

**Evaluating Information and Analyzing Media  
Communication Studies 221  
Josh Pasek, Ph.D.  
Winter 2021**

**Class**

This semester, Communication 221 will be an asynchronous lecture course, offered principally with 3-4 video lectures per week totaling around 2 hours of video content. In addition, meet at designated section times using Zoom.

**Office Hours**

Prof. Pasek: Tues 2:00-3:00 PM or by appointment. [jpasek@umich.edu](mailto:jpasek@umich.edu)  
<https://umich.zoom.us/j/93710923108>

**Lab Section Meetings**

Section 002: Fri 12:00-1:00 PM <https://umich.zoom.us/j/98637676117>

Section 003: Fri 1:00-2:00 PM <https://umich.zoom.us/j/99113890406>

Section 004: Thurs 3:00-4:00 PM <https://umich.zoom.us/j/91795886434>

Section 005: Thurs 4:00-5:00 PM <https://umich.zoom.us/j/95247648488>

**Graduate Student Instructors**

<b>Name</b>	<b>Sections</b>	<b>Office Hours</b>	<b>Zoom ID (Office Hours Only)</b>	<b>Email</b>
Gabriel Li	004, 005	Thurs 2-3PM & appt.	<a href="https://umich.zoom.us/j/98998239290">98998239290</a>	<a href="mailto:miaoli@umich.edu">miaoli@umich.edu</a>
Edwin Wang	002, 003	Fri 2-3PM & appt.	<a href="https://umich.zoom.us/j/95505875288">95505875288</a>	<a href="mailto:edwinwwh@umich.edu">edwinwwh@umich.edu</a>

Please do not visit office hours for GSIs other than your own. Hours may be updated on Canvas.

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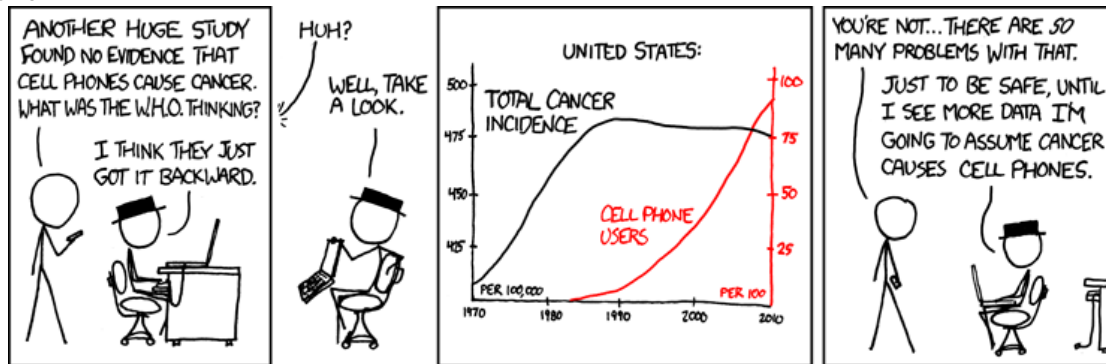
**Is Your Mobile Phone Giving You Cancer?**

Readers of the *New York Times* could point to seven headlines published during 2011 reporting, “Cellphone Use Tied to Brain Changes” (Feb 22), “No Cellphone-Cancer Link in Large Study” (Oct 20), and, “Cellphone Radiation May Cause Cancer” (May 31) among other related claims.

Does this seem somewhat contradictory? It should. Depending on whom you ask and when, the answer to the cellphone-cancer link might be existent, nonexistent, or a subject for continuing research.

In life, we are constantly exposed to claims about what is true and how the world works. Some of these claims come from trusted acquaintances, others stem from news reports, and additional assertions reach us through Facebook, casual conversations, and emails. We find ourselves in this constant stimulation environment without a single easy way to determine which of the things we hear are actually true, which may be misleading, and which are completely false.

