

Chief Reader Report on Student Responses: 2019 AP[®] Research Free-Response Questions

• Number of Students Scored	15,724		
• Number of Readers	317		
• Score Distribution	Exam Score	N	%At
	5	1,686	10.7
	4	3,492	22.2
	3	6,759	43.0
	2	3,065	19.5
	1	722	4.6
• Global Mean	3.15		

The following comments on the 2019 free-response questions for AP[®] Research were written by the Chief Reader Matthew Krain of The College of Wooster. They give an overview of each free-response question and of how students performed on the question, including typical student errors. General comments regarding the skills and content that students frequently have the most problems with are included. Some suggestions for improving student preparation in these areas are also provided. Teachers are encouraged to attend a College Board workshop to learn strategies for improving student performance in specific areas.

Performance Task: Academic Paper **Topic:** Varies by student

Max. Points: 10 **Mean Score:** 5.98

What were students expected to demonstrate in this performance assessment task?

This performance task was intended to assess students' ability to conduct scholarly and responsible research and articulate an evidence-based argument that clearly communicates the conclusion, solution, or answer to their stated research question. More specifically, this performance task was intended to assess students' ability to:

- Generate a focused research question that is situated within or connected to a larger scholarly context or community;
- Explore relationships between and among multiple works representing multiple perspectives within the scholarly literature related to the topic of inquiry;
- Articulate what approach, method, or process they have chosen to use to address their research question, why they have chosen that approach to answering their question, and how they employed it;
- Develop and present their own argument, conclusion, or new understanding while acknowledging its limitations and discussing implications;
- Support their conclusion through the compilation, use, and synthesis of relevant and significant evidence generated by their research;
- Use organizational and design elements to effectively convey the paper's message;
- Consistently and accurately cite, attribute, and integrate the knowledge and work of others, while distinguishing between the student's voice and that of others;
- Generate a paper in which word choice and syntax enhance communication by adhering to established conventions of grammar, usage, and mechanics.

How well did students address the course content related to this performance assessment task? How well did students perform on the skills required on this performance assessment task?

NOTE: The holistic rubric focuses on the following course proficiencies. The bulleted list below illustrates how students demonstrated strengths with these proficiencies.

- Overall, most students showed familiarity with the basic expectations of the academic paper. Extensive student effort was evident in almost all the papers. Students showed more consistency in application of the course's skills than in past readings, regardless of discipline.
- In *Understanding and Analyzing Context*, most students developed creative, interesting, and/or timely research questions with appropriate degrees of focus and situated their research questions within a broader context. Most students clearly stated a research question or objective. Many students effectively argued why their question required additional research or examination. Some students developed carefully crafted and well-reasoned questions that were clearly linked to a broader context, gap in our understanding, or relevance to a community of practice. Some students' literature reviews used their analysis of past scholarly arguments to show that their studies needed to be conducted to help the understanding of the field.
- In *Understanding and Analyzing Arguments*, most students effectively reviewed scholarly literature relevant to their inquiry. Most students were able to critically analyze scholarly work, and most were able to summarize

multiple perspectives within the relevant scholarly literature on their research question or topic of inquiry. Many students developed sophisticated literature reviews in which they placed sources in conversation with each other. Many were also able to situate their research in the field of practice placing them in conversation with each other.

- In *Evaluating Sources and Evidence*, students mostly drew upon credible and relevant sources in situating their question within a larger context and in developing their arguments while demonstrated an understanding of and fluency with scholarly sources.
- In *Research Design*, most students demonstrated an understanding of the need for a systematic method or approach to their question in order to generate data to analyze. Many students were able to describe reasonably replicable procedures followed in the chosen method or approach and some were able to describe why that method and its reasonably replicable procedures were chosen. Some students effectively explained the link between the approach and their question; and some students showed an understanding of ethical considerations, sample selection, and procedure for collecting data. Some students linked the approaches used in the literature they reviewed to their own study, or adapted approaches used in the literature to their own research while some were good at describing limitations of the method or approach chosen.
- In *Establishing (Their Own) Argument*, most students stated a clear argument or claim and some recognized and acknowledged limitations on their ability to extrapolate conclusions from their evidence.
- In *Selecting and Using Evidence*, many students were able to provide some evidence from their research to speak to their question of interest, though some students simply discussed (rather than presented) their results. Some students were able to support their conclusions using relevant and sufficient evidence from their own research. And while some provided evidence to speak to their conclusion, it was evidence from other studies in the academic literature, or other already existing information.
- In *Engaging the Audience*, most students organized their papers in a manner that made it easy for the reader to follow the argument, the method/approach, and the examination of the evidence. Many used organizational and/or design elements effectively and most students demonstrated the ability to organize their information to convey meaning (a skill initially developed in AP Seminar and built upon in AP Research). Many students clearly established their own voice and differentiated it from the other voices in academic conversation. Many wrote in a style that was easily accessible to an intelligent, non-expert reader.
- In *Applying Conventions*, most students followed the conventions of a standard research paper in their respective disciplines. Most used a consistent style throughout the bodies of their papers and in their works cited or bibliography sections. Most students attributed sources, many using appropriate citation style and used established conventions of grammar, usage, and style. Some students did so with variety, emphasis, and precision, thereby enhancing communication.

