal mapping*.

In this training, we'll be examining four questions:

- What is legal mapping?
- Why do we use legal mapping?
- What kinds of legal mapping options exist?
- How does legal mapping work in practice?

Slide 6

Let's start with the first question. What exactly is legal mapping? Legal mapping is a process that shows how policies have changed over time and how they vary across jurisdictions or institutions. The process captures important features of different laws and policies, allowing us to compare approaches and interventions. Legal mapping can be applied broadly to assess laws across different levels of government, such as local ordinances, state statutes, and federal regulations. And it can also assess policies from many institutions, such as school districts, hospitals, and parks.

Slide 7

Now, let's talk about why you might use legal mapping.

Slide 8

The first reason is that legal mapping synthesizes data in a simple and accessible way. To track a particular law, legal mapping uses a question-and-answer format, also known as a Q&A format. Even with large and complex policy assessments, the Q&A format makes it easy for many different audiences – including policymakers, researchers, the media, and the public – to understand the data.

We'll talk more about how to track laws through a Q&A format later in this training.

Slide 9

The second reason for using legal mapping is that it emphasizes transdisciplinary research – that is, it encourages individuals from different disciplines to collaborate and share methods, tools, and expertise. As we'll discuss shortly, it's important to promote work and research that cut across disciplines and bring together different groups, such as scientists, lawyers, and public health professionals.

Slide 10

As we mentioned earlier, legal mapping can help you track changes in the law over time.

This slide shows what a longitudinal legal mapping project might look like. This particular project focuses on the prevalence of state texting-and-driving laws in 1996, 2005, and 2015. The black indicates states with texting-and-driving laws, and the white indicates states without a texting-and-driving law. As you can see on the left, only one state had a texting-and-driving law in 1996. In 2005, 22 states had such a law. And by 2015, every state except Montana had passed a law on texting while driving.

Slide 11

The final reason for using legal mapping is that it creates transparent and reliable legal data. Once a legal mapping project is complete, a statistician can overlay the legal data with health outcome data. This process can show whether a law has had a positive effect, a negative effect, or no effect on health outcomes.

Slide 12

Now that you understand why you might use legal mapping, let's talk about different legal mapping options.

Slide 13

There are several types of legal mapping activities, including policy surveillance, legal assessments, legal scans, and legal profiles.

Slide 14

In this training, we'll focus on the first two: **policy surveillance** and **legal assessments**. These activities fall under the umbrella of legal epidemiology.

Slide 15

Policy surveillance and legal assessments have several components in common:

- Both require a transdisciplinary team of at least three individuals;
- Both produce robust data using a rigorous scientific process; and
- Both track laws across multiple jurisdictions.

Slide 16

But they're also different. Policy surveillance tracks laws over time . . .

Slide 17

Whereas legal assessments examine laws at one point in time.

Slide 18

But before we dive deeper into policy surveillance and legal assessments, we're going to briefly discuss **legal scans** and **legal profiles**. These legal mapping activities are not part of legal epidemiology but instead fall under the umbrella of a more conventional public health law practice.

Slide 19

Legal scans are useful for answering a broad question on a topic across many jurisdictions. For example, if you wanted to know the number of states that have a certain law, you might complete a legal scan.

Slide 20

If you wanted to answer more nuanced questions about a particular law or assemble more in-depth information on one or more topics, you could complete a legal profile.

Slide 21

As we mentioned at the beginning of this training, this series focuses on legal epidemiology, so we will not be discussing legal scans or legal profiles at length. But it is important to consider these legal mapping techniques because they may better fit your needs.

Slide 22

To understand how legal mapping works in practice, let's meet Wendy.

- Wendy has a master's degree in public health and works for her state's public health department.
- Two neighboring states just passed distracted driving laws that regulate drivers' cell phone use while they drive.
- Despite Wendy's ever-growing workload, her boss has asked her to determine whether distracted driving laws have affected health outcomes since they were first passed.

Slide 23

Wendy's hypothesis is that states with strict bans on cell phone use while driving have experienced a positive effect on public health. However, having a hunch is not enough. She needs to borrow from the scientific method and move from a hypothesis to a conclusion that is based in evidence. Wendy must transform her hunch that distracted driving laws are positively affecting health into a data-supported conclusion, such as "There are fewer accidents caused by cell phone use in states with distracted driving laws."

Slide 24

So, how does Wendy, a public health practitioner, determine whether distracted driving laws have had an impact on health? Should she

- A. Use legal epidemiology methods like policy surveillance or legal assessments?
- B. Use public health law practices like legal scans or legal profiles? or
- C. Take a long vacation?