Clearly, cellphone use cannot simultaneously cause cancer, not cause cancer, and possibly cause cancer. But how should we evaluate which of the studies reported by the *New York Times* was actually accurate? Sadly, most of the time we simply aren't given enough information to weigh the evidence without looking at the studies themselves. Problematically, many people lack the training to read and understand original scientific research.



As the quantitative research literacy course in the Communication Studies curriculum, this course focuses on the core skills necessary to think through and critically evaluate scientific arguments and evidence. It offers basic tools for understanding results from the scientific study of human behavior, marketing data, and public opinion polls. By the end of the semester, you will have the tools to read and understand social science as it appears in the news and to differentiate between casual opinions and well-evidenced arguments.

Evaluating Media explores the fundamentals underlying the development of knowledge, theories, and evidence, and the collection of data to describe society. The course works through explanations of how to conceptualize and enact research that studies people's use of media through methods including experiments, surveys, and naturalistic observation.

In this course, you will be expected to understand some of the basic principles of scientific research. You will learn some of the different ways that scientific studies can be designed, that data can be collected, and that data can be analyzed when studying mass communication phenomena. These same skills are central to the interpretation and communication of marketing data and public opinion information. For each of these areas, we explore a variety of techniques and assess the assumptions that researchers make in using each of those techniques. From this, you will be able to recognize what we can and cannot conclude in our examinations. These skills will also help you when you encounter scientific information in real world settings.

### Course Learning Goals

By the end of 221, you will have a much deeper understanding of how knowledge is generated in both academic and nonacademic settings. This knowledge should enable you to critically read and evaluate research in the social sciences and the presentation of information in the news and in various workplaces. You should be able to pick up and read the vast majority of research articles in the social sciences and marketing research reports, understanding what the key concepts are, how they were assessed in the research, and the

basic analytical tools that were used. You should also be able to render an independent judgment on the quality of academic work you encounter as well as claims about the nature of society (e.g. public opinion, product market shares, etc.). These skills are seminal both in the rest of your academic career and beyond.

More specifically, by the end of 221, you should be able to:

- Understand types of evidence and the sorts of knowledge they engender.
- Know the steps of the scientific method and how they are applied in social scientific research.
- Recognize how theories relate to hypotheses in the scientific tradition.
- Understand conceptualization and operationalization of key concepts in hypotheses.
- Know the types of sampling and what they imply about the generalizability of research results.
- Identify different types of study design and recognize what they can and cannot tell us about society.
- Assess the reliability and validity of an operationalization.
- Know what criteria are necessary to make a solid causal claim.
- Conduct simple statistical tests in Microsoft Excel.
- Evaluate the quality of evidence in social scientific research.

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### Course Materials

#### Required Texts:

Readings posted on the Canvas account.

Wrench, J. S., Thomas-Maddox, C., Richmond, V. P. and McCroskey, J. C. (any edition).  
*Quantitative Research Methods for Communication: A Hands-On Approach*. New York: Oxford University Press.

\* This book is an excellent resource, especially if you are struggling with any of the methods we discuss or are looking for additional information about how to run analyses in Excel. You will not be tested specifically on anything from this book that is not also discussed in lecture.

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### Requirements

#### Grading

Participation and Section	25%
Research Critique Paper (February 22)	20%
Midterm Exam (Week of March 15)	20%
Capstone Project (April 26)	35%

Participation and section grades are composed of the following parts:

Section Participation	10%
Homework	10%
Quizzes	5%

## **Class Progress**

Because the lecture portion of this class is asynchronous, requirements for class attendance involve accessing and watching the videos associated with each week's lectures. To simplify this process as much as possible, each week's lectures have been divided into 3-4 videos per week (of typically ~30 minutes in length). You should aim to read the appropriate chapters of the book and watch the lectures before each week's lab. Materials should be available online at least a week ahead of class progress throughout the term.