What common student misconceptions or gaps in knowledge were seen on this question?

- Overall, student work has shifted greatly over the past two years. Rather than papers struggling to report the “bare bones” concept of research, a majority of academic papers are now struggling to capture the nuances of elevated research reporting—rationale, justification, analysis of student-generated data within the scholarly community, implications, and limitations of student data within the context of their specific field and/or focus.
- In *Understanding and Analyzing Context*, some students developed broad or exploratory topics that lacked a pointed research question or a clear focus. Some students identified a narrowly focused question but did not continue this narrowed focus throughout their papers. Some claims made in the introductions in order to situate the question in a context were overly broad and uncited or otherwise unsubstantiated. Some students asserted rather than demonstrated that a gap existed in our knowledge. Many used hyperbole in discussing the importance of their topic or the novelty and significance of their findings. A few students employed multiple questions, or changed their main question throughout the paper, making it difficult for them to focus their

inquiry. A few presented a position on a topic rather than develop a research question that could be explored through the process or inquiry.

- In *Understanding and Analyzing Argument*, some students did not firmly establish their research within a scholarly community. Some provided background information about the topic of inquiry rather than a review of the scholarly literature while some discussed multiple works in their reviews of the literature but did not explicitly relate these works to one another or to their own argument or perspective. A few students discussed a single perspective within the literature on their respective research questions, even if it was via discussing multiple authors with a similar perspective. A few had difficulty discussing and/or incorporating perspectives different from their own.
- In *Evaluate Sources and Evidence*, some students relied heavily on sources that were less than relevant or credible given the context of their inquiry.
- In *Research Design*, while most students identified which method or approach they were using, many did not justify that choice by addressing why they chose this approach to answer their question. In some cases, a method did not align with the question they were trying to answer or the evidence they needed to collect in order to test their argument. Some students justified methodological choices based on convenience or feasibility rather than on what would be most appropriate or necessary to address the research question or project goal. Some did not provide enough detail so that their method or approach could be reasonably reproduced.

Some students claimed to be using one method while actually using a different method. In particular, most students who described their approach as a meta-analysis, content analysis, a “systematic review,” thematic analysis, trend analysis, or even historical analysis did not actually conduct original research, but rather engaged in an extended second literature review. Some students who chose to analyze quantitative data used inappropriate methods to do so, provided incomplete statistical information, or interpreted the information incorrectly. Some students described how to do the statistical tests but failed to adequately describe the statistical results or relate them to their conclusions. Many who used surveys in their research did not connect their choice of questions to their inquiry and some who conducted surveys did not include the actual survey in the paper (or even in an appendix). Students were not always clear as to how and why they selected their sample; sometimes these samples were biased, inappropriate, or too small to draw meaningful inferences from.

Many students who worked with human subjects did not indicate that they had pursued institutional review board (or human subjects research board) authorization, nor did they have sections in their papers that addressed ethical issues and explained how risks to subjects either had been minimized or avoided. Some students conducting surveys or interviews asked questions that were ethically problematic.

- In *Establishing (Their Own) Argument*, a few papers were unclear on the distinction between the literature, the student’s specific argument, the method used, and the evidence. Many students summarized their conclusions but did not put their research or evidence into a bigger context.
- In *Select and Use Evidence*, some students did not substantiate links between their own claims and the evidence they presented from their original research. Some students attempted to link their own claims to evidence from the literature but did not provide evidence from their original research. Many of the papers that utilized surveys collected data from a convenient sample audience or lacked enough responses to adequately develop an argument. In discussing the limitations and implications of their research, many students focused more on barriers to their ability to complete the project or limits of the method chosen rather than an effort to connect their results back to; the gap they identified, the new understanding, the conversation within the academic community, the community of practice, and other implications beyond their own efforts.
- In *Engaging the Audience*, some students had issues with the organization of the paper. This made it difficult for the reader to follow the thread of the argument or the layout of the project design. Some students used hard to read, hard to interpret, oversimplified, or under-explained graphs or charts to present their findings. A few

students wrote in a more conversational style, rather than in a style appropriate to a research paper. Some students exceeded the maximum word count by a large number. A few students submitted papers/PDFs that were incomplete, missing pages, or in some other way were not final.