In order to decide, Wendy needs to understand the differences between the legal mapping options.

Slide 25

As you may recall, there are several kinds of legal mapping. To pick the best technique for her project, Wendy must determine what kind of information she's trying to collect and whether she's trying to track laws across multiple jurisdictions over time or at one specific point in time.

Slide 26

Because Wendy must examine how laws affect health, she needs to use methods that collate complex data. She must go through Door A and use legal epidemiology.

It is important to note that conducting policy surveillance or a legal assessment is just the first step. To learn about the effects of distracted driving laws on health, Wendy must use legal epidemiology methods and then have a statistician or researcher study the health outcomes. To learn more about advanced legal epidemiology methods, please visit the third training in this series from the Public Health Law Academy.

Slide 27

So, Wendy discovers she must use legal epidemiology for this project. To get started, she reviews her notes from the first training in this series. Her notes remind her that

- Legal epidemiology is the scientific study and deployment of law as a factor in the cause, distribution, and prevention of disease and injury in a population;
- Legal epidemiology is created for research; and
- It uses transparent scientific methods and rigorous quality control.

Slide 28

Next, Wendy must choose a study design.

Slide 29

Based on what you learned earlier, which of these two models of legal epidemiology mapping should Wendy use: policy surveillance or a legal assessment?

Slide 30

Here's a hint: Remember that Wendy's boss asked her to report on the effects of these laws since they were first passed.

Slide 31

This means that Wendy needs to create a longitudinal legal dataset. If you said Wendy must conduct policy surveillance for this task, that's correct!

Slide 32

To get started, Wendy must assemble her team. Remember: legal epidemiology requires people from different disciplines to collaborate, share tools, and combine expertise.

At least two team members should be lawyers or know how to conduct legal research, which includes reading statutes and regulations. Wendy will also need people who can design and conduct quantitative and qualitative research and who understand the ins and outs of the public health and legal systems.

To understand what Wendy should do next, let's dive into the step-by-step process for conducting a policy surveillance project.

Slide 33

As you have probably guessed, policy surveillance is a nonlinear process. However, the process does follow some general steps.

There are eight discrete but iterative steps in the policy surveillance process. We are going to explore them one by one. It's important to remember that quality control measures are implemented throughout the entire process.

Starting at the top and moving clockwise, the eight steps are

1. Defining the scope;
2. Conducting background research;
3. Developing coding questions;
4. Collecting the law;
5. Creating the legal text;
6. Coding the law;
7. Publication and dissemination; and, finally,
8. Tracking and updating the law.

Slide 34

Scoping means determining what to include in a project. Scoping is the initial step in the policy surveillance process. It helps identify the question or questions the dataset is looking to answer and outlines the parameters of the project.

Slide 35

Let's use Wendy's project to answer some common scoping questions.

Slide 36

We'll start with the first question: **What is the goal of the project?** Wendy's team needs to create legal data that can be used with health outcomes data to determine what effect, if any, distracted driving laws have on health.

Slide 37

Who is the audience? In this case, the audience is Wendy's boss, the public health department, and policymakers in her state. Citizens of her state may be an audience as well, if the findings ultimately become public.

Slide 38

Are the laws readily accessible? Wendy's office has limited access to traditional legal databases such as Westlaw, Lexis, and Bloomberg. However, Wendy knows from a lawyer on her team that the distracted driving laws for each state can be found on each state legislature's website.

Slide 39

Do we have the resources we need to do this project? Wendy will be supervising two junior staff attorneys on this project. Once they finish the legal dataset, Wendy will hand the data over to the statistician in her office, who will evaluate the legal data against public health outcome data on car crashes. After the statistician determines whether there is a significant relationship between the datasets, Wendy will summarize the findings in a report.

Slide 40

Do we use a legal assessment or policy surveillance? Is this dataset going to be cross-sectional or longitudinal? As previously discussed, Wendy needs to complete a longitudinal project in the form of policy surveillance because she needs to know the effects of distracted driving laws over time.

Slide 41

It is important to remember that the scoping process is iterative; it repeats and refines itself as you work through a project. For example, Wendy's initial scope included *all* distracted driving laws – such as eating while driving, putting on makeup while driving, and cell phone use while driving. After assessing her team's resources, such as time, money, and staffing, Wendy decided to narrow the scope to what she concludes is the biggest problem: **cell phone use while driving.**

Redefining the scope becomes particularly important in the next step, which is conducting background research.

