

Spring 2022 Faculty Research Mini-seminar Series

A Collaboration of CSUSB Faculty Development, Academic Research, and the UCR Graduate Division/GradQuant

Description of the joint university series:

CSUSB Component:

The Faculty Research Mini-seminar Series is designed to provide a quick overview—just one hour—to busy faculty regarding various research “*basics*” and specific research *methods*. Experts in various areas provide a quick overview of various research methods and strategies, do and don’t do tips, examples, and current trends in a faculty-only format. While the thrust of the seminars is generally at a basic level, some of the more advanced methods offer experts opportunities to interact during the seminar. Slides or notes are shared after all sessions. All CSUSB faculty—lecturers, tenured/tenure track, and research-active administrators—are welcomed as are UCR post-docs. Some graduate students may join as well, but only on a special request basis.

1. **Using GIS in research:** January 26 (Wednesday), 12-1, Zoom
<https://csusb.zoom.us/meeting/register/tZMsdeygpzgoE9RaV7cvgrnUA3tcvF-UUaUX>
2. **Tidyverse:** February 4 (Friday), 12-1, Zoom
https://csusb.zoom.us/meeting/register/tZUkc-6hrzkrGNM_TZUwUn3sP-8Fq1IyLxX3
3. **3D Scanning, Modelling, and Analysis:** February 9 (Wednesday), 12-1, Zoom
<https://csusb.zoom.us/meeting/register/tZwtd-6vrjIoE9aWDPpl-xQHJZdDCjtnIPGh>
4. **Tips on secondary data analysis in the health and social sciences.** February 16 (Wednesday), 12-1, Zoom
<https://csusb.zoom.us/meeting/register/tZwtdeusqj4iHtzNc8kBgoq9414jXC5nOXBt>
5. **Researching energy storage and distribution:** February 18 (Friday), 12-1, Zoom
<https://csusb.zoom.us/meeting/register/tZMldOmqrj8rGtBIWzF3w6xrrouHCxmAOVHFfn>
6. **DEI-related research at CSUSB:** February 25 (Friday), 12-1, Zoom
https://csusb.zoom.us/meeting/register/tZAuduGorjosHtU74fYbzXZPP_7Of7EB8hj9
7. **Participatory action research:** March 4 (Friday), 12-1, Zoom
https://csusb.zoom.us/meeting/register/tZckcuipqj8jHNTT_jBS6t_u7E79a2cgGfKI
8. **Tips on creating a good survey and getting a good response:** March 8 (Tuesday), 12-1, Zoom
<https://csusb.zoom.us/meeting/register/tZYod-6gpjksGtPKvcttEQN0gPTNuShsoDJe>
9. **Discourse analysis:** March 16 (Wednesday), 12-1, Zoom
<https://csusb.zoom.us/meeting/register/tZEkdO6hrzorEtRmHV8RiGvONERuAvJWPhsE>
10. **Genetic engineering:** March 18 (Friday), 12-1, Zoom
<https://csusb.zoom.us/meeting/register/tZMod-6uqjwoHd3ZPwx8xU3HSHO3yseW9fKA>
11. **Structural equation modeling (SEM):** March 22, (Tuesday), 12-1, Zoom
<https://csusb.zoom.us/meeting/register/tZlucGtqT0oG9DxGzJs8kRGLxA-MOeMIGTn>
12. **Business statistics databases:** March 23 (Wednesday), Zoom
https://csusb.zoom.us/meeting/register/tZ0sfuioqT8tGdzt0IyfrWu_LG8Ge0Kjoc6O
13. **Doing action research:** April 6 (Wednesday), Zoom
<https://csusb.zoom.us/meeting/register/tZYlcmhrTovG9U85xIdGTn417vfTAjgTd69>

14. **Best and current