- In *Applying Conventions*, a few students did not appropriately cite images, tables, graphs, or figures in their papers. Some did not label images, tables, graphs, or figures clearly or appropriately. A few used images/figures, but they failed to describe or analyze them. Many students did not clearly, consistently, and accurately cite claims or information from their sources in the text. A few students did not clearly differentiate between the voice of others and their own voice and few students employed quotations or summaries of sources without integrating them into the paper in a cohesive way. Some students even engaged in sloppy scholarship, and, in rare cases, overt “cut and paste” plagiarism.
- In *Applying Conventions*, some students did not proofread their papers carefully, and/or did not correct errors of grammar, style, or mechanics that interfered with communication. The in-text citation and bibliographic citations of students illustrated that some students may not understand the rules of citation.

Based on your experience of student responses at the AP® Reading, what advice would you offer to teachers to help them improve the performance of their students on the exam?

- *Overall*: Teachers have done a wonderful job in helping students move from wrestling with the basics of systematic research to conducting original research using an explicit method or approach. Students have a better understanding of how to take the skills learned in AP Seminar and apply them in a substantively different way in AP Research. Teachers can help students facilitate this important skill transfer by continuing to emphasize how the writing, argumentation, and research tasks in AP Research differ from those in AP Seminar, thus requiring different strategies.
- *Rubric*: Establish a relationship with the rubric prior to teaching the course every school year. Require students to establish this same type of relationship. If students can use the rubric to help guide their thinking about published work and/or peers’ projects, it will help them in making sure that their own projects meet the rubric’s expectations. Have students score sample papers, or peers’ papers, using the rubric, so that they better understand the difference across scores, as well as the different components of each score.
- *Process*: Emphasize that research is a process, one that requires time, reflection, problem solving, and revision. Teach students that the research process is a social and community-based endeavor, where researchers are in conversation with other scholars, and they can learn from each other’s comments, ideas, and findings.
- *PReP*: Encourage students to use the Process and Reflection Portfolio (PReP) to document and reflect upon the process, and to help stimulate their own creative thinking. Use the PReP to make that process visible, to prompt student reflection, and to enable you to provide both positive and constructive feedback.
- *Peers*: Encourage students to find peers to share ideas and drafts with. Utilize peer review early and often. This allows project development and writing to go through iterations, rather than be constructed in sections without revisiting them as students add to their papers. It also provides students with an opportunity to identify alignment issues early in the process. Peer review gives students valuable experience as presenters and as consumers of others’ scholarly work. It also emphasizes the idea that research is an iterative and recursive process.
- *Expert advisors*: Encourage students to find expert advisors with whom to discuss their projects, and to help students ensure they perform research appropriate to the field. Also encourage students discuss their limitations/conclusions with an expert advisor. Readers noted that students who reported working with an expert advisor, particularly on methodology, performed better than students who did not.