Slide 42

During the scoping process, Wendy develops a **clear statement of purpose** that includes the topic she would like to study.

Slide 43

Next, she explores the **legal landscape** of the chosen topic by conducting background research. This step includes researching the relevant federal, state, and local laws. It also requires identifying the key issues addressed and any variation among jurisdictions.

It is important to note that the legal landscape is not static and often changes as the federal government, state governments, or local governments enact new laws on a particular topic.

Slide 44

Toward the end of the background research process, Wendy will develop a list of **features**, or variables, to be studied. These are important features of the law that can vary among jurisdictions – for example, penalties, prohibitions, or age restrictions.

Slide 45

What we just discussed is a general overview of the background research process, in which the goal is to identify a preliminary list of features. This process is best when time and resources are limited and expertise is available in house.

But let's say Wendy's team is completely unfamiliar with this topic. Provided that they have the time and resources, they'll need to follow a different set of steps to conduct more in-depth research.

Slide 46

The six steps for more in-depth research are

1. Identify reliable secondary sources
2. Draft a background memorandum
3. Draft a five-state memorandum
4. Compile a sample of relevant laws
5. Using this sample of relevant laws, refine your search strategy
6. Identify features of the law

What's important to note here is that background research does not simply seek to collect laws but also aims to identify important policy questions. For example, in the distracted driving dataset, it would be important to explore how the law distinguishes between hands-free and handheld cell phones.

Slide 47

The first step in conducting in-depth background research is to identify reliable secondary sources. At the beginning of the process, these sources will help your team understand the literature that already exists, the gaps in research, and the parts of this topic that legislators, researchers, and the media are focused on.

Wendy identifies the Centers for Disease Control and Prevention as a good secondary source that explains the importance of the topic being studied. CDC provides statistics like this: Each day in the United States, more than 9 people are killed and more than 1,153 people are injured in crashes that are reported to involve a distracted driver.

In Wendy's project, the primary source of information is the distracted driving laws themselves. However, she needs to find reliable secondary sources, like CDC, to better understand the issue at hand.

Slide 48

Now that Wendy has reviewed these secondary sources and found ample research to defend this project, she is ready to write a background memorandum. The background memo is a paper that summarizes and synthesizes the information collected about the legal landscape.

Typically, two researchers each write a background memo that

- Discusses the legal landscape;
- Identifies sources of law – such as statutes, regulations, and policies – and describes how they interact; and
- Identifies key elements of the laws being studied.

Why draft two separate background memos? One reason is to compare the two sets of findings. Another reason is that each researcher may identify different secondary sources and gaps in the research. And finally, if the researchers are unfamiliar with the topic, each writing their own background memo is a great way for them to become familiar with the subject, as we will discuss next.

Slide 49

Background memos have several goals:

- First, these memos teach the team about the topic being studied. It may be a new topic for one or more of your researchers, or the law may be more complex than anticipated.
- Second, they can help your team find gaps in existing resources and uncover unexpected challenges.
- And finally, they can help your team identify key trends in the law over time.

Slide 50

By reading her team's memos and consulting with subject matter experts, Wendy discovers that distracted driving is regulated at the state level and preemption is not an issue for this project.

Slide 51

The next step in the team's research process is to write a five-state memorandum – a document that summarizes relevant laws from five jurisdictions. As with the background memo, how the five-state memo takes shape depends on the resources available and the level of existing expertise.

For the five-state memo, the two researchers examine five jurisdictions each, establishing an initial sample size of ten jurisdictions. The team's supervisor selects the ten jurisdictions at random in order to identify similarities or differences in demographics, data, governance, or infrastructure that pertain to the issue.

In this training, we're going to use states as the example. But the same process could be applied at any level of government, from international law (for example, national drinking ages) to hyper-local law (for example, school board policies).

The ten states in the sample will be the first states to be coded. We'll discuss coding shortly, but it is worth noting here that you collect relevant laws and then code them in batches of ten states at a time.

Slide 52

As noted on the slide, a five-state memorandum has several goals. The first goal is to identify what kind of law you are dealing with: Are we talking about a statute, a court decision, or a constitutional amendment? Also identify how the law is structured. The structure of the law refers to how a law is organized. Sometimes a jurisdiction will include all of the laws on a topic in one chapter of its code; other times, the laws on a topic will be spread between several different chapters.

