

## **SOWK 721**

### **Data Driven Decision Making in Social Services**

**3 Units**

*Term Year*

**Instructor:**

**E-Mail:**

**Telephone:**

**Office:**

**Office**

**Hours:**

**Course Day:**

**Course Time:**

**Course**

**Location:**

#### **I. COURSE PREREQUISITES**

SOWK 713 and SOWK 714

#### **II. CATALOGUE DESCRIPTION**

This course serves as a practical introduction to using quantitative administrative data to identify trends, track performance, evaluate programs, and drive decision making.

#### **III. COURSE DESCRIPTION**

Leaders and innovators in the world of social work must be conversant in data. In the contemporary social service and policy landscape, funders are increasingly concerned with seeing concrete evidence to support the continuation of programs and policy makers are increasingly demanding data to support policy change. Fortunately, administrative data, social media data, program evaluation, and community needs assessments are all readily available sources of data which are increasingly being used to push for social justice and meaningful program development and policy change. This course covers research methodologies and statistics, but with a focus on their application as leaders and innovators. The purpose is to provide students with the practical and conceptual skills needed to manage, analyze, interpret, and present quantitative findings from data generated through agency operations. Learning how to interpret statistics, visual presentations of statistics, and conceptualizing the measurement and rigorous assessment of new innovations and policy change initiative will be emphasized. Ethical considerations and practical issues on using data originally collected for non-research purposes will also be discussed. The course also introduces students to developments in data science and artificial intelligence which are emerging as new methods to analyze big data within social work. Assignments will be oriented around hands-on work with existing data sources and integrating them into student's work on their capstone innovation and their application to the Social Work Grand Challenges.

**IV. COURSE OBJECTIVES**

Objective #	Course Objectives
	<ol style="list-style-type: none"> <li>1. Understanding of how organizational leaders and policy makers effectively use data to evaluate program performance and advocate for policy change. [DSW #6]</li> <li>2. Practical and applied analytic skills related to publicly available data, including the ability to distill and present numerical findings. [DSW #2]</li> <li>3. Knowledge of federal statutes governing data sharing and the use of administrative records for research / evaluation and real-time case planning. [DSW #9]</li> <li>4. An advanced conceptual understanding of statistical inference and methodologies that allow for the critical and thoughtful review of literature and supervision of rigorous evaluation efforts. [DSW #2]</li> <li>5. The ability to critically appraise AND use data / research to improve social work practice, inform policies, and track agency performance. [DSW #4]</li> </ol>

**V. COURSE FORMAT / INSTRUCTIONAL METHODS**

This course follows a “service-learning” model. Students will be asked to develop assignments that align and inform agency performance goals and broader policy objectives related to the Social Work Grand Challenges. As such, students are given the opportunity to apply their methodological training to a problem that is immediately relevant to the field at large.

Weekly units are organized as a combination of lecture/discussion and the hands-on analysis of publicly available data. In order to solidify connections between the topics covered and Social Work practice and policy, asynchronous lectures will include speakers from the community who will describe the manner in which data are being utilized by their agencies.

**VI. STUDENT LEARNING OUTCOMES**

The following table lists the nine Social Work core competencies as defined by the Council on Social Work Education’s 2015 Educational Policy and Accreditation Standards:

Student Learning Outcomes	
1	Introduce students to how to read research with an understanding of the basics of statistical methods [DSW #1]
2	Facilitate the analysis and discussion of current research, best practices, and gaps in the literature related to their Grand Challenge. [DSW #1]

3	Introduce students core concepts in univariate statistics, inferential statistics (including statistical significance), and basics of multivariable statistics. [DSW #3]
4	Demonstrate an understanding of how leaders in social service organizations, governmental organizations, and policy advocates use data to inform practice and policy. [DSW #6]
5	Demonstrate an understanding of how to conduct an evaluation of their grand challenge innovation capstone project. [DSW #5] i
6	Demonstrate an understanding of how to visually represent data to tell a compelling story to move innovations forward [DSW #2]

## VII. COURSE ASSIGNMENTS, DUE DATES & GRADING

Assignment*	Due Date	% of Final Grade
<b>Assignment 1:</b> Written introduction to Grand Challenge topic and description of data to be used throughout the semester	Unit 6	25%
<b>Assignment 2:</b> Grand Challenge infographic	Unit 11	25%
<b>Assignment 3:</b> Final presentation of Grand Challenge Analysis and submission of slide deck	Unit 14 / 15	40%
<b>Class Participation:</b> Critical commentary on topics in class	Ongoing	10%

\*Additional details for each assignments to be provided on the VAC platform.

**Assignment 1:** Students will be asked to develop a concise (4000 word) research brief outlining a Grand Challenge topic and data sources relevant to understanding the challenge and measuring progress. Students will be asked to provide a brief literature review of their grand challenge capstone area, focussed on quantitative and statistical findings that support the need for their capstone innovation. In addition a deep dive into 3 of these data sources, the methods undergirding the data, and the possible sources of bias are to conclude this assignment.