Unlike many other classes, the workshops in Comm 221 are not simply a forum for reviewing material discussed in lecture. Instead, they are designed to serve as an independent learning environment and an occasion to practice many of the concepts that are central to the course. This means that 1) there will be some required information that is only covered in lecture, not in the workshops, 2) there will be some required information that is only covered in workshops, not in the lecture, and 3) the content of the workshops will not always reflect exactly what was learned in lecture in each week.

## **Papers**

Course papers require you to analyze and write clearly about analyses you have conducted. You will be graded on your writing, your use of the specified analytic techniques, as well as the extent to which you identify important class ideas. All papers for this class should use APA style (American Psychological Association, 2009) and you will need to be familiar with the rules for writing and citation in this style. A good overview is available in Chapter 4 of the textbook as well as at:

[https://owl.purdue.edu/owl/research\\_and\\_citation/apa\\_style/apa\\_style\\_introduction.html](https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_style_introduction.html)

The research critique paper requires that you critique the way a journalist reported on a particular piece of research. The capstone project will require you to write up the results of your own analysis of some survey data. All papers need to be turned in on Canvas in advance of the class for which they are due. Late papers will be docked 1/3 of a letter grade for each day they are late and will NOT be accepted more than one week late.

## **Exam**

The exam will require you to apply the concepts you have learned in class in a timed fashion. Exams from past courses will be posted on Canvas. The exam will be made available on Canvas and consists of two parts, a research report and a set of largely short answer questions about the research report. It will be *extremely helpful* to either have a printer or two screens available to take the exam, so that you can look at the research report in a separate location from where you are answering questions about it.

Because the learning goals for the class are entirely based on skills and are focused on your ability to digest research, testing in the class is focused on how well you can apply the concepts we are learning. Most test questions are short answer questions that ask you to analyze or identify the central concepts in research reports. **Be aware that memorizing the definitions of key terms will NOT be sufficient preparation for these examinations.** The exam will be open note, but we strongly recommend creating a cheat sheet both because

it will help consolidate the information you need to know and because the practice of creating a cheat sheet serves to facilitate learning.

We are still determining the best tools for the exam given the asynchronous format, and will let you know exactly how it will be conducted as soon as we know.

### **Homework**

There will be six homework assignments throughout the term. They will be assigned in section and will typically be due by the beginning of the following week's section.

### **Quizzes**

There will be a few quizzes to complete in addition to the homework throughout the term. You will be informed about them in each week's workshops and you will complete them before the following week's lab. For the first week's quiz, you may find it helpful to review the syllabus carefully.

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## **Some Recommendations and Resources**

### **How to Succeed**

In this class, we provide a number of tools to help you learn how to understand, evaluate, and produce good social science. We will test you on your ability to do just that. Your success in the class will be highly dependent on how well you utilize the tools we offer. It is hypothetically possible to pass the class without attending to all the lectures, but keeping up with lecture materials has proven an incredibly accurate indicator of overall class performance.

Similarly, because we test how well you can apply the concepts in the readings and in class, you will not need to memorize any of the specific examples used in the textbook. Nonetheless, if you understand how concepts are applied in those examples, you will be much more likely to be able to apply them in the papers and during the exams.

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## **Course Policies**

### **Students with Disabilities**

If you think you need an accommodation for a disability, please let the professor or your GSI know as soon as is feasible. Some aspects of this course, the assignments, the online activities, and the way we teach can be modified to facilitate your participation and progress. As soon as you make us aware of your needs, we can work with the Office of Services for Students with Disabilities (SSD) to help us determine appropriate accommodations. SSD (734-763-3000; <https://ssd.umich.edu>) recommends accommodations through a Verified Individualized Services and Accommodations (VISA) form. The teaching team will treat any information you provide as private and confidential. Please note that we will not make any retroactive accommodations, so let us know of anything we may need to deal with in advance.