- *Higher Education Institutions:* Reach out to nearby colleges or universities. This could help with understanding human subjects/IRB issues, building relationships and research connections, and gaining access for students to start seeking access to databases or research librarians early in the process. They might also be good sources for expert advisers, oral defense panelists, and even venues for viewing or presenting student research.
- *Topics:* Encourage creative topics of study outside of the social sciences, especially in the humanities, arts, engineering, and technology as the curriculum of AP Research is broad and comprehensive enough to accommodate work in multifarious disciplines. Remind students doing such projects that they need to be explicit about their method, approach, and process. Encourage students to read widely within their chosen area of interest before choosing their research question to narrow their topic more effectively and to more clearly identify whether and to what degree a gap in our understanding exists.
- *Research Questions:* Emphasize the importance of developing one explicit, precise, focused research question that is narrow enough to be studied within the scope of the project but broad enough to develop a new understanding. Doing so affects the rest of the research project, and thus is essential. Remind students that all elements of the research paper should relate to the research question and should speak back to their argument. Remind them to state their research question early and clearly to help the reader understand the direction and focus of the research project. Consider asking students to regularly update or reflect upon their research questions in their Process and Reflection Portfolios (PRePs).
- *Audience:* Remind students to write as if the audience for their papers is an intelligent, non-expert who does not know anything about this specific area. Remind students that as the author and researcher, it is their job to clearly convey what they did, why the approach they took is appropriate given the topic of inquiry, what they found, and what implications their conclusions have for our understanding of the question. It is not the reader's job to infer any of this from the paper; it's the student's job to be clear and explicit. Also remind students that there is no guarantee that their paper will be scored by an expert in that field, making it all the more important to write clearly and explicitly for an intelligent, non-expert audience.
- *Abstracts:* Remind students that abstracts are useful organizational tools, but that they will not be scored as part of the paper. Have students verify that anything that appears in the abstract (if they choose to write one) also appears in the appropriate place in the body of the paper. Encourage students who want to write abstracts to do so after their papers are complete, and to do so as a summary of the paper, so that no new information, not already in the body of the paper, shows up in the abstract.
- *Introduction:* Emphasize revising the paper's introduction near the end of the research process, to clearly identify the question that guides the project and to situate the question within a broader context. Remind students that introductions need to avoid broad generalizations and should also be informed by sources and evidence. Remind them that statements of fact or argument need to be cited, even in the introduction. Remind students that research yields new understanding incrementally, and credible researchers moderate their claims. This means that hyperbolic language regarding what they will do or what new understanding they have generated should be discouraged.
- *Scholarly Sources:* Review what constitutes scholarly sources to use knowledge from AP Seminar to help scaffold work in AP Research. Compare examples of scholarly and non-scholarly sources that address the same topic.
- *Literature Reviews & Establishing a "Gap":* Show students examples of literature reviews from published works or from previous years' student papers to help them understand how researchers review the literature in a way that suggests a debate or illustrates a gap in our understanding. Discuss the need to explicitly demonstrate that a gap in the literature exists, rather than just asserting it.
- *Database Searches:* Help students consider database search strategies, as well as alternative database options. Spend time helping students conduct database searches and teach them that though they may not find articles

that relate directly to their topic, they will find sources that relate closely. Consider encouraging them to access databases or to consult with research librarians at local institutions of higher education early in the process.

- *Research Design:* Remind students that they need to clearly explain which research design, method of analysis, or approach they have chosen, how the research will be carried out, and why it is the appropriate method to address the research question. Defending research choices—justifying the use of a approach, and justifying the choices made within that approach—is critical, but also needs the most reinforcing. Remind students that they are completing the task as laid out in the Course and Exam Description (CED), which means that the discussion of their methodology needs to be explicit, even when it is generally understood within the field, or when scholars in that field typically don't clearly layout their approach choices. A reader who is an intelligent non-expert should be able to easily understand that description and rationale and be able to reasonably replicate the approach.
- *Different Methods:* Help students understand that specific methods have specific requirements. For example, methods such as meta-analysis, content analysis, thematic analysis, trend analysis, grounded theory, qualitative comparative analysis, systematic review, correlational analysis, and historical analysis (or historiography) have particular guidelines and procedures that must be followed. Students are using these methods without clear explanation of what they have done, and without clear understanding of how to use these methods. Encourage students to read within their area to better understand appropriate methodology choices. Provide examples where possible, and close-read these samples to check for method explanation and alignment. Allow for time to teach deeply about different research methods (including modeling, building together, peer review).
- *Surveys:* Given how frequently students rely on survey methodology, teachers should devote class time to teaching about effective survey construction and implementation in order to make sure students understand the purpose of utilizing survey research. Emphasis is needed particularly on question construction, effective sampling, and the need to justify all of the choices made along the way. Students should be encouraged to put all survey questions in the paper (or at least within an appendix). Note that if students survey adjacent populations (e.g. classmates), it should be for defensible reasons, *vis-a-vis* the research project, and not simply for the sake of convenience. If surveying classmates or high school students does not represent a well-aligned method designed to answer the given research question fully, students should abandon this method for one that makes more sense. Finally, students need to defend their choice of a survey as their methodology, explaining why it is the appropriate choice given their question or argument.
- *Statistical Analyses:* Teachers should remind students that they need to apply the appropriate statistical test to their question, justify that choice, and explain it clearly to the reader. Encourage students to always explain the meaning of their statistical results and to elaborate what these mean for their argument. Students seem to focus more on describing how they performed a particular statistical test and what that test means rather than on describing and explaining the statistical result and its implications for their argument and conclusion.
- *Alignment:* Teachers should spend more time discussing the need for alignment throughout the study. For instance, some papers had methods that were not aligned with the question being asked, which led to evidence collected that could not speak to that question. This suggests that students may not be putting enough thought into justifying their choice of method as it relates to their research question. Alignment is an issue throughout the study, however, as occasionally conclusions drawn do not relate to the inquiry approach used, the literature evaluated, or even the question asked. Alignment should be checked regularly and should be considered at every step of the research process. Teachers should consider reviewing example papers with students, highlighting alignment or problems with alignment in those examples.
- *Unfamiliar Approaches:* If students are using a methodology with which the teacher is unfamiliar, the teacher can recommend that the student find an outside expert who can review and comment on that approach. Teachers might also invite other instructors or bring instructional materials into the classroom. For instance, teachers who do not feel comfortable with data might think about inviting an AP Statistics teacher to work with

