This World of Humans: Episode #5
Guide for Educators

Immigration and Crime

These activities address NGSS LS1.A, LS2.D, and LS4.C, as well as specific Cross-Cutting Concepts and Science and Engineering Practices (see page 6). Many are also suitable for courses designated as "Writing-Intensive."

About the Article

This article examines the body of scholarship on immigration and crime rates published between 1994 and 2014 to identify which theoretical arguments on correlation and causation are supported by data. The authors find that, while there is a relationship between immigration and crime, this relationship is very weak and that significant variation across the different studies exists.

About the interview

In this interview, study author Dr. Charis Kubrin and another scholar in this area, Dr. Daniel Stageman, discuss the different theories used to describe relationships between immigration and crime. Importantly, they explore factors that influence the data analysis, including familial relationships and data sources.

Both the article and the interview can be found here: https://www.visionlearning.com/en/twoh/#ep5

Recommended: pair these materials with the Visionlearning module *Introduction to Inferential Statistics* (see "Extension Activities" on   page 3).

Use in the Classroom

These materials are useful for exploring ways in which scientists use non-human communities to understand human ones. They also assist in building understanding of the different ways in which scientific information can be conveyed depending on audience. Students should read the article before listening to the interview.

1. **Pre-reading and pre-listening activities** are provided to prompt prior knowledge and help students make connections between their own lives and the research they are learning about. Materials may be used in the classroom to generate discussion, or as homework if the article or interview will be read/listened to in-class. Having students write before speaking helps focus discussions and reading.

2. The **worksheets** are explicitly designed to walk students through the process of reading a scientific paper, as well as building disciplinary vocabulary. They serve as excellent homework assignments (if the article is read outside of class) and will direct students toward identifying important information about the research. While the answers provided can be used to check student reading, it is really an opportunity to assist students in how to read scientific material. Completed worksheets are excellent for small group discussions, allowing students to solve any discrepancies themselves, or as a debrief with the entire class.

3. **Post-reading and -listening activities** are designed to extend student thinking and engage them more deeply with the text and interview. These questions are great for small groups, for large class discussions, or for short-answer writing assignments.

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Pre-reading and –listening activities

1. **Vocabulary preparation:** Provide students with the Vocabulary Worksheet and ask them to offer definitions. Clarifying terminology as a class is recommended. This worksheet is suitable for a 20-minute in-class activity if students have access to dictionaries or the internet. Many of the terms are specific to statistics, thus *context* is critical to reinforce when assigning this activity.

2. **Affinity Mapping and Analysis**: Affinity mapping, like brainstorming, helps individuals get ideas out of their head and onto paper without over-thinking or editing. In this activity, students first generate immediate responses to the question: "What are the impacts of immigration on communities?" Once enough responses have been generated, students group the answers by theme and then discuss (in small groups) how they might design a study to answer such questions. Sticky-notes and a blank wall or chart are required for this activity. ***Instructions to students:***

   We are going to do an exercise called 'affinity mapping'. This is a brainstorming activity that helps you generate a large amount of answers to a specific question without *editing your answers. Here are our steps:*
   1. *You are each going to receive some sticky-notes. Write responses to the following question (one response per note): What are the impacts of immigration on communities?*
   2. *Place each sticky-note on the board/chart when you are done.*

   The second phase of this activity is to have students group the notes by theme. When that is complete, break students into groups and assign themes. Ask students to design a research project that could answer the question(s). This activity prepares students for thinking about meta-analysis and how the study authors incorporated multiple research lines into one project.

Post-reading and –listening activities

1. **Revisiting vocabulary:** Using the vocabulary sheet students completed at the start, clarify as a group/class how the authors used the terms. Were they used the same? Differently? Explain.

2. *Examining methodology:* The research study conducted by Drs. Ousey and Kubrin uses a methodology called "meta-analysis". Meta-analysis allows researchers to systematically combine data that is both qualitative and quantitative in nature, typically drawing on other published research, in order to develop a single conclusion about the phenomena in question. The results of a meta-analysis can be considered stronger than any one of the studies included because it examines broader contexts through multiple lenses.