Another goal of the five-state memo is to present a sample of laws relevant to the topic. And finally, a five-state memo can help identify variations in the law between the jurisdictions.

Slide 53

By reading her team's two five-state memos, Wendy discovers that in 1996, Arizona became the first state to enact a distracted driving law. In this project, she must map distracted driving laws from the first year they were passed, so she now knows that her legal mapping project will begin in 1996.

Slide 54

The five-state memo also helps the team draft questions for the next step in the process, which is compiling a sample of relevant laws. Wendy's legal researchers will collect a sample of laws from each of the 10 jurisdictions in their memos. The researchers can use this sample of laws to

- Understand what the laws have in common and how they differ;
- Observe patterns and trends across jurisdictions and over time; and
- Look for provisions that appear to have made an impact.

Slide 55

After the team compiles a sample of laws, they must create a search strategy. Search strategies are vital in the process of finding relevant laws. Let's go over a couple of search strategy tips:

- Tip 1: Use multiple search strategies to find reliable and accurate legal research. For example, try using different search terms, supplementing research by searching through tables of contents, and exploring multiple databases.
- Tip 2: Develop a solid search string. A search string contains specific terms or combinations of terms to help narrow your search. For example, if you're researching state laws that prohibit the use of cell phones while driving, you might type in the terms "cellular AND driving" or "penalty AND telephone." Developing a solid search string saves time by finding relevant laws through one search rather than multiple searches.

Slide 56

As Wendy's team starts their search for the sample of laws in the states Wendy assigned, the researchers run into a common problem. They have too many results!

Their search returned 42,577 results. It would cost Wendy's office a lot of staff time for the team to go through that many results. Clicking through more than 40,000 results just will not work.

Wendy needs to think strategically about her search.

Slide 57

Using the advanced search function in a legal research database can save Wendy's team time and money. By using this function to find the key words *driving* and *cell phone* within 50 words of one another, Wendy's team narrowed their search results. This simple request cut out 42,054 results.

It's important to note that the search process requires a background in law. You will likely need an attorney or a legal intern to complete this step.

Slide 58

Wendy must now record her team's search strategy in a research protocol document. The research protocol outlines the methodology and process of the project. Specifically, the document might include

- The scope of the project, including the dates of the project, the team members involved, the jurisdictions, the purpose of the project, and the variables;
- The data collection methods, including search strategy and databases used;
- Details on the coding method used; and
- A description of quality control measures.

Speaking of quality control, let's take a moment to discuss the quality control process.

Slide 59

Quality control is important throughout the entire policy surveillance process.

For quality control, it is important that individual researchers on your team independently collect and analyze the same set of laws for each jurisdiction. This procedure, known as *redundant legal research*, helps ensure that researchers don't miss a critical component of the law.

Slide 60

For example, let's say both of Wendy's researchers record all the relevant statutes from Alaska. Wendy then reviews and compares the two sets of citations to identify any divergences – that is, differences between the findings. If one researcher collected Alaska statute 143B and the redundant researcher did not, that would be identified as a divergence in the redundant research. Once all the divergences are discussed and resolved, the team finalizes the list of citations that are relevant to that jurisdiction.

Slide 61

The percentage of identical jurisdictions that both researchers review is called the *rate of redundancy*. This rate needs to be 100% at the start of the study, meaning that both researchers will collect and analyze the laws from the same 10 jurisdictions.

Inevitably, as more laws are collected, differences in the content collected will arise. Why? When people do keyword searches in legal datasets, they sometimes find different text because of human error or because they lead with one term over another term. When you are doing legal epidemiology projects, you want to minimize the chances that such differences will occur. One way to prevent differences is making sure that everyone on your team is using the same search strategy. Even though Wendy's team has preselected which terms they will use to search for laws, the coders may still end up collecting different texts. When this happens, researchers call it *divergence*. How often these differences occur is called the *rate of divergence*.

Slide 62

If the rate of divergence – the difference between the two sets of research results – is less than 5%, the percentage of redundant research drops to 50% in the next round. If the rate of divergence stays at less than 5%, the amount of redundant research drops to 20% of the remaining jurisdictions in the next round. In other words, if the researchers download legal text from 10 additional states, 2 of those states would be the same for both researchers.

Slide 63

However, if at any point in this process the researchers find that more than 5% of their results differ, then they would need to go back to reviewing identical jurisdictions 100% of the time. Wendy would make them go back to both looking at all the same states. In other words, the next 10 states that Wendy assigned would be the same for both researchers.