### **Absences from Section**

*Sickness.* Please let us know as soon as you are able if you are sick and will need to miss section or if you need any schedule adjustments due to sickness. As section participation is part of the grade and the sections build on one-another, these absences can have large consequences if you do not get in touch with your GSI and/or professor and make a plan. Please email both your GSI and your professor for any absences.

*Religious holidays.* Within the first two weeks of the semester, please notify your GSIs of any religious holidays for which you will be absent. If a holiday is sufficiently important that you will miss class, you should know the dates in advance.

*Athletic and other university-related absences.* If you are travelling to represent the University of Michigan, someone on your team will provide you with the appropriate paperwork to distribute to your instructors.

*Other excusable absences.* In an emergency or other unexpected event results in an unplanned absence, you should also notify the office of the Assistant Dean of Student Affairs, who will be able to inform all of your instructors. In Winter 2021, the assistant to the Assistant Dean is Debbie Walls; you can email her at [dwalls@umich.edu](mailto:dwalls@umich.edu).

### **Grade Questions**

When any major assignment (paper or exam) is returned to you, you must wait at least 24 hours before contacting your GSI with any questions you have. This ensures that you have time to read over the feedback given you and understand the issues your assignment faced. We have found that students who take the time to wait approach their GSIs with more useful questions and receive more helpful answers. We also expect you to bring questions to your GSI first, as they are more directly involved in the grading process and are permitted to resolve any grading errors.

### **Academic Honesty**

A good student-teacher relationship operates on the basis of trust. From that basis, your professors and GSIs trust that you will do your utmost to complete coursework and to be honest with us if for any reason you are unable to fully meet a commitment to the class. We also trust your judgment that any advice you solicit from or offer to your peers will stay well outside the bounds of the University of Michigan's policies on plagiarism and cheating (see examples at <https://lsa.umich.edu/lsa/academics/academic-integrity.html>).

That said, if any member of the teaching team encounters evidence that you have in any way, shape, or form copied material without attribution or collaborated to the point that the work you present is not entirely your own, we will immediately refer the incident to Rashonda Flint, the Assistant Dean for Undergraduate Education. Because plagiarism and academic dishonesty hurt *everyone* in the class, we have no compunction about failing students who are found to have been dishonest. Put simply, this class has a zero-tolerance policy. There will be no second chances for cheating.

If you are unsure about whether some level of collaboration would count as too much, feel free to ask any member of the teaching team.

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### **Additional Resources to Know**

#### **Michigan Association of Communication Studies (MACS)**

The Michigan Association of Communication Studies (MACS) is a student organization at the University of Michigan for people who — are communication studies majors, want to be communication studies majors, or are even the slightest bit interested in communication studies and all that it entails. For more information, see [macsuofm.com](http://macsuofm.com).

#### **Communication Studies Advising**

The Communication Studies department offers advising for students who are interested in joining the major or understanding its requirements. Learn more by going to a poster meeting or visiting their website at <https://lsa.umich.edu/comm/undergraduates/about-comm-studies-advising.html>.

#### **Sweetland Center for Writing**

The Sweetland Center for Writing is a comprehensive center for improving student writing at all levels. They offer one-to-one tutoring for undergraduate students. Find them at [www.lsa.umich.edu/sweetland/](http://www.lsa.umich.edu/sweetland/).

#### **Counseling and Psychological Services (CAPS)**

Counseling and Psychological Services offers counseling services, educational and preventive initiatives, training programs, outreach and consultation activities, and provide guidance on how to “do something” to fully contribute to a caring healthy community. CAPS can be contacted on their 24-hour crisis line, 734-996-4747 and online at [caps.umich.edu](http://caps.umich.edu).

#### **MiTALK**

MiTALK offers mental health resources including online screenings for depression and anxiety, skill-building tools to help you manage stress and academic life, and digitally recorded workshops, lectures, and some relaxation exercises. The site is completely free of charge to U-M Students. Find them at [mitalk.umich.edu](http://mitalk.umich.edu).