**Assignment 2:** Using infographic design software (e.g., <https://infogr.am>), students will be asked to develop a digital poster for presenting data concerning their Grand Challenge.

**Assignment 3:** For the final assignment of the semester, students will be asked to submit a detailed slide deck and a 10-15 minute presentation to the class.

**Expectations for Class Participation:** Social workers have an ethical imperative to rely on practices and policies supported by empirical evidence. Throughout this course, students will be challenged to critically

evaluate research findings encountered – particularly those that are cited as justification for either maintaining the practice/policy status quo, or as a call for change. In both discussions and written assignments, students are expected to draw upon data when arguing a particular point and to make explicit those assumptions that fall outside of the evidentiary research base. Students are expected to be active and open-minded participants in group discussions. An inclusive classroom environment will be promoted in which a diversity of perspectives emerge and respectful debates ensue. Students should challenge one another (and the instructor) to consider rival alternatives to one’s hypotheses and to play the role of “skeptic”.

**Expectations for Written Work:** All written assignments must be submitted as single or double spaced documents, typed with an 11 or 12-point font and formatted with 1-inch margins. Text citations and references list must be in correct AMA or APA (6<sup>th</sup> Ed.) format. All sentences must be written in the student’s own words. Ideas, information, and concepts that originated with any other source must always be noted as such. **Material that is not correctly cited is considered plagiarized and provides grounds for academic discipline.** Assignments should be carefully proofed for spelling, grammar, and clarity of meaning.

**Other Expectations:** Every student should emerge from this course having contributed to our collective knowledge base through the submission of assignments that align with social work values as set forth by the NASW. These include: 1) service (*by conducting research that addresses social problems among at risk populations served by social workers*); 2) justice (*by using the research to draw informed conclusions about paths for pursuing social change on behalf of vulnerable populations*); 3) dignity and worth of the person (*by completing analyses that are respectful of individuals, culturally sensitive, and inclusive of diversity in all its form*); 4) importance of human relationships (*by undertaking research that considers individuals in the context of the family, community, and other social groups*); 5) integrity (*by conducting ethical research*); and 6) competence (*by developing statistical literacy skills that the student can carry forth into the field*).

Class grades will be based on the following:

Class Grades		Final Grade	
3.85 – 4	A	93 – 100	A
3.60 – 3.84	A-	90 – 92	A-
3.25 – 3.59	B+	87 – 89	B+
2.90 – 3.24	B	83 – 86	B
2.60 – 2.89	B-	80 – 82	B-
2.25 – 2.59	C+	77 – 79	C+
1.90 – 2.24	C	73 – 76	C
		Below – 72	C-

Within the USC Suzanne Dworak-Peck School of Social Work, grades are determined in each class based on the following standards which have been established by the faculty of the School: (1) Grades of A or A- are reserved for student work which not only demonstrates very good mastery of content but which also shows that the student has undertaken a complex task, has applied critical thinking skills to the assignment, and/or has demonstrated creativity in her or his approach to the assignment. The difference between these two grades would be determined by the degree to which these skills have been demonstrated by the student. (2) A grade of B+ will be given to work which is judged to be very good. This grade denotes that a student has demonstrated a more-than-competent understanding of the material being tested in the

assignment. (3) A grade of B will be given to student work which meets the basic requirements of the assignment. It denotes that the student has done adequate work on the assignment and meets basic course expectations. (4) A grade of B- will denote that a student’s performance was less than adequate on an assignment, reflecting only moderate grasp of content and/or expectations. (5) A grade of C would reflect a minimal grasp of the assignments, poor organization of ideas and/or several significant areas requiring improvement. (6) Grades between C- and F will be applied to denote a failure to meet minimum standards, reflecting serious deficiencies in all aspects of a student’s performance on the assignment.

As a professional school, class attendance and participation is an essential part of your professional training and development at the USC Suzanne Dworak-Peck School of Social Work. You are expected to attend all classes and meaningfully participate. For Ground courses, having more than 2 unexcused absences in class may result in the lowering of your grade by a half grade. Additional absences can result in additional deductions. For VAC courses, meaningful participation requires active engagement in class discussions and maintaining an active screen. Having more than two unexcused absences in class may result in the lowering of your grade by a half grade. Additional absences in the live class can result in additional deductions. Furthermore, unless directed by your course instructor, you are expected to complete all asynchronous content and activities prior to the scheduled live class discussion. Failure to complete two asynchronous units before the live class without prior permission may also lower your final grade by a half grade. Not completing additional units can result in additional deductions.

**VIII. REQUIRED AND SUPPLEMENTARY INSTRUCTIONAL MATERIALS & RESOURCES**

Outlined each week in detailed course overview (below).