   Working as a class, use the article to map the various analytical approaches the authors used. Creating a diagram on a board is an effective visual for this activity. Ask students to identify what questions were answered by the different research lines. Have them identify the limitations of the study, as well as the ways in which the researchers combined and segregated data. If applicable,

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refer back to the affinity maps they created before reading – are there similarities between the two?

If students have not listened to the podcast, do so as a class. Debrief with the class about the ways in which research questions drive methodology and the rationale Dr. Kubrin gives for why she and Dr. Ousey used the meta-analytic approach in this project.

3. **Short writing assignments:** The following prompts are suitable for short writing assignments (300-500 words) to assess reading comprehension and application of concepts. They can also be used as discussion prompts within the classroom. These assignments require the reading of the module Introduction to Inferential Statistics, *as well as* the study article.

    https://www.visionlearning.com/en/library/Math-in-Science/62/Introduction-to-Inferential-Statistics/224

    o   *In her module Introduction to Inferential Statistics, Dr. Roth-Johnson explains:*

    "While descriptive statistics … allow scientists to quickly summarize the major characteristics of a dataset, inferential statistics go a step further by helping scientists uncover patterns or relationships in a dataset, make judgments about data, or apply information about a small dataset to a larger group."

    In what ways did the meta-analysis of 51 published studies allow Drs. Ousey and Kubrin make inferences about the relationship between immigration and crime? What challenges did the authors claim they faced in this work?

    o   *Using Roth-Johnson's definition of "population" as it's used in statistics, what would the population in the study article be? Explain your answer(s).*

    o   *Dr. Roth-Johnson explains that, "When using a <u>subsample</u> to draw conclusions about a much larger <u>population</u>, it is critical that the subsample reasonably represent the population it comes from." In what ways does the study "reasonably" represent the relationship between crime and immigration? What did the researchers have to take into consideration with their sampling? How did they address these considerations?*

    o   *Using the definitions of "correlation" and "causation" provided by Dr. Roth-Johnson, explain what the article researchers found. Use evidence from the article to support your claims.*

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<u>Extension activities</u>.

<u>Vocabulary Worksheet</u>

Below are a list of terms and phrases that you will encounter while reading the article and listening to the interview. Using a dictionary, provide definitions for each term or phrase. If you cannot find a formal definition, write down what you *think* the term or phrase might mean. Keep in mind that the meanings of these terms *in statistics* may be different from the way we used them in common speech. *Most likely definitions provided in blue.*

Meta-analysis

A systematic review of existing research that quantitatively and qualitatively analyses the data so as to answer a single question.

Null Effect

Absence of result.

Negative Relationship

A correlation between two variables where, when one increases the other decreases.

Positive Effect

A correlation between two variables where, when one increases the other increases as well.

Synthesize/Synthesis

To combine. For example, read three papers and identify what they say as a whole.

Aggregate

One whole that is made up of many different elements (e.g., combining different types of data).

Narrative review

A qualitative method that summarizes different studies to give an interpretation of the whole.

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Reading Guide and Worksheet

Use this worksheet to guide your reading of the primary article. As you read, answer the questions in your own words. Whenever possible, make notes as to where in the text you found your answer (e.g., in the Methods section, in the fifth paragraph on page 112). *Most likely definitions provided in blue.*

1. Who are the authors of the article? What information can you find about them in the article directly?

   We can assume that the authors are all researchers/scholars (PhDs) working in sociology and criminology because of their institutional affiliations. These affiliations are noted under the author names – i.e., Dept. of Criminology, Law & Society, University of CA, Irvine.

2. What specific problem is this research attempting to address? (Another way to think of this: What reasons do the authors give for conducting this research?)

   The authors are attempting to answer definitively what relationship there is, if any, between immigration and crime. This has been a hot topic in the public sphere because of safety and security concerns. The authors decided to study all that has been published on the topic to identify any consistencies and discrepancies

3. What group(s) of people does the research focus on?

   The authors focus the meta-analysis on research related to immigration and crime within the United States. They then parse the data by study type (qualitative versus quantitative). In this way, the "population" is actually US citizens and immigrants to the US – fairly broad and open.