#### **Sexual Assault Prevention and Awareness Center (SAPAC)**

If you or someone you know has been harassed, assaulted, or stalked, you can receive confidential support and academic advocacy at the Sexual Assault Prevention and Awareness Center (SAPAC). SAPAC can be contacted on their 24-hour crisis line, 734-936-3333 and online at [sapac.umich.edu](http://sapac.umich.edu). Alleged violations can be non-confidentially reported to the Office for Institutional Equity (OIE) at [institutional.equity@umich.edu](mailto:institutional.equity@umich.edu). For those in the Ann Arbor area, reports to law enforcement can be made to University of Michigan Police Department at 734-763-3434.

## Course Outline

### **PART 1 – Knowledge, Social Science, and Measurement**

Week of January 18, 2021 (Week 1)

#### **Introduction to Evaluating Information and Analyzing Media**

This week we will briefly discuss the purpose of the course, the syllabus, and the expectations for the class. We will also discuss how we know things and the role that media play in our knowledge about the world. We also consider how our understanding of the social world can be examined using the scientific method. We focus on the roles of theory, hypotheses, and data as sources of this understanding. In the GSI-led workshops, we will be introducing the labs and the tools we will be using to conduct analyses.

Readings: Wrench et al. “Empirical Research” Chapter

*LAB 1: Workshop: Introduction to Workshop Labs and Excel*

Week of January 25, 2021 (Week 2)

#### **Science and Social Science, and the Scientific Literature**

This week, we go over methods for finding and evaluating the quality of research. We will also work through the ways scholars communicate their findings and the challenge of translating technical language and concepts into the types of scientific stories you see in the news. Before we begin to contemplate the process of conducting research, we need to think about the potential implications of our choices. We therefore start out by talking about research ethics before moving into considering the data collection process. This week’s workshop will aim to improve your reading skills, allowing you to practice finding the information you need in social scientific research without having to read entire articles in depth.

Readings: Wrench et al. “Searching for Previous Research and APA Style” Chapter

Offit, Paul A. (2008). “Science and the Media.” In *Autism’s False Prophets: Bad Science, Risky Medicine and the Search for a Cure* (pp. 156-175). New York, NY: Columbia University Press.

Wrench et al. “Ethics” Chapter

*LAB 2: Parsing Papers and Sources and Evaluating Media Coverage of Academic Work*

***\*Homework 1 Due by Lab\****

Week of February 1, 2021 (Week 3)

#### **Ideas to Concepts to Questions**

If we want to test a scientific theory, we first have to figure out what that theory implies and how to address it specifically in our research. We discuss data and the role that data play in allowing us to test theories and hypotheses. In particular, we focus on the importance of measurement and the role of quantitative data as a way to test theories and hypotheses that



can help us understand the world. We examine the processes of conceptualization and operationalization. First, an idea or theory is translated into clear enough language that we can directly and unambiguously test it. We then become familiar with the process of operationalization and explore how operationalizations of different types can help us transition from hypotheses to data we can test. As we will see, not all operationalizations are equally good at addressing the variables we really want to measure.

Readings: Wrench et al. "Variables" Chapter  
Wrench et al. "Measurement" Chapter

### LAB 3: Conceptualization, Operationalization, and Measures *\*Homework 2 Due\**

Week of February 8, 2021 (Week 4)

#### **Sampling**

We begin this week by introducing a key component in the design of any quantitative study—choosing a sample from which to collect data. Samples allow us to collect the data we need without having to talk to every single person or look at every single media source, saving both money and time while collecting data of equal quality. Figuring out whom or what to study constitutes one of the central challenges researchers encounter. We discuss ways to turn scientific theories into data we can use and practice some of these tools to do this in lab. We then discuss some of the different ways of sampling cases to study and explore the pros and cons of each approach. We will be discussing probability samples, or samples based on randomness, as opposed to non-probability ones.