**Course Overview**

Unit	Topics	Assignments
1	■ Data, Data Everywhere <i>(and why that matters)</i>	
2	■ Critically Consuming Research <i>(and why you should not believe everything you read)</i>	
3	■ Matching Objectives to Data Sources and Methods <i>(and how not all data are created equal)</i>	
4	■ Administrative Data in Public and Nonprofit Sectors <i>(and how we make use of what we have)</i>	
5	■ Developing Program and Policy Evidence <i>(and the critical role of rigorous designs)</i>	
6	■ Data for population surveillance <i>(and the importance of measuring what you want to change)</i>	Assignment #1

Unit	Topics	Assignments
7	■ Data Use, Security, and Ethics <i>(and the role of Federal Law and IRBs)</i>	
8	■ Predictive Analytics and Risk Modeling <i>(and the potential to better target resources)</i>	
9	■ Visualizing Data to Tell Stories <i>(and why a good picture really is worth a thousand words)</i>	
10	■ Foundational issues in statistics <i>(and all we can learn from even simple tables)</i>	
11	■ Inferential statistics <i>(and the relevance of place and time )</i>	Assignment #2
12	■ Multivariable Modeling 101: A Conceptual Overview	
13	■ Multivariable Modeling 102: A Conceptual Overview	
14	■ Student Presentations and Interactive Class Feedback (1)	Assignment #3
15	■ Student Presentations and Interactive Class Feedback (2)	Assignment #3

**STUDY DAYS / NO CLASSES**

**FINAL EXAMINATIONS**

## Unit 1: Data, Data Everywhere (and why that matters)

*“It’s a revolution. We’re really just getting under way. But the march of quantification, made possible by enormous sources of data, will sweep through academia, business and government. There is no area that is going to be untouched.” - Gary King*

### Topics

- Course objectives, syllabus, and assignments
- Relationship between organizational leaders and data
- Data as a foundation for the Social Work Grand Challenges
- How to effectively read research articles

### Required Readings / Viewings

1. Coulton, Goerge, Putnam-Hornstein, & de Haan: “Harnessing Big Data for Social Good: A Grand Challenge for Social Work” <http://aaswsw.org/wp-content/uploads/2015/10/Big-Data-GC-edited-and-formatted-correct-references.pdf>
2. Hans Rosling: “The Joy of Stats” <https://www.youtube.com/watch?v=g9nvLqLM9Y0>
3. Rice, E., Kurzban, S., & Ray, D. (2012). Homeless but connected: the role of heterogeneous social network ties and social networking technology in the mental health outcomes of street-living adolescents. *Community mental health journal*, 48(6), 692-698.

### Other Resources

Harvard Business Review: “Keep Up with Your Quants” <https://hbr.org/2013/07/keep-up-with-your-quants/ar/3>

Petering, R., Rice, E., & Rhoades, H. (2016). Violence in the Social Networks of Homeless Youths: Implications for Network-Based Prevention Programming. *Journal of Adolescent Research*, 31(5), 582-605.

Harris, T., Rice, E., Rhoades, H., Winetrobe, H., & Wenzel, S. (2017). Gender Differences in the Path From Sexual Victimization to HIV Risk Behavior Among Homeless Youth. *Journal of Child Sexual Abuse*, 26(3), 334-351.

Rice, E., Craddock, J., Hemler, M., Rusow, J., Plant, A., Montoya, J., & Kordic, T. (2017). Associations Between Sexting Behaviors and Sexual Behaviors Among Mobile Phone-Owning Teens in Los Angeles. *Child Development*.

Social Work Grand Challenges: <http://aaswsw.org/grand-challenges-initiative/>

Metadata Library for Developmental Sciences: <https://nyu.databrary.org/>

California Open Data Portal: <https://chhs.data.ca.gov/>

Kids Data Portal: <http://www.kidsdata.org/>

City of Chicago Open Data Portal: <https://data.cityofchicago.org/>

Federal Health Data: <http://www.healthdata.gov/>

Web-based Injury Statistics Query and Reporting System (WISQARS):  
<http://www.cdc.gov/injury/wisqars>)

California Child Welfare Indicators Project: [http://cssr.berkeley.edu/ucb\\_childwelfare/](http://cssr.berkeley.edu/ucb_childwelfare/)

Jamie Holmes: “The Case for Teaching Ignorance” <http://www.nytimes.com/2015/08/24/opinion/the-case-for-teaching-ignorance.html>

## Unit 2: Critically Consuming Research (*and why you should not believe everything you read*)

“There are lies, damned lies and statistics.” – Mark Twain (and others...)