4. What were the specific research questions the study attempted to answer? (Another way to think of this is: What were the researchers' hypotheses? What were they trying to find out?)

   From the final paragraph before "Our Approach" on p. 1.2: "In this paper, we seek to synthesize the recent generation (1994 to 2014) of research that investigates the immigration-crime relationship across macrosocial (i.e., geospatial) units."

   The research questions are aimed at "first [determining] the overall average effect of immigration on crime rates across the body of literature and, second, [assessing] how variations in key aspects of research design may impact the results obtained in prior studies" (p. 1.2).

5. List the methods the researchers used to collect data.

   This project mixes both qualitative and quantitative research to answer the larger questions.
       1) *Systematic review of the literature*
       2) *Narrative review (qualitative)*
       3) *Meta-analysis (quantitative)*

6. What did the researchers find? Summarize the key points.

   p. 1.6-1.7: Overall, the research revealed that there is no or no significant relationship between immigration and crime. At the same time, the researchers found variation in the association – lower crime rates were associated with immigration of familial units (a family immigrating together), while higher rates were associated with individuals immigrating alone (p. 1.10). Variations also occurred by location: "violence tended to decrease as metropolitan areas experienced gains in their concentration of immigrants" (p. 1.13).

7. What questions were raised in your reading of the article?
       Open response.

Targeted NGSS, Cross-Cutting Concepts, and Science and Engineering Practices

The activities in this guide can be used to address the following standards, concepts, and practices.

Next Generation Science Standards	
LS1.A: Structure and Function	• Feedback mechanisms maintain a living system's internal conditions within certain limits and mediate behaviors, allowing it to remain alive and functional even as external conditions change within some range. Feedback mechanisms can encourage (through positive feedback) or discourage (negative feedback) what is going on inside the living system. (HS-LS1-3)
LS2.D: Social Interactions and Group Behaviors	• Group behavior has evolved because membership can increase the chances of survival for individuals and their genetic relatives. (HSLS2-8)
LS4.C: Adaptation	• Natural selection leads to adaptation, that is, to a population dominated by organisms that are anatomically, behaviorally, and physiologically well suited to survive and reproduce in a specific environment. That is, the differential survival and reproduction of organisms in a population that have an advantageous heritable trait leads to an increase in the proportion of individuals in future generations that have the trait and to a decrease in the proportion of individuals that do not. (HS-LS4-3),(HS-LS4-4)
Science and Engineering Practices	
Developing and Using Models	- Develop, revise, and/or use a model based on evidence to illustrate and/or predict the relationships between systems or between components of a system. - Develop and/or use a model (including mathematical and computational) to generate data to support explanations, predict phenomena, analyze systems, and/or solve problems.
Obtaining, Evaluating, and Communicating Information	- Critically read scientific literature adapted for classroom use to determine the central ideas or conclusions and/or to obtain scientific and/or technical information to summarize complex evidence, concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms. - Evaluate the validity and reliability of and/or synthesize multiple claims, methods, and/or designs that appear in scientific and technical texts or media reports, verifying the data when possible.
Analyzing and Interpreting Data	- Analyze data using tools, technologies, and/or models (e.g., computational, mathematical) in order to make valid and reliable scientific claims or determine an optimal design solution. - Apply concepts of statistics and probability (including determining function fits to data, slope, intercept, and correlation coefficient for linear fits) to scientific and engineering questions and problems, using digital tools when feasible. - Compare and contrast various types of data sets (e.g., self-generated, archival) to examine consistency of measurements and observations.
Cross-Cutting Concepts	
Cause and Effect: Mechanism and Prediction: Events have causes, sometimes simple, sometimes multifaceted. Deciphering causal relationships, and the mechanisms by which they are mediated, is a major activity of science and engineering.	- Empirical evidence is required to differentiate between cause and correlation and make claims about specific causes and effects. - Changes in systems may have various causes that may not have equal effects.
Patterns: Observed patterns in nature guide organization and classification and prompt questions about relationships and causes underlying them	- Empirical evidence is needed to identify patterns. - Graphs, charts, and images can be used to identify patterns in data. (6-8) - Patterns can be used to identify cause and effect relationships. (6-8)