Readings: Wrench et al. "Sampling Methods and Replication" Chapter

### LAB 4: Pivot Tables

Week of February 15, 2021 (Week 5)

#### **Hypotheses, Causality, Third Variables and Measurement Quality**

This week, we step back to conclude the part of the course where we plan data collection by talking about how our hypotheses inform research design more generally and how we can use design to make claims about what causes what. Because causality is a central goal in many types of research, identifying when causal claims are strong or weak is important. We also discuss third variables, which comprise an additional part of our hypotheses where we test proposals for how things are related. Notably, the measures we produce are frequently imperfect. This is true in part because of challenges in the question-and-answer process, but also because our operationalizations rarely map perfectly onto the concepts we wish to study. When we want to understand how well our measures relate to the concepts of interest, we assess on two overarching dimensions of measurement: reliability and validity. In this week's lab, we will generate hypotheses with third variables that we will use for our final projects.

Readings: Höfler, M. (2005). "Causal inference based on counterfactuals." *BMC Medical Research Methodology*, 5: 28-39. doi:10.1186/1471-2288-5-28.  
\*\* Note that this is a tough reading, we have annotated a version on the course page to make it a little easier to read. You will not need to know anything from this reading that is not also in the lecture.\*\*

Wrench et al. "Reliability and Validity" Chapter

LAB 5: Third Variables  
**\*Homework 3 Due\***

Week of February 22, 2021 (Week 6)

**Measurement and Survey Research**

This week, we turn to the second part of the course, where we explore various types of operationalizations, starting with surveys. Surveys constitute one of the principal tools we have for understanding the social world. Like any other method, careful thought and planning are necessary if you want a survey to collect useful data. We explore the different types of surveys that can be conducted and their various uses. Because surveys depend fundamentally on asking questions, we conclude our look at surveys with a focus on survey questions and how researchers can ensure that their questions they ask elicit the responses they desire. This information will be useful for our class survey, which is a key part of the capstone project. It is also very important for individuals who want to go on to communication-related fields such as marketing, which relies heavily on survey research.

Readings: Wrench et al. "Survey Research" Chapter

Pasek, J. & Krosnick, J. A. (2010). "Optimizing Survey Questionnaire Design in Political Science: Insights from Psychology". In Leighley, J. E. (ed.) *The Oxford Handbook of American Elections and Political Behavior*. Oxford University Press: Oxford, UK. pp. 27-51.

LAB 6: Asking Survey Questions

**\*\*Research Critique Paper Due Monday, February 22nd at 11:59PM\*\***

Week of March 1, 2021 (Week 7)

**Experiments**

This week we delve into the world of experimentation. Specifically, we will focus on the logic of experimentation as well as some of the practical limits on experimental designs. We will also look closely at the assumptions behind experimentation and conditions under which experiments can mislead. We then examine how using the experimental method allows us to make claims toward causality or generalizability. We will discuss experimentation in lab.

Readings: Wrench et al. "Experimental Design" Chapter

Shadish, W. R., Cook, T. D., & Campbell, D. T. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Houghton Mifflin: Boston, MA. Ch. 1 "Experiments and Generalized Causal Inference" pp. 1-22.

LAB 7: Experimentation and Capstone Hypotheses  
**\*Homework 4 Due\***

Week of March 8, 2021 (Week 8)

**Combined Measures and Observational Data**

We start this week by working through one approach for improving measurement: measuring the same thing with multiple items. We then move on to observational methods. Specifically, we will discuss methods for observing behavior and patterns in textual data, with a specific focus on content analysis. We will discuss reliability in this week's lab.

Readings: Babbie, E. (2010) Indexes, Scales and Typologies. *The Basics of Social Research*. 5th ed. Wadsworth: USA. 167-169; 171-189; 196-198.