Slide 64

Features, which are also known as **variables** in some practice settings, are important attributes of a law that can vary from state to state.

After resolving divergences, Wendy must identify features from the final sample of laws reviewed.

Slide 65

Wendy may start with a long list of features. For example, she may initially find that the laws vary by

- What devices they prohibit (handheld cell phones versus hands-free cell phones);
- What behavior they prohibit (talking on the phone versus texting);
- What age of driver the law applies to;
- Whether the person's driving record matters;
- What kind of drivers the law applies to (for example, does it extend to people who operate semi trucks or only to people who drive standard-size vehicles like a four-door sedan?); and
- What the penalties are for distracted driving.

Slide 66

By doing some background research, Wendy can narrow the scope of this project and remove some of the law's features from her analysis. For instance, she may find that existing research – or *outcome data* – suggests that hands-free devices result in fewer crashes. She might learn from her five-state memo that states have widely differing approaches to penalizing distracted driving.

Using this research as a guide, Wendy may decide that her project should focus only on

- Which devices each state law prohibits;
- What behavior each state law prohibits;
- What type of driver the law applies to; and
- What the penalties are for distracted driving.

Slide 67

It is important to note that if her team still lacks expertise, Wendy should contact and enlist the support of a subject matter expert while completing the process. For instance, if Wendy and her team are still unsure about which features are important, they need to contact someone familiar with laws on cell phone use and driving.

Even if your team has a clear understanding of the law, we still recommend having an expert review your coding questions once they are drafted.

You should consider consulting an expert

- During the scoping phase;
- When identifying features;
- Once coding questions are drafted; and
- Once coding is completed.

Slide 68

After Wendy finalizes her list of features, she will be ready to develop coding questions, which are the questions researchers use to capture and compare key features of the law between jurisdictions.

What does it mean to “develop coding questions”? Here’s a simple explanation: After you read a body of law from a sample of states, you will finalize a list of features. Then, you flip those features around and turn them into questions.

Let’s revisit a feature we discussed earlier: penalties. The team can turn the idea of penalties into a question: What is the penalty for the first violation of this law?

Slide 69

When developing coding questions, it is important to keep the goals of question development in mind. One goal is to track and display the state of the law through a question-and-answer format. The question-and-answer format used in policy surveillance creates data from law, which can then be compared with health outcome data. Even in large, complex areas of law, the Q&A format makes it easy for many different audiences to understand the data.

Slide 70

Let’s revisit an example from earlier, which illustrates some potential questions and answers about laws that prohibit people from using their cell phones while they drive.

Slide 71

Question 1 asks, Is there a state law on cell phone use while driving? For this question, let’s say the answer is yes.

Slide 72

Question 1a asks, Are local governments allowed to regulate drivers’ cell phone use? For this question, let’s say the answer is no.

Question 1a is noteworthy because it addresses the topic of preemption. The term *preemption* refers to situations in which a law passed by a higher authority takes precedence over a law passed by a lower authority. In this example, state preemption is taking place because the state law in Question 1 prohibits local governments from regulating drivers’ cell phone use, which is addressed in Question 1a.

Preemption can take place at any level. Federal preemption might prevent a state from passing a law that is inconsistent with federal law, and state preemption prevents local governments from passing laws that conflict with state law. It is very important to consider preemption when creating a legal mapping project. For more information, check out our Public Health Law Academy training on preemption, which discusses the concept and how it plays out in the practice of public health.

Slide 73

Another goal is to create questions that measure the law through strict observation rather than interpretation.

Slide 74

Observation is defined as information obtained from things we can measure. An observation-focused question might be “Does the jurisdiction have a law on texting while driving?” The question is quantifiable and objective because the answer is a simple yes or no.

Questions that call for interpretation are different. Consider this question: “Does the jurisdiction have a strict law on texting while driving?” Because the word *strict* is subjective and can mean different things to different people, this question is more interpretive. Questions like these lead to coding problems and unreliable data.

Slide 75

Finally, if the end goal of building a legal dataset is to determine what effect, if any, the laws have on health, you must write coding questions that mirror health outcome data.

Take Wendy’s project, for example. Imagine that her team creates a complete legal dataset on distracted driving laws to figure out whether these laws reduce the number of car crashes caused by texting. But after they are finished, they find no reliable data on car crash statistics involving cell phones. They wouldn’t be able to conduct the research that Wendy needs. You can see why it’s essential that you review the health literature and find health outcome data before you’re too far into the project.