### Topics

- Data and research methods 101 (review)
- Sources of bias
- Causal inference

### Required Readings / Viewings

1. John Ioannidis “Why Most Published Research Findings are False”:  
<http://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.0020124>
2. Palinkas, L. A. (2014). Causality and Causal Inference in Social Work: Quantitative and Qualitative Perspectives. *Research on Social Work Practice*.
3. Emily Oster “Flip your thinking on AIDS in Africa”  
[https://www.ted.com/talks/emily\\_oster\\_flips\\_our\\_thinking\\_on\\_aids\\_in\\_africa](https://www.ted.com/talks/emily_oster_flips_our_thinking_on_aids_in_africa)
4. The New Yorker “How a Gay-Marriage Study Went Wrong”  
<http://www.newyorker.com/science/maria-konnikova/how-a-gay-marriage-study-went-wrong>

### Other Resources

The B Files: Case Studies of Bias in Real Life Epidemiologic Studies. “Should we stop drinking coffee? The story of coffee and pancreatic cancer”

FiveThirtyEight: <http://fivethirtyeight.com>

Everything is correlated: <http://www.correlated.org/>

“Are Fats Unhealthy? The Battle Over Dietary Guidelines”  
[http://www.nytimes.com/2015/10/13/upshot/are-fats-unhealthy-the-battle-over-dietary-guidelines.html?rref=upshot&\\_r=0](http://www.nytimes.com/2015/10/13/upshot/are-fats-unhealthy-the-battle-over-dietary-guidelines.html?rref=upshot&_r=0)

David Brockman & Joshua Kalla “Irregularities in LaCour”  
[http://stanford.edu/~dbroock/broockman\\_kalla\\_aronow\\_lg\\_irregularities.pdf](http://stanford.edu/~dbroock/broockman_kalla_aronow_lg_irregularities.pdf)

Engel, R. J., & Schutt, R. K. (2012). Chapter 1 Science, Society, and Social Work Research. In *The practice of research in social work*. Sage Publications.

## Unit 3: Matching Objectives to Data Sources and Methods (*and how not all data are created equal*)

“...let the dataset change your mindset.” – Hans Rosling

### Topics

### Unit 3: Matching Objectives to Data Sources and Methods (*and how not all data are created equal*)

- Data for program evaluation
- Data for continuous quality improvement
- Data for measuring outcomes and accountability

#### Required Readings / Viewings

1. Chris Anderson: “The End of Theory: The Data Deluge Makes the Scientific Method Obsolete” <http://www.wired.com/2008/06/pb-theory/>
2. Coalition for Evidence-Based Policy Making: “Which Study Designs are Capable for Producing Valid Evidence about a Program’s Effectiveness?” <http://coalition4evidence.org/wp-content/uploads/2014/10/Which-Study-Designs-are-Capable-of-Producing-Valid-Evidence-of-Effectiveness.pdf>
3. Bruce D. Meyer & Nikolas Mittag: “Using Linked Survey and Administrative Data to Better Measure Income: Implications for Poverty, Program Effectiveness and Holes in the Safety Net”: NBER Working Paper

#### Other Resources

Engel, R. J., & Schutt, R. K. (2012). Chapter 4 Measurement. In *The practice of research in social work*. Sage Publications.

### Unit 4: Administrative Data in Public and Nonprofit Sectors (*and how we make use of what we have*)

“Big data is like teenage sex: everyone talks about it, nobody really knows how to do it, everyone thinks everyone is doing it, so everyone claims they are doing it...” – Dani Ariely

#### Topics

- Operationalizing concepts using existing data
- Sampling frameworks / defining the universe of records
- Reliability and validity in the context of administrative data
- Structured and unstructured fields

#### Required Readings / Viewings

1. Card, D., Chetty, R., Feldstein, M., & Saez, E. (n.d.) Expanding access to administrative data for research in the United States. *National Science Foundation*. Retrieved November 30, 2015 from: <http://eml.berkeley.edu/~saez/card-chetty-feldstein-saezNSF10dataaccess.pdf>
2. Putnam-Hornstein E, Needell B, & Rhodes AE. (2013). Understanding risk and protective factors for child maltreatment: the value of integrated, population-based data. *Child Abuse & Neglect*, 37(2-3), 116-119. [PMID: 23260115]

#### Other Resources

Engel, R. J., & Schutt, R. K. (2012). Chapter 5 Sampling. In *The practice of research in social work*. Sage Publications.

### Unit 5: Developing Program and Policy Evidence (*and the critical role of rigorous designs*)

*“Every government agency collects data and usually does so as part of its existing business practices, connecting these data and building a research capacity opens whole new areas of policy analysis and reform.” – Actionable Intelligence for Social Policy*

#### Topics

- Using retrospective data to answer prospective questions
- Cost-effective RCTs of social service programs
- Pay for Success Models
- Quasi-experimental evaluations
- Case Study: Orange County Prevention and Early Intervention Program