Wrench et al. "Content Analysis" Chapter

LAB 8: Reliability

Week of March 15, 2021 (Week 9)

**Social and Economic Indicators and Big Data**

This week's lectures will touch on a few additional methods for collecting social science data, focusing largely on new tools such as web scraping and so-called "big data" analytics. We will examine validity in more depth in this week's labs. This will also be the week for the midterm, plan what day you will be taking it.

Readings: Wrench et al. "Big Data" Chapter (Only in newer editions, also on Canvas)

LAB 9: Validity

**\*\*MIDTERM EXAM\*\*** (on canvas)

Week of March 22, 2021 (Week 10)

**Combining Methods and Descriptive Statistics**

This week we will focus on putting some of the methods we have learned together. Specifically, we will discuss approaches to collecting data that have some of the features of multiple methods that we have seen so far. This week's lab will explore validity, focusing on how combined measures can sometimes improve the validity of our operationalizations. We will also discuss how to present simple descriptive information about our data. The lab will show you how to generate simple descriptive statistics using spreadsheets.

Reading: Sniderman, P. M. (2011). "The logic and design of the survey experiment: An autobiography of a methodological innovation." In Druckman, J. N., Green D. P., Kuklinski J. H., and Lupia A. *Cambridge handbook of experimental political science* (pp. 102-114). New York, NY: Cambridge University Press.

Wrench et al. "Descriptive Statistics" Chapter

LAB 10: Cleaning, Recoding, and Describing Data

**\*Homework 5 Due\***

Week of March 29, 2021 (Week 11)

### **Comparing Quantitative Data**

This week, we will also begin to consider how to use data to test the reliability and validity of our measures as well as how they relate to one-another. In this week's lab, which will get slightly ahead of the lectures, we will be working with the class dataset.

Readings: Wrench et al. "Chi-Square ( $\chi^2$ ) Test of Independence" Chapter  
Wrench et al. "Correlation" Chapter

LAB 11: Correlations and Crosstabs

**\*Homework 6 Due\***

Week of April 5, 2021 (Week 12)

### **Data Analysis**

Hypotheses require that we know more than just how variables are distributed; we also need to know how they compare to one another. This week we focus on the relations between variables, the ways in which they map onto our hypotheses. We examine how to more closely map correlations and crosstabs onto our hypotheses about how concepts relate. In particular, we will discuss how to test for mediation, moderation, and sources of spuriousness. Later, we discuss how statistical tools can help to solve more complex research questions and talk through how to assess whether data presented in research articles or in the news is accurate. Open lab periods will provide occasion for you to work on your final projects with help from the teaching team.

Readings: Wrench et al. "Hypothesis Testing" Chapter  
Wrench et al. "Regression" Chapter

Week of April 12, 2021 (Week 13)

### **Reaching Conclusions**

This week we will discuss the process of making generalizable statements about a group of people after a hypothesis has been tested. We will consider what we can make of our analyses and the limits of what can be said based on the data. We will also consider some of the key differences between quantitative social scientific methods and other forms of systematic inquiry. Open lab periods will provide occasion for you to work on your final projects with help from the teaching team.

Wrench et al. "Presenting Research" Chapter

Pasek, J. (2011). Writing the Empirical Social Science Research Article, A Guide for the Perplexed. *Psychology Teacher Network*, 21(4).

LAB 12: OPEN LAB

Week of April 19, 2021 (Week 14)

### **Generalizing and Concluding**

The final lectures of the semester will pull together the material you have learned and connect it to the main goal of the course—teaching you to be critical of the information around you, regardless of whether that source is academic, popular, or some person on YouTube. This toolkit will help you as you proceed in your future Communication classes, but will also serve as a useful skill when you enter the job market in the future.

Readings: Excerpts from Huff, D. (1954). *How to Lie with Statistics*. New York: W. W. Norton & Company Inc. (on Canvas).

**\*\* Capstone Project Due April 26<sup>th</sup> \*\***