Remember, questions can be edited, deleted, and added throughout creation of the legal dataset.

Slide 76

When you initially develop questions, you probably won’t know all the potential responses. For instance, maybe the states included in the sample have only fines and license points listed as possible penalties. However, as noted on the slide, adding a catch-all response, such as “other,” can help capture unexpected responses. As you code more states, you might discover that license suspension and imprisonment are also penalties for distracted driving that should be listed as possible responses.

Slide 77

When developing your questions, it is important to consider the question structure and the question type. We will talk about the following kinds of questions:

- Conditional
- Text field
- Binary – mutually exclusive fields
- Categorical – “select all that apply” fields
- Categorical – mutually exclusive fields

Slide 78

First, questions can be conditionally structured. A *conditional* question is one that depends on the response of the prior question. For example, Wendy’s first question is “Is there a state law on cell phone use while driving?” Every other question in the dataset is based on the response to that question. If the answer to the first question is “No, there is no law,” she obviously won’t need to answer the subsequent questions on the features of the law.

Slide 79

Questions that call for specific types of answers are also important. One possible type is called a *text field*. Wendy would use this type if she wanted to ask an open-ended question that could be answered with unstructured text. However, this type of question is not recommended for structuring data.

Slide 80

Another type of question is *binary*. Wendy would use this type to answer the question with a yes or a no. For example, if the question was “Does the state have a law restricting all drivers from using cell phones while driving?” Wendy would select “Yes” or “No.”

Slide 81

Some *categorical* questions prompt you to “select all that apply.” Wendy would use this type of question when there can be multiple answers. For example, if the question is “What behaviors are restricted?” Wendy would select all the answers that apply.

Slide 82

Finally, there are categorical questions that have *mutually exclusive answers*. Wendy would use this type when a question has multiple answer options, but only one answer will be selected. For example, answer choices that provide age ranges usually are mutually exclusive because only one answer choice can be true.

Slide 83

These are just a few of the most popular question types. Other types of questions may be used in your project, such as numeric, date, and currency. Numeric questions call for a number as the response. A currency question is like a numeric question but has a currency attached, such as dollars or euros. Finally, a date question calls for a date as the response. For more information on question types, visit Module 3 in the LawAtlas Learning Library at www.LawAtlas.org.

Slide 84

Let’s say Wendy has now developed the questions for her project. Her team can only begin answering these questions – a process known as *coding* – once they have collected and organized the law.

Collecting the law involves recording important information about the relevant laws for each jurisdiction in the project. Let’s take a look at examples of important information.

Slide 85

One piece of important information is the legal citation, shown here as “New Jersey Statutes, Title 39, Subtitle 1, Chapter 4, section 97.3. Use of hands-free and handheld wireless communication devices while driving.”

Slide 86

The effective date is also important information. The date the law went into effect is shown here: July 1, 2014.

Slide 87

The statutory history is also worth noting. The statutory history is the citations for each change in that law over time, shown here as “Legislative session 2013, Chapter 70, section 1.”

Slide 88

And, of course, there is the body of the law itself.

One practical matter to consider during this step is access. Access may also be addressed during the scoping phase. Consider these questions: Do you have access to the law? Is it readily available? And if so, do you have to pay for or request access to the source?

Wendy answered these questions about access in the scoping phase of her project, and she knows that each state has a legislative website that contains the statutes she is interested in. She decides to pull her legal text from these sources because they don’t require her to request access or pay a fee.

Slide 89

When collecting laws, keep these important tips in mind:

- First, be sure to carefully review the terms of service of any legal databases used.
- Second, be sure to check for copyright restrictions on legal text. State legislative websites typically have a section that indicates any applicable copyright restrictions.

Slide 90

Once Wendy’s team collects the laws, they can begin to organize the relevant sections into legal texts. Because they’re conducting a policy surveillance project, they will have multiple legal texts for each jurisdiction, representing changes in the law over a period of time. If they were doing a legal assessment, however, they would have one legal text for each jurisdiction, and all the texts would be for one point in time. For example, a team conducting a legal assessment of the 50 states and Washington, DC, would ultimately have 51 legal texts.

Slide 91

Remember, when Wendy first learned about the different legal epidemiology models, she realized she needed to use the policy surveillance process because she would be creating longitudinal legal data.

She also decided to start her dataset from the year the first distracted driving law was passed because her office has car crash statistics from that year onward. Again, Wendy knows that Arizona passed the first law in 1996. So now her team must collect all relevant laws for each jurisdiction and organize these laws into legal texts from 1996 to today. With this information, she will have what she needs for her statistician to overlay 20 years of legal data with 20 years of car crash data!