students or could assign statistics videos for students to watch and later apply to their papers. Finally, finding exemplars of the type of method in published work or in previous student papers would be helpful to students.

- *Peer Methods Communities:* Encourage students to engage in peer reviewing even while developing their methodologies. This might be made easier if students create “method communities” in the classroom, where students with similar research methods can give each other feedback on their approach while communicating ideas and conclusions.
- *Ethical Issues:* Teachers need to spend more time prior to the research proposal discussing ethical issues, and helping students think through the effects of their choices on their research subjects. There were a number of papers that collected sensitive information or asked clearly disturbing or triggering questions without evidence of an IRB or some way to gain consent. Message the need to address ethical issues proactively, fully, and appropriately, particularly when dealing with human or animal subjects. Remind students that it is their responsibility to act in an ethical manner while carrying out their study responsibly, and in presenting the data honestly and accurately. Even if students will not go through an IRB / human subjects review process, encourage them to reflect on ethical issues of their projects’ methodology or implications, as it is expected that they do so.
- *Plagiarism:* Emphasize to students that it is their responsibility to act in an ethical manner with regard to appropriate citation and attribution. Use Turnitin.com to ensure that students are complying with AP Research course guidelines regarding plagiarism.
- *Start Early, Plan Ahead:* Consider creating a timeline for student success in the yearlong research process. Emphasize the importance of starting to collect the evidence or data as early as possible in the year, to leave enough time to carry out the study, complete the analysis, and leave time to write up and revise the paper. Students appear to be spending a great deal of time on their reviews of the literature and the development of their methodology, but not on analyzing the information that they collect or drawing conclusions from that information. These sections tend to appear more rushed and less complete than the earlier sections of the paper.
- *Analyzing Data:* Teachers should construct more activities on how to analyze data (for instance: how to use primary documents in historical analysis, or how to do content analysis, or descriptive statistics calculation).
- *Conclusions:* Teachers should encourage students to conclude with an analysis on how the paper’s conclusion (drawn from evidence generated by the research method) contributes to the conversation. Summary is an important first step, but conclusions need to also contain reflection and analysis. In the conclusion, papers that referred back and compared the new findings to previous findings demonstrated an ability to show how their results had meaning beyond their own study. That also helped to show the new understanding and its relevance. New understandings discussed should be evidence-based (a result from their study’s analysis, findings, or data), rather than simply a new awareness based on the reading they have done or the process that they have undergone. They should also be discussed and elaborated upon, rather than simply asserted.
- *Limitations:* Teachers should remind students that they should discuss the limitations of their study’s design and conclusions, not on student circumstance or access to resources or time. Limitations should be tied to the conclusions in that they explain how certain the conclusions are, or to what degree they are generalizable, reliable, or valid.
- *Implications:* Encourage students to see the implications and conclusions sections of their papers as critical components that allow them to situate their study’s findings and help the findings to have meaning beyond the study. The implication sections in weaker papers suggested that this step was an afterthought or an attempt to simply catalog possible sources of error, rather than an opportunity to address the “so what?” implications of their research or the opportunity to speak back to the professional discussion. Encourage students to reflect on and write about why their results are what they are; have them point out where their results matched previous research (and explain why this could have happened) and where it did not (and explain why this could have happened). Remind students to situate their findings in the literature.