#### Required Readings / Viewings

1. Ron Haskins: “Social Programs that Work” <http://www.nytimes.com/2015/01/01/opinion/social-programs-that-work.html>
2. Stuart Buck & Josh McGee: “Why Government Needs More Randomized Controlled Trials: Refuting the Myths” [http://www.arnoldfoundation.org/wp-content/uploads/2015/07/RCT\\_FINAL.pdf](http://www.arnoldfoundation.org/wp-content/uploads/2015/07/RCT_FINAL.pdf)
3. Hyatt, S. (2013). More than a roof: How California can end youth homelessness. *California Homeless Youth Project*. <http://cahomelessyouth.library.ca.gov/docs/pdf/More-Than-a-Roof-FINAL.pdf>
4. Hyatt, S., Walzer, B., & Julianelle, P. (2014). *California's Homeless Students: A Growing Population*. CA Homeless Youth Project, CA Research Bureau, CA State Library. [http://cahomelessyouth.library.ca.gov/docs/pdf/CaliforniasHomelessStudents\\_AGrowingPopulation.pdf](http://cahomelessyouth.library.ca.gov/docs/pdf/CaliforniasHomelessStudents_AGrowingPopulation.pdf)

#### Other Resources

Engel, R. J., & Schutt, R. K. (2012). Chapter 7 Group Experimental Designs. In *The practice of research in social work*. Sage Publications.

**Unit 6: Data for population surveillance (and the importance of measuring what you want to change)**

“You are what you measure” – Dan Ariley

**Topics**

- Community-based surveillance methods
- Random sampling based surveillance methods

**Required Readings / Viewings**

1. Rice, E., Barman-Adhikari, A., Rhoades, H., Winetrobe, H., Fulginiti, A., Astor, R., ... & Kordic, T. (2013). Homelessness experiences, sexual orientation, and sexual risk taking among high school students in Los Angeles. *Journal of Adolescent Health, 52*(6), 773-778.
2. Rice, E., Winetrobe, H., & Rhoades, H. (2013). Hollywood homeless youth point-in-time estimate project: an innovative method for enumerating unaccompanied homeless youth. [hhyp.org/wp-content/uploads/2013/02/HHYP\\_Point-in-Time\\_Brief\\_5.pdf](http://hhyp.org/wp-content/uploads/2013/02/HHYP_Point-in-Time_Brief_5.pdf)
3. Putnam-Hornstein E, Webster D, Needell B, & Magruder J. (2011). A public health approach to child maltreatment surveillance. *Child Abuse Review, 20*, 256-273.

**Other Resources**

Culhane, D. P., Fantuzzo, J., Rouse, H. L., Tam, V., & Lukens, J. (2010). Connecting the Dots: The Promise of Integrated Data Systems for Policy Analysis and Systems Reform. *Intelligence for Social Policy*, Retrieved from [http://repository.upenn.edu/spp\\_papers/146](http://repository.upenn.edu/spp_papers/146)

Engel, R. J., & Schutt, R. K. (2012). Chapter 9 Survey Research. In *The practice of research in social work*. Sage Publications.

## Unit 7: Data Use, Security, and Ethics (*and the role of federal laws and IRBs*)

*"Don't be evil" - Google*

### Topics

- Institutional review boards
- Waivers of informed consent / assent
- Information Practices Act
- Health Insurance Portability and Accountability Act (HIPAA)
- Family Educational Rights and Privacy Act (FERPA)

### Required Readings / Viewings

1. Currie, J. (2013). "Big Data" versus "Big Brother": On the appropriate use of large-scale data collections in pediatrics. *Pediatrics*, 131 (Supplement): S127-S132.
2. Petrilu, J. Legal issues in the use of electronic data systems for social science research. [http://impact.sp2.upenn.edu/aisp\\_test/wp-content/uploads/2012/12/0033\\_12\\_SP2\\_Legal\\_Issues\\_Data\\_Systems\\_000.pdf](http://impact.sp2.upenn.edu/aisp_test/wp-content/uploads/2012/12/0033_12_SP2_Legal_Issues_Data_Systems_000.pdf)
3. Stephanie Simon (2014). Big Brother: Meet the Parents <http://www.politico.com/story/2014/06/internet-data-mining-children-107461>

### Other Resources

NASW code of ethics. (n.d.). Available from <http://www.naswdc.org/pubs/code/>

USC's IRB. Retrieved from <http://www.usc.edu/admin/provost/irb/>

Sharing Data for Better Results: A Guide to Building Integrated Data Systems Compatible with Federal Privacy Laws:

<http://www.nlc.org/Documents/Find%20City%20Solutions/IYEF/Data%20Sharing%20for%20Better%20Results.pdf>

## Unit 8: Predictive Analytics and Risk Modeling (*and the potential to better target resources*)

*"Prediction is very difficult, especially if it is about the future."* - Neils Bohr

### Topics

- Predictive risk modeling
- TAY Triage Tool case study
- Artificial Intelligence and the future of predictive modelling

### Required Readings / Viewings

1. Rice, E. (2013). The TAY Triage Tool: A tool to identify homeless transition age youth most in need of permanent supportive housing. [http://www.csh.org/wp-content/uploads/2014/02/TAY\\_TriageTool\\_2014.pdf](http://www.csh.org/wp-content/uploads/2014/02/TAY_TriageTool_2014.pdf)

2. Rice, E., & Rosales, A. (2015). TAY Triage Tool pilots report. [http://www.csh.org/wp-content/uploads/2015/06/TAY-Triage-Tool-Pilots-Report\\_FINAL.pdf](http://www.csh.org/wp-content/uploads/2015/06/TAY-Triage-Tool-Pilots-Report_FINAL.pdf)

### Other Resources

Putnam-Hornstein, E., & Needell, B. (2011). Predictors of child protective service contact between birth and age five: An examination of California's 2002 birth cohort. *Children and Youth Services Review*, 33(11), 2400-2407.