Slide 92

Based on the statutory history her researchers collected, Wendy knows that New Jersey’s statute on fines was amended, effective on July 1, 2014. This means that a new version of the legal text must be created for that change in the law.

On July 1, 2014, the legal text changes from its July 2, 2010, version. In July 2014, the fines were increased and a new structure to determine those fines was created.

Slide 93

Coding the law refers to bringing question development and law collection together. Coding the law means using the text collected to answer the questions developed.

The goal of coding is to read, observe, and record the law, rather than read and interpret the law. This distinction is made because we want to create objective data that can be used for scientific study. With objective questions and a focus on observation, researchers will be less likely to introduce subjectivity while coding.

Several legal mapping tools can be used to code the law. Researchers can use a software program such as Microsoft Word or Excel or one of several web-based tools that are designed specifically for coding legal questions.

For policy surveillance projects, multiple versions of the law are coded for each jurisdiction, to capture features of the law at different points in time. For legal assessments, researchers code the law once for each jurisdiction.

Slide 94

Using clear, objective questions, Wendy's researchers are flying through the coding process. Let's practice answering one of their coding questions: What behaviors are restricted while driving?

Slide 95

Here's an excerpt from Alaska's law regulating the use of electronic devices while driving. Subsection (a) says,

A person commits the crime of driving while texting, while communicating on a computer, or while a screen device is operating if the person is driving a motor vehicle, and . . . the person is reading or typing a text message or other nonvoice message or communication on a cellular telephone, personal data assistant, computer, or any other similar means capable of providing a visual display that is in view of the driver in a normal driving position while the vehicle is in motion and while the person is driving.

Slide 96

Based on that excerpt, what behaviors are restricted while driving in Alaska?

- A. Handheld electronic messaging,
- B. Handheld calling,
- C. Hands-free electronic messaging, or
- D. Hands-free calling

Slide 97

As you might recall, Alaska restricts "reading or typing a text message or other nonvoice message or communication on a cellular telephone."

Slide 98

If you picked A, "Handheld electronic messaging," that is correct!

Slide 99

As previously mentioned, the policy surveillance process is iterative. Questions, responses, inclusion and exclusion criteria, and the coding scheme can change as you code more jurisdictions.

However, when making changes, be sure to record all changes in the research protocol. If a change is made halfway through the process, it may be necessary to revisit and recode previously coded jurisdictions.

Slide 100

Wendy spot-checks responses, citations, and caution flags as the researchers code. By checking the original coding, Wendy can find blank or outlier responses and missing citations.

Wendy checks redundant coding by looking at a batch of states at a time. As discussed earlier in the context of legal research, redundant coding is a strategy in which two researchers independently – and intentionally – code the same records. As researchers code the same jurisdiction, they will overlap on some responses but diverge on others. The objective is to identify which responses are different and to resolve those discrepancies.

As the supervisor, Wendy tracks and calculates the researchers' divergence rates by downloading the coding data into Excel. The team will report the divergence rates in the research protocol when the dataset is published.

Slide 101

The rate of redundancy is the percentage of identical records that both researchers must independently code. Just like redundancy for legal research, this rate needs to be 100% at the start of the study, meaning, for example, that both researchers will code the laws from the same 10 jurisdictions.

Slide 102

If the rate of divergence – that is, the differences between coding results – is less than 5%, it means that the two researchers are coding the laws very similarly and would be likely to get very similar results when coding the laws in other jurisdictions. So the number of identical jurisdictions they would both need to code would drop to 50%.

Once the rate of divergence is below 5% again, the rate of redundancy drops to 20% for all remaining jurisdictions. So, in Wendy's case, if two researchers were jointly responsible for coding the legal text of 10 additional states, 2 of those 10 states would be the same for both researchers.

Slide 103

However, if at any point in this process, the coders find that their results are differing more than 5% of the time, then they would need to go back to independently coding the same jurisdictions 100% of the time. In that case, the next 10 states that Wendy assigned would be the same for both researchers.

Slide 104

Remember that in policy surveillance projects, researchers must code every amendment or newly enacted law over time. In legal assessments, researchers code the law only as it exists at one point in time.

As a result, policy surveillance projects will generally require more original coding and more redundant coding than legal assessments.

