

Cite as: Sarah E. Ryan, *Teaching Empirical Legal Research Study Design: Topics & Resources*, 23 Perspectives: Teaching Legal Res. & Writing 152 (2015).

Teaching Empirical Legal Research Study Design: Topics & Resources

By Sarah E. Ryan

Sarah E. Ryan is Empirical Research Librarian and Lecturer in Legal Research at Yale Law School in New Haven, Conn., and Dean's Fellow at Quinnipiac Law School in North Haven, Conn.

This article was derived from materials developed for the Introduction to Empirical Legal Research course taught by the author at Yale Law School. Scott Matheson contributed valuable insights and resources to that course and this article.

This article provides a list of teaching topics and resources for class sessions and workshops on empirical legal research study design. Topics include constructing hypotheses and research questions, conducting an empirical literature review, crafting significance and impact statements, and articulating a research methodology. This article aims to contribute to social science research support and instruction in U.S. law schools.

Good research takes planning, especially empirical research. Developing a research plan, or “study design,” is important for student researchers, who often operate under tight deadlines and budgets. Writing and research instructors can assist students in crafting solid empirical legal research (ELR) study designs that describe project goals and research methods. Effective study designs can keep students on track and help them explain their projects to faculty mentors, coauthors, institutional review boards, grant-making agencies, and the like. Incorporating ELR study design sessions into Legal Writing, Advanced Legal Research, or Law and Social Science courses addresses a growing demand for social science research support and instruction in law schools.¹

A number of recent texts describe ELR research methods generally² and in reference to exemplary legal studies.³ However, no succinct list of ELR study design teaching topics exists. This article fills that gap. Though study designs vary in length, level of specificity, organization, and tone, the four components presented in this article are common to most study designs and serve as excellent lecture or workshop topics.

Component 1. Hypothesis(es) or Research Question(s)

The heart of empirical legal research is the hypothesis(es) being tested or research question(s) guiding the inquiry (note: many studies have both). In general, a good hypothesis includes:

1. an outcome of interest to the researcher, such as homicide rates or number of cases heard (i.e., dependent variable);
2. one or more items that potentially trigger, impede, nudge, or occur alongside that outcome (i.e., independent variable);
3. a verb/verb phrase that relates the outcome and the nudging item(s) (e.g., *X increases Y*); and
4. boundary words that include and exclude some groups, time periods, conditions, etc. For example:

They're (Really) Seeking, 22 Perspectives: Teaching Legal Res. & Writing 30 (2013).

² Peter Cane & Herbert Kritzer, *The Oxford Handbook of Empirical Legal Research* (2012); Lee Epstein & Andrew D. Martin, *An Introduction to Empirical Legal Research* (2014); Robert M. Lawless, Jennifer K. Robbennolt & Thomas S. Ulen, *Empirical Methods in Law* (2010).

³ Lee Epstein, William M. Landes & Richard A. Posner, *The Behavior of Federal Judges: A Theoretical and Empirical Study of Rational Choice* (2013); Bart van Klink & Sanne Taekema, *Law and Method: Interdisciplinary Research into Law* (2011).

¹ Sarah E. Ryan, *Data, Statistics, or Secondary Statistical Analysis: Helping Students Articulate and Acquire the Numbers*

“A number of recent texts describe ELR research methods generally ... [h]owever, no succinct list of ELR study design teaching topics exists. This article fills that gap.”

“Research questions do not offer testable premises like hypotheses do.”

H₁: New York City's stop-and-frisk program decreased homicides from 1990-2010⁹

↑ ↑ ↑ ↑

boundary independent variable verb dependent variable boundary

The hypothesis-crafting process can serve to clarify students' thinking about what they're hoping to achieve. For instance, a student recently met with me to discuss her interest in law and health in South Africa. Specifically, she wondered if judicial rulings in health law cases were beginning to translate into better health outcomes. I explained to her that court decisions might be “nudges” or independent variables, and asked “what are the decisions about?” She mentioned a host of topics, including drug trademarking and government clinic-building requirements. We made a list of topics and then brainstormed corollary outcomes. For instance, a decision relaxing patent or trademark standards might increase the number of people taking generic antiretroviral medicines (i.e., dependent variable). I suggested that she collect relevant cases and develop thematic codes for each independent variable (e.g., 1=drug patent/trademark ruling). She left with a clearer sense of how court decisions might influence health outcomes. And, her new hypotheses helped her crystalize her next steps.