### Unit 9: Visualizing Data to tell Stories *(and why a good picture really is worth a thousand words)*

*“In good information visualization, there are no rules, no guidelines, no templates, no standard technologies, no stylebooks... You must simply do whatever it takes.” – Edward Tufte*

### Topics

- Using charts and tables to summarize data
- The role of technology in visualizing statistics
- Messaging with infographics

### Required Readings / Viewings

1. Hans Rosling: “The Best Stats You’ve Ever Seen”  
<https://www.youtube.com/watch?v=hVimVzgtD6w>
2. Tableau: “Data Visualisation Literacy: Learning to See” <http://www.tableau.com/learn/webinars/data-literacy-learning-to-see>
3. David McCandless: “The Beauty of Data Visualization”  
[http://www.ted.com/talks/david\\_mccandless\\_the\\_beauty\\_of\\_data\\_visualization?language=en](http://www.ted.com/talks/david_mccandless_the_beauty_of_data_visualization?language=en)

### Other Resources

“Junk Charts” (Recycling chart junk as junk art w/ statistician Kaiser Fung):

<http://junkcharts.typepad.com/>

“Visualizing Data” <http://www.visualisingdata.com/blog/>

Infographics: <https://infoagr.am/>

## Unit 10: Foundational concepts in statistics (and all we can learn from even simple tables)

“Discovery consists of seeing what everyone has seen and thinking what no one has thought.” - Albert Szent-Gyorgyi

### Topics

- Review of univariate statistics
- Probability distributions
- Means, proportions, rates, and ratios

### Required Readings

Hoffman, R. D. (2003). Internet glossary of statistical terms. Retrieved from <http://www.animatedsoftware.com/statglos/statglos.htm>

Rhoades, H., Winetrobe, H., & Rice, E. (2015). Pet ownership among homeless youth: Associations with mental health, service utilization and housing status. *Child Psychiatry & Human Development*, 46(2), 237-244.

### Other Resources

<https://dornsife.usc.edu/mathcenter/probabilty-and-statistics/>

## Unit 11: Inferential Statistics

“I have no data yet. It is a capital mistake to theorize before one has data. Insensibly one begins to twist facts to suit theories, instead of theories to suit facts.” – Arthur Conan Doyle

### Topics

- T-tests, ANOVA,  $\chi^2$  test, z-test
- p-values: statistical significance vs. practical significance

### Required Readings / Viewings

1. Christie Aschwanden “Not Even Scientists Can Easily Explain p-Values”: <http://fivethirtyeight.com/features/not-even-scientists-can-easily-explain-p-values/>
2. Rice, E., Lester, P., Flook, L., Green, S., Valladares, E. S., & Rotheram-Borus, M. J. (2009). Lessons learned from “integrating” intensive family-based interventions into medical care settings for mothers living with HIV/AIDS and their adolescent children. *AIDS and Behavior*, 13(5), 1005.
3. Winetrobe, H., Rhoades, H., Rice, E., Milburn, N., & Petering, R. (2017). “I’m not homeless, I’m houseless”: identifying as homeless and associations with service utilization among Los Angeles homeless young people. *Journal of Social Distress and the Homeless*, 26(1), 16-24.

## Other Resources

<https://dornsife.usc.edu/mathcenter/probabilty-and-statistics/>

## Unit 12: Multivariable Modeling 101: A Conceptual Overview

*“All models are wrong, but some are useful” – George E.P. Box*

### Topics

- Linear and logistic regression
- Generalized linear models

### Required Readings / Viewings

1. “The Discovery of Statistical Regression”: <http://priceconomics.com/the-discovery-of-statistical-regression/>
2. Rice, E., Monro, W., Barman-Adhikari, A., & Young, S. D. (2010). Internet use, social networking, and HIV/AIDS risk for homeless adolescents. *Journal of Adolescent Health, 47*(6), 610-613.