- *Appendices:* If students wish to use an Appendix, remind them to discuss the most pertinent material or evidence in the body of the paper, and to explicitly reference (and direct the reader to) the Appendix in the main text of the paper.
- *Writing and Citation Style:* Make sure students know the writing style and citation style expected in their discipline. Spend time emphasizing proper and consistent citation techniques, including the need to cite works of art, images, tables, or figures used in the paper, and the need to fully cite all online sources (not just the URL/web address). Teach, model, discuss, and work with students throughout the year regarding the mechanics of citations. Remind them to proofread to avoid incomplete or error-filled “works cited” sections.
- *Proofreading:* Remind students that prior to their final submission they should proofread their work carefully. At this time, they should remove their names, school information, teacher and expert advisor names, and other identifying information from works to be submitted. Consider giving teachers the ability to redact that sensitive information before upload.
- *Uploading:* Sometimes conversions from Google Docs or other formats to PDF result in some content being lost. Remind students to make certain that the PDF they are about to submit is absolutely their final paper, contains all the desired text and elements, and is the version that they intend to be scored.

What resources would you recommend to teachers to better prepare their students for the content and skill(s) required on this question?

- Use the rubric as a teaching tool and a guide for the students throughout the course. Periodically have students review the rubric and ask (perhaps in the PReP – Process and Reflection Portfolio) whether the elements of their academic paper have met the criteria in the rubric.
- Use the Student Workbook and associated PowerPoint presentations from the AP Research Teacher Community (<https://apcommunity.collegeboard.org/web/apresearch>) to help students focus their research questions, align their chosen method to the purpose of their inquiry, and to ensure they are addressing ethical research practices in writing and in the implementation of their method.
- Teachers should attempt to troubleshoot their curricula on the AP Research Teacher Community, encouraging and engaging in dialogue that supports their own development of the course and course expectations, particularly after they receive their score report data.
- Teachers should also consider applying to be readers during the AP Research Reading, as this professional development not only allows teachers to understand the rubric, but it provides access to student work that creates more context for the course and the various disciplines of scholarly research.
- Citations in many student papers were disorganized, missing sources, or formatted incorrectly. Effective use of free plug-ins or apps such as Zotero (<https://www.zotero.org/>) can help students organize their cited sources and cite them consistently and in the correct format.
- Purdue Owl (<http://owl.english.purdue.edu/owl>) is a great, free on-line source on citation and reference formatting. It contains information on many widely-used citation styles and guidelines regarding best practices in source citation and attribution.
- Human Subjects / IRB training would be useful professional development for AP Research teachers but would also benefit AP Research students who will be engaging with people for their projects. While there is an IRB education exemption for most high school students’ projects (based on U.S. Department of Health and Human Services guidelines), such training would help students to at least talk about the ethical issues involved in their study, which is still required. It also models better research practice, which would be required at the college or

university level. One free option is the on-line Protecting Human Research Participants module, from the National Institutes of Health's (NIH) Office of Extramural Research, at <https://phrp.nihtraining.com>.

- Teachers should look into alternative journal collections such as JSTOR, search engines such as Google Scholar, or consider a field trip to the local university library to use those resources. This way, students have a wealth of information outside of EBSCO. Teachers might consider building partnerships with local colleges or universities and their libraries to provide more resources to students, and to introduce local institutions of higher education to the great work AP Research students are doing.
- Encourage students interested in historical research to look into digital archives and data sets. There is a wealth of letters, diaries, and artifacts from under-represented groups that have been digitized and made widely available. Students looking for an innovative topic should look to the work of digital historians and digital history projects to find data that has only been lightly explored.
- There are various quantitative database websites with online analysis built in to the platform (especially in the social sciences), such as Gapminder, Google Trends, Kaggle, the European Social Survey, GESIS, World Values Survey, or the General Social Survey. There are also numerous sources for aggregate public opinion data, such as the Pew Research Center, Roper iPoll, Gallup, and PollingReport.com. Free open source government and international organization data also exist at websites such as <http://www.data.gov>, <http://www.census.gov>, <https://data.worldbank.org>, <http://data.un.org>.
- Students who want to conduct statistical analyses can use a free online tool called PSPP, which can be accessed at <http://www.gnu.org/software/pspp>. It is designed to be similar to SPSS, a commonly-used statistics software package, and is generally user-friendly.
- Professors at nearby colleges or universities could become resources: as expert advisors, oral defense panelists, or as guest lecturers who might, for instance, come and talk about good qualitative methodology or about ethical issues in working with human subjects.
- If your local college or university holds an honors day or research symposium event where undergraduate students are presenting their research, consider finding out whether your class can attend (or even present their work). They could see different kinds of research and, hopefully, observe good presentations. For students who perhaps were not thinking about going to college, seeing where their research could take them could be meaningful and encouraging.