For more information, see the Hypotheses entry in the Research Methods Knowledge Base (RMKB) website,⁴ and chapter 9 of Lawless et al.'s *Empirical Methods in Law*.⁵

Research questions do not offer testable premises like hypotheses do. Still, they should be “clear, focused, concise, complex and arguable.”⁶ Since students need to answer their research questions after completing their quantitative and/or qualitative data collection, their questions need to indicate the boundaries of what they will collect, focusing on who, what, when, and where. For instance, a student and I developed research questions to guide his broad inquiry into

cyberhacking. At the start of our conversation, I asked him who might be the victims, who might be responsible for protecting these victims, and who might perpetrate the crimes. This line of formative questions helped the student clarify that he was interested in tort liability for corporations that failed to assiduously protect their customers from cyber attacks. Further discussion illuminated his interest in federal duties and remedies. His first research question was: What federal laws govern the duties of corporations who do business over the Internet?

For more on research question construction, see Patton's *Qualitative Research & Evaluation Methods*, particularly chapter 5.⁷

Component 2. Literature Review

Students should be reminded that no empirical study occurs in a vacuum. Previous scholarly discoveries, political and cultural happenings, and natural events provide context for new research. Within a scholarly community, a new study addresses unanswered questions, provokes previous results, and/or responds to a scholarly conversation. Typically, a quality literature review will identify a framing or guiding theory, survey debates in the field, interrogate seminal essays, and highlight unresolved theoretical, methodological, or applied research issues.

When a literature review is found lacking, the author is assumed to be unprepared or unable to fully contribute to the discussion. Although the social sciences do not adhere to the principle of stare decisis, they also do not encourage radical departures from accepted rules or solid prior findings. In that vein, a thorough literature review should demonstrate a solid grasp of disciplinary “truths,” standard research methods (e.g., ways of recording narrative data), and the state of discovery about a particular topic, event, group of people, phenomenon, etc. “Preemption checking” is a good start, but like a legal brief, a literature review is complete when there are no critical omissions.

⁴ Research Methods Knowledge Base, *Hypotheses*, <http://www.socialresearchmethods.net/kb/hypothes.php> (last visited April 14, 2015).

⁵ Lawless, *supra* note 2, at 227.

⁶ The Writing Center at George Mason University, *How to Write a Research Question*, <http://writingcenter.gmu.edu/writing-resources/wc-quick-guides> (last visited April 14, 2015).

⁷ Michael Quinn Patton, *Qualitative Research & Evaluation Methods* 209 (2002).

A quality ELR study design should include a first draft of the literature review. In assembling that draft, students often need to consult sociobehavioral databases such as EBSCO, PubMed, Scopus, Web of Science, etc. They should be reminded that each database covers a distinct set of journals, employs proprietary search algorithms, and presents results differently.⁸ In the case of Web of Science, some of the tools are boons to research assistants (RAs). For instance, one of our RAs needed to trace the rise and fall of studies on human greed across the social sciences, over time. I showed her how the “Create Citation Report” feature of Web of Science automatically produces a graph of yearly citation counts on a given keyword or phrase. Beyond such tools, students can increase their efficiency by employing timeworn search and retrieval techniques such as drafting a list of near-synonyms (e.g., income, wealth, socioeconomic status), and understanding a database’s controlled vocabulary—particularly in health research.⁹

For more on conducting literature reviews, see Aveyard’s *Doing a Literature Review in Health and Social Care: A Practical Guide*, particularly chapter 1.¹⁰

Component 3. Significance and Impact

Most grant applications, many institutional review board applications, and some journal articles speak directly to issues of research significance and impact. In a nutshell, significance refers to the novelty or importance of a research study to a field (e.g., seminal study of sociology seminars in selected law schools), while impact refers to the broad positive outcomes that could

result from the research (e.g., how sociologically trained might better represent indigent clients). The two concepts can blur, as recent National Institutes of Health (NIH) guidelines illustrate:

Significance: Does the project address an important problem or critical barrier to progress in the field? If the aims of the project are achieved, how will scientific knowledge, technical capability, and/or clinical practice be improved? How will successful completion of the aims change the concepts, methods, technologies, treatments, services, or preventative interventions that drive this field?