### Other Resources

<https://dornsife.usc.edu/mathcenter/probabilty-and-statistics/>

## Unit 13: Multivariable Modeling 102: A Conceptual Overview for Non-Statisticians

*“Knowing is not enough; we must apply. Willing is not enough; we must do.” - Johann Wolfgang von Goethe*

### Topics

- Survival analysis
- Hierarchical models
- Structural equation models

### Required Readings

1. Putnam-Hornstein E. (2013). Hierarchical modeling: applications to social work. *Journal of Social Work, 13*(6), 599-615.
2. Putnam-Hornstein, E. (2011). Report of maltreatment as a risk factor for injury death: A prospective birth cohort study. *Child Maltreatment, 16*(3), 163-174.
3. Fulginiti, A., Pahwa, R., Frey, L. M., Rice, E., & Brekke, J. S. (2016). What factors influence the decision to share suicidal thoughts? A multilevel social network analysis of disclosure among individuals with serious mental illness. *Suicide and Life-Threatening Behavior, 46*(4), 398-412.
4. Rice, E., Stein, J. A., & Milburn, N. (2008). Countervailing social network influences on problem behaviors among homeless youth. *Journal of adolescence, 31*(5), 625-639.

## Other Resources

<https://dornsife.usc.edu/mathcenter/probabilty-and-statistics/>

## Unit 14: AI for Social Good

*“In God we trust, all others must bring data.” – W. Edwards Deming*

### Topics

- AI for Social Good
- Student presentations and discussion (Group 1)

### Required Readings / Viewings

Rice, E. & Tambe, M. (2018). Merging Social Work Science and Computer Science for Social Good. In Tambe, M., & Rice, E. (Eds.). *Artificial Intelligence and Social Work* (pp. 3-15). Cambridge University Press.

Seif, G. (2018). The 5 Basic Statistics Concepts Data Scientists Need to Know. Retrieved from <https://towardsdatascience.com/the-5-basic-statistics-concepts-data-scientists-need-to-know-2c96740377ae>

### Other Resources

Tambe, M., & Rice, E. (Eds.). (2018). *Artificial Intelligence and Social Work*. Cambridge University Press.

## Unit 15: Machine Learning, Big Data and the future of Evaluation

“Without data you’re just another person with an opinion” – W. Edwards Deming

### Topics

- Machine Learning, Big Data and the future of evaluation
- Student presentations and discussion (Group 2)

### Required Readings / Viewings

Beam, A. L., & Kohane, I. S. (2018). Big data and machine learning in health care. *Jama*, 319(13), 1317-1318.

Char, D. S., Shah, N. H., & Magnus, D. (2018). Implementing machine learning in health care—addressing ethical challenges. *The New England journal of medicine*, 378(11), 981.

Holzinger, A. (2016). Interactive machine learning for health informatics: when do we need the human-in-the-loop?. *Brain Informatics*, 3(2), 119-131.

**STUDY DAYS / NO CLASSES**

**FINAL EXAMINATIONS**

## University Policies and Guidelines

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## IX. ATTENDANCE POLICY

Students are expected to attend every class and to remain in class for the duration of the unit. Failure to attend class or arriving late may impact your ability to achieve course objectives which could affect your course grade. Students are expected to notify the instructor by email ([xxx@usc.edu](mailto:xxx@usc.edu)) of any anticipated absence or reason for tardiness.

University of Southern California policy permits students to be excused from class for the observance of religious holy days. This policy also covers scheduled final examinations which conflict with students' observance of a holy day. Students must make arrangements *in advance* to complete class work which will be missed, or to reschedule an examination, due to holy days observance.

Please refer to Scampus and to the USC School of Social Work Student Handbook for additional information on attendance policies.

## X. ACADEMIC CONDUCT

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, "Behavior Violating University Standards" <https://policy.usc.edu/scampus-part-b/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

## XI. SUPPORT SYSTEMS

*Student Counseling Services (SCS) – (213) 740-7711 – 24/7 on call*

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention. [engemannshc.usc.edu/counseling](http://engemannshc.usc.edu/counseling)

*National Suicide Prevention Lifeline – 1 (800) 273-8255*

Provides free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week. [www.suicidepreventionlifeline.org](http://www.suicidepreventionlifeline.org)

*Relationship and Sexual Violence Prevention Services (RSVP) – (213) 740-4900 – 24/7 on call*

Free and confidential therapy services, workshops, and training for situations related to gender-based harm. [engemannshc.usc.edu/rsvp](http://engemannshc.usc.edu/rsvp)

*Sexual Assault Resource Center*

For more information about how to get help or help a survivor, rights, reporting options, and additional resources, visit the website: [sarc.usc.edu](http://sarc.usc.edu)

*Office of Equity and Diversity (OED)/Title IX Compliance – (213) 740-5086*

Works with faculty, staff, visitors, applicants, and students around issues of protected class. [equity.usc.edu](http://equity.usc.edu)

*Bias Assessment Response and Support*

Incidents of bias, hate crimes and micro aggressions need to be reported allowing for appropriate investigation and response. [studentaffairs.usc.edu/bias-assessment-response-support](http://studentaffairs.usc.edu/bias-assessment-response-support)