Slide 105

After Wendy and her team are done coding, it's time to go back and double-check their work *again*. To help make sure they didn't make any mistakes, they'll select a random sample to recode. Both of Wendy's researchers will recode these samples to make sure the error rate stays the same: less than 5% during the recoding. This procedure helps confirm that they didn't make any mistakes in their methodology.

Slide 106

Let's not forget that Wendy's primary reason for developing this research is to create legal data to overlay with health outcome data. If she uses a software coding platform, she can click a button, and all her coded responses will automatically turn into statistical data.

Once all the data are finalized, Wendy can give this file to the researchers in her office to study car crashes involving cell phone use. To learn more about this research process, please take the third training in this series, Advanced Legal Epidemiology Methods.

Slide 107

Let's talk briefly about the codebook. The codebook is a document that defines potential answers to each coding question in the project. It is used in conjunction with the data file to perform analysis or help explain the research and coding.

Wendy needs to create a codebook to accompany her team's data file. The codebook should contain all the values and features in the project. For example, here is part of Wendy's codebook on the distracted driving project. It lists the coding questions that were developed for the project, along with the question type, variable name, variable values, and variable labels.

Slide 108

As Wendy wraps up her legal dataset, she must consider some questions related to publication and dissemination.

Slide 109

For example, should Wendy's team keep this project internal until the researchers finish researching the outcome data? And how do they want to present the information? Wendy and her team might decide to write an evidence-based report describing the findings once the scientific study is complete. Or they could use the dataset to create fact sheets that will educate the public about the dangers of texting and driving.

Slide 110

Wendy also needs to decide whether to highlight any information. For example, the team might highlight that the change in the law over time had positive health effects. In this case, they may want to identify the relationship between enacted laws and reduced car crash fatalities due to cell phone use. The next training in this series, Advanced Legal Epidemiology Methods, discusses how to study the relationships between laws and health outcomes.

Finally, Wendy must determine who the audience is for this report. Based on her team's findings, Wendy may want to adjust her dissemination plan to reach different audiences.

Slide 111

Now that Wendy has finished her legal mapping project, what's next? Her team must decide where to publish their data, based on the target audience, the resources available, and the goals of the project.

For your projects, you might consider publishing your data online – for example, on your organization's website – so that the data are accessible and can be updated regularly. For examples of how this is done, check out www.LawAtlas.org.

If you plan to use your data for a journal article, you may choose to share the data only internally with your fellow researchers.

Slide 112

The final step in this process is tracking and updating the law. In this step, researchers maintain the dataset by checking periodically for new laws or updates to existing laws that were included in the project.

For example, Wendy puts together a plan to track and update the dataset as laws change or new laws are enacted. Once the dataset is finished, it can easily be updated by using the policy surveillance process.

It's important to note that once you update a legal assessment, it becomes longitudinal. Your team can create a plan to update the dataset at regular intervals or monitor changes to the law using passive alerts on Google or a legal search engine. When there is a new law or an amendment to an existing law, the change can be captured by creating new records for jurisdictions with updates.

Wendy decides that, given her resources, she can do an active update of her project every six months. But she sets passive alerts to keep track of new laws as they come in.

Slide 113

Legal mapping helped Wendy visualize the impact of laws and analyze trends over time. Now she can recommend changes to laws in her jurisdiction and track distracted driving laws as they continue to evolve.

Slide 114

Remember, after Wendy has finished her legal mapping project, she has robust *legal* data. However, to determine what effect distracted driving laws have on health outcomes, she'll need to take the research further by comparing the legal data with public health outcome data.

If Wendy does not have the credentials to take the data further, she'll need to find someone who does.

Slide 115

Once the researchers in her office had finished the scientific study examining distracted driving legal data and car crash statistics, Wendy wrote her report. Her office decided that she could now make the project public. You can find the actual dataset on www.LawAtlas.org.

Slide 116

Let's review what we learned during this training. Today, we

- Defined legal mapping;
- Discussed the reasons why someone might use legal mapping;
- Examined the different legal mapping options, with a specific focus on legal epidemiology through policy surveillance and legal assessment; and
- Described how legal mapping works in practice.

Slide 117

The views expressed in this training, including written training materials or publications, do not necessarily reflect the official policies of CDC or the US Department of Health and Human Services, nor does the mention of trade names, commercial practices, or organizations imply endorsement by the US government.

Like all trainings associated with the Public Health Law Academy, this training provides legal information but not legal advice, and no attorney-client relationship is created with the content developers of this training. Please contact an attorney in your state if you need legal advice.

Slide 118

Questions?

Thank you!