Impact: ...the likelihood for the project to exert a sustained, powerful influence on the research field(s) involved¹¹

While the formal statements of significance and impact listed in a grant proposal might not appear in resulting journal articles or reports, developing these statements is an important aspect of ELR study design for three reasons. First, significance and impact statements locate the research in a larger conversation or quest for knowledge, akin to the literature review. Second, the statements contribute to the development of an “elevator pitch” that can help a newer researcher gain partners and supporters. Third, the statements impose boundaries on the research, akin to a hypothesis or research question. With these outcomes in mind, it is important not to write overbroad significance and impact statements. Students need to know that each research project should truly matter—or it won’t be worth its costs in human and other capital—but that few research projects will change the course of human understanding. Significance and impact statements enable student researchers to locate their projects somewhere between mattering and materially altering life on earth. For guidance on authoring significance and impact statements, visit federal grant-making agency websites, particularly the NIH and National Science Foundation sites.

“Significance and impact statements enable student researchers to locate their projects somewhere between mattering and materially altering life on earth.”

⁸ See Matthew E. Falagas, Eleni I. Pitsouni, George A. Malietzis, and Georgios Pappas, *Comparison of PubMed, Scopus, Web of Science, and Google Scholar: Strengths and Weaknesses*, 22 FASEB J. 338 (2008).

⁹ See Loet Leydesdorff & Tobias Opthof, *Citation Analysis with Medical Subject Headings (MeSH) Using the Web of Knowledge: A New Routine*, 64 J. Assoc. Info. Sci. & Tech. 1076 (2013); Henry J. Lowe & G. Octo Barnett, *Understanding and Using the Medical Subject Headings (MeSH) Vocabulary to Perform Literature Searches*, 271 J. Am. Med. Assoc. 1103 (1994).

¹⁰ Helen Aveyard, *Doing a Literature Review in Health and Social Care: A Practical Guide 1* (3rd ed. 2014).

¹¹ National Institutes of Health, *Overall Impact versus Significance*, http://grants.nih.gov/grants/peer/guidelines_general/impact_significance.pdf (last visited April 17, 2015).

Component 4. Research Methodology

The research methodology, or how the study will unfold, is what most students think of when they hear “study design.” Curious, then, that it is the final part of most formal study design documents. Researchers can describe what they plan to do only after a clear direction and boundaries have been set by the hypothesis/research question, literature review, and significance/impact sections. The research methodology flows logically from the prior parts of the study design and prescribes specific goals, foci, and activities aligned to the study’s broader parameters. The methodology section is divided up differently depending upon the study design purpose or template. For instance, institutional review board applications typically feature a stand-alone section on confidentiality.¹² Regardless of variance, the following are typical components of the “how the research will get done” section of the study design.

4a. Unit of Analysis

In an ELR study, the unit of analysis is the level of the social group studied. Supposing that “all living beings” is the largest possible unit of study and a single person is the smallest, a typical social science unit of analysis is somewhere in between. Units of analysis include continent, nation-state, province, metropolitan area, neighborhood, group, family, dyad, individual, etc. Oftentimes, a student will be interested in a phenomenon that cuts across several units, such as a neighborhood-city-state issue like the quality of local public schooling. Selecting a focal unit of analysis clarifies—and sometimes provokes rewriting of—the research hypothesis or question. It guides data collection or retrieval (e.g., household-level data versus neighborhood-level data) and prescribes contextual literature (e.g., city council reports on citywide crime). For more on units of analysis, see chapter 5 of Patton’s *Qualitative Research & Evaluation Methods*.¹³

¹² Sarah E. Ryan, *The Rhyme and Reason of IRBs: Navigating the Human Subjects Research Review Process*, 18 AALL Spectrum 30 (2014).

¹³ Patton, *supra* note 8, at 228.