*The Office of Disability Services and Programs*

Provides certification for students with disabilities and helps arrange relevant accommodations. [dsp.usc.edu](http://dsp.usc.edu)

*USC Support and Advocacy (USCSA) – (213) 821-4710*

Assists students and families in resolving complex issues adversely affecting their success as a student EX: personal, financial, and academic. [studentaffairs.usc.edu/ssa](http://studentaffairs.usc.edu/ssa)

*Diversity at USC*

Information on events, programs and training, the Diversity Task Force (including representatives for each school), chronology, participation, and various resources for students. [diversity.usc.edu](http://diversity.usc.edu)

*USC Emergency Information*

Provides safety and other updates, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible. [emergency.usc.edu](http://emergency.usc.edu)

*USC Department of Public Safety – UPC: (213) 740-4321 – HSC: (323) 442-1000 – 24-hour emergency or to report a crime.* Provides overall safety to USC community. [dps.usc.edu](http://dps.usc.edu)

**XII. ADDITIONAL RESOURCES**

Students enrolled in the Virtual Academic Center can access support services for themselves and their families by contacting Perspectives, Ltd., an independent student assistance program offering crisis services, short-term counseling, and referral 24/7. To access Perspectives, Ltd., call 800-456-6327.

**XIII. STATEMENT ABOUT INCOMPLETES**

The Grade of Incomplete (IN) can be assigned only if there is work not completed because of a documented illness or some other emergency occurring after the 12th week of the semester. Students must NOT assume that the instructor will agree to the grade of IN. Removal of the grade of IN must be instituted by the student and agreed to be the instructor and reported on the official “Incomplete Completion Form.”

**XIV. POLICY ON LATE OR MAKE-UP WORK**

Papers are due on the day and time specified. Extensions will be granted only for extenuating circumstances. If the paper is late without permission, the grade will be affected.

**XV. POLICY ON CHANGES TO THE SYLLABUS AND/OR COURSE REQUIREMENTS**

It may be necessary to make some adjustments in the syllabus during the semester in order to respond to unforeseen or extenuating circumstances. Adjustments that are made will be communicated to students both verbally and in writing.

## **XVI. CODE OF ETHICS OF THE NATIONAL ASSOCIATION OF SOCIAL WORKERS (OPTIONAL)**

*Approved by the 1996 NASW Delegate Assembly and revised by the 2017 NASW Delegate Assembly <https://www.socialworkers.org/About/Ethics/Code-of-Ethics/Code-of-Ethics-English>*

### **Preamble**

The primary mission of the social work profession is to enhance human well-being and help meet the basic human needs of all people, with particular attention to the needs and empowerment of people who are vulnerable, oppressed, and living in poverty. A historic and defining feature of social work is the profession's focus on individual well-being in a social context and the well-being of society. Fundamental to social work is attention to the environmental forces that create, contribute to, and address problems in living.

Social workers promote social justice and social change with and on behalf of clients. "Clients" is used inclusively to refer to individuals, families, groups, organizations, and communities. Social workers are sensitive to cultural and ethnic diversity and strive to end discrimination, oppression, poverty, and other forms of social injustice. These activities may be in the form of direct practice, community organizing, supervision, consultation, administration, advocacy, social and political action, policy development and implementation, education, and research and evaluation. Social workers seek to enhance the capacity of people to address their own needs. Social workers also seek to promote the responsiveness of organizations, communities, and other social institutions to individuals' needs and social problems.

The mission of the social work profession is rooted in a set of core values. These core values, embraced by social workers throughout the profession's history, are the foundation of social work's unique purpose and perspective:

- Service
- Social justice
- Dignity and worth of the person
- Importance of human relationships
- Integrity
- Competence

This constellation of core values reflects what is unique to the social work profession. Core values, and the principles that flow from them, must be balanced within the context and complexity of the human experience.

## **XVII. ACADEMIC DISHONESTY SANCTION GUIDELINES**

Some lecture slides, notes, or exercises used in this course may be the property of the textbook publisher or other third parties. All other course material, including but not limited to slides developed by the instructor(s), the syllabus, assignments, course notes, course recordings (whether audio or video) and examinations or quizzes are the property of the University or of the individual instructor who developed them. Students are free to use this material for study and learning, and for discussion with others, including those who may not be in this class, unless the instructor imposes more stringent requirements. Republishing or redistributing this material,

including uploading it to web sites or linking to it through services like iTunes, violates the rights of the copyright holder and is prohibited. There are civil and criminal penalties for copyright violation. Publishing or redistributing this material in a way that might give others an unfair advantage in this or future courses may subject you to penalties for academic misconduct.

### **XVIII. COMPLAINTS**

If you have a complaint or concern about the course or the instructor, please discuss it first with the instructor. If you feel cannot discuss it with the instructor, contact the chair of the [xxx]. If you do not receive a satisfactory response or solution, contact your advisor and/or Associate Dean and MSW Chair Dr. Leslie Wind for further guidance.