4b. Description of Population

Once a unit of analysis has been selected, the student needs to describe who or what is in that unit. This can include geographic markers (e.g., census tracts 1413, 1414), demographic statistics (e.g., 76 percent are under the age of 25), political and cultural indicators (e.g., one synagogue within study area), etc. While describing population parameters is not easy, it can also be difficult to estimate the size of a population. Recently, a student sought my assistance in estimating the percentage of certain city populations composed of released prisoners. We could find no agency data, so we decided to estimate using crime rates. We reasoned: if 10 percent of Connecticut crime happens in New Haven, and released prisoners tend to return to wherever they lived and committed crimes, then 10 percent of prisoners released in Connecticut this year will (re)locate to New Haven. Admittedly, we employed arguable logic; we are searching for better estimates.

Accurate population estimates and robust descriptions enable researchers to critically analyze the representativeness of any sample they obtain. For example, if Census Bureau data indicates that the median age in a city is 37, and the median age of a sample drawn from the city is 57, the sample is likely not a good representation of the population. Because many law students utilize existing datasets, sampling issues are difficult to remedy. If a student is collecting “original” data, she might address this issue by adjusting her sampling plan or techniques.

4c. Sampling Plan/Techniques

When a population is sufficiently large (e.g., >99), researchers usually select a sample of that population to study. If the sample is selected randomly and near-optimal data collection methods are followed, then the researcher can use statistical techniques to infer information about the broader population. This set of circumstances is the basis of inferential statistics. While many students will know the ideal conditions for sampling (e.g., each participant has an equal chance of being selected, most of those selected opt to participate, etc.), sampling is often the messiest part

of empirical work. The sampling plan/techniques portion of a study design should thus read like a best case-worst case handbook. It should announce the student's aims, describe impediments to those aims, and detail and justify work-arounds. For example, today, the median age of residents listed in print telephone books is typically older than the median age in the community. So, to sample most members of the community, additional or different lists of residents must be used. Definitions of key sampling terms are available via the RMKB;¹⁴ chapter 6 of Lawless et al.'s *Empirical Methods in Law*¹⁵ also discusses sampling.

4d. Data Collection Procedures

Once a plan for sampling has been established, the student can describe how research data will be collected from the individuals or groups in the sample. Data can be collected in myriad ways, including surveys, interviews, focus groups, participatory activities, observation, etc. Often, specific research instruments will be designed to collect the data (e.g., interview script) and attached as appendixes to the study design. Like every other part of the study design, data collection procedures and instruments need to map onto the hypothesis or research question. For instance, when researchers from two U.S. universities sought to understand the impact of health messages (i.e., the independent variable) embedded within radio dramas in northern Sudan (i.e., the boundary) upon the attitudes of illiterate women (i.e., the dependent variable and unit of analysis), they asked local women to sketch the themes, characters, and ideas they remembered from the programs.¹⁶ The method enabled the researchers to explore broad research questions and collect meaningful data from participants who could not independently

complete typical surveys. Most research methods textbooks contain several chapters on data collection procedures, including chapters 3 through 5 of Lawless et al.'s *Empirical Methods in Law*¹⁷ and chapters 5 through 7 of Patton's *Qualitative Research & Evaluation Methods*.¹⁸ Additionally, see the SAGE *Research Methods* online resource.¹⁹

If a student is collecting data from humans, the issue of consent must be addressed in the ELR study design. There are instances in which consent is inferred, such as when the researcher is observing participants in public (e.g., at a baseball game) or when another researcher or agency previously collected the data. The latter example can get thorny, particularly when data is repurposed for ends that the participants might not have anticipated. In that case, an institutional review board consultation or application might be necessary. When data is being collected directly from participants for the first time, university-affiliated researchers must secure the participants' voluntarily consent to participate in the research project. Often, researchers will create scripts and/or forms to aid in gaining and recording voluntary consent.²⁰

4e. Data Management Procedures

Many students—and seasoned researchers—omit data management sections from their initial study designs. Instead, they confront the challenges of the “data life cycle” as they arise. This reactive approach is not only a poor research practice, it can also jeopardize research funding, particularly from large government agencies.²¹

Data management starts at the study design stage and concludes years after the research is completed. Data about potential participants (e.g., telephone

“Data can be collected in myriad ways, including surveys, interviews, focus groups, participatory activities, observation, etc.”

¹⁴ Research Methods Knowledge Base, *Sampling Terminology*, <http://www.socialresearchmethods.net/kb/sampterm.php> (last visited April 20, 2015).

¹⁵ Lawless, *supra* note 2, at 139.

¹⁶ Karen Greiner, Arvind Singhal, & Sarah Hurlburt, *With an Antenna We Can Stop the Practice of Female Genital Cutting”: A Participatory Assessment of Ashreat Al Amal, an Entertainment-Education Radio Soap Opera in Sudan*, 15 *Investigación & Desarrollo* 226 (2007).

¹⁷ Lawless, *supra* note 2, at 60.

¹⁸ Patton, *supra* note 8, at 209.

¹⁹ SAGE, *Research Methods*, <http://srmo.sagepub.com/> (last visited April 17, 2015).

²⁰ Ryan, *supra* note 9.

²¹ Chris Jordan et al., *Responses to Data Management Requirements at the National Scale*, in *Research Data Management: Principles, Practices, and Prospects* (2013), <http://www.clir.org/pubs/reports/pub160/pub160.pdf#page=73>.

“A study design is complete when it provides a solid road map for research and makes sense to outside readers.”

numbers), from participants (e.g., a response to a question), and related to the research (e.g., participant payment rates) all need to be stored in a reliable and ethical manner. In terms of reliability, the data needs to be consistently available to the researcher nearly on-demand in a readable and useable format (e.g., using the latest version of a statistical software package). This aspect of data storage requires conscious planning on the part of the researcher and investments in hardware and software technology ranging from locks for file cabinets to the purchase of external hard drives. For students, free long-term data storage often expires at graduation, so considerations of alumni access to university resources are important.

In addition to the technical aspects of data management planning, research data needs to be handled in ways that safeguard research participants from harm. Data storage ethics concentrate on two concerns: anonymity and confidentiality. Anonymity shields the identity of the participant from the researchers and/or readers of the study results. Confidentiality safeguards the participants' data from all unauthorized users. Anonymity is like a veil while confidentiality is like a lock. Some studies provide both and nearly every study aims at confidentiality. Data security responsibilities conclude when absolutely all of the data has been destroyed, typically years after the study has concluded. For a longer discussion of these topics, see the RMKB.²²

4f. Data Processing/Analysis

Once students have constructed a hypothesis or research question, identified sampling strategies, addressed the protection of human subjects and data, etc., they can turn to “everything else” in a research methods textbook to complete the final section of the study design. This section of the study design outlines a cursory plan for data processing

and analysis. It can include proposed statistical operations and/or qualitative analysis procedures (e.g., thematic analysis), as well as technical specifications related to those procedures (e.g., significance level). Writing this part of the study design can stimulate refinement of other parts of the study design. For instance, once a student realizes that he wants to employ a particular statistical test, he might revisit how his survey questions are structured (e.g., as either-or, as “rank these items”). A UCLA page entitled “What statistical analysis should I use?”²³ suggests some of the refinement that might result from the drafting of this section of the study design. For more on data processing and analysis, see chapters 7 through 13 of Lawless et al.'s *Empirical Methods in Law*²⁴ and chapters 8 through 9 of Patton's *Qualitative Research & Evaluation Methods*.²⁵

Conclusion

A study design is complete when it provides a solid road map for research and makes sense to outside readers. It functions best when it both tethers the research project to rules of operation and frees the researcher to fruitfully explore within delineated boundaries. While crafting effective empirical legal research studies is an art, the topics and resources described in this article can assist emerging empirical scholars in developing their talents and fulfilling their scholarly aspirations.

© 2015 Sarah E. Ryan

²² Research Methods Knowledge Base, *Ethics in Research*, <http://www.socialresearchmethods.net/kb/ethics.php> (last visited April 14, 2015).

²³ UCLA: Institute for Digital Research and Education, *What Statistical Analysis Should I Use?*, http://www.ats.ucla.edu/stat/mult_pkg/whatstat/ (last visited April 17, 2015).

²⁴ Lawless, *supra* note 2, at 165.

²⁵ Patton, *supra* note 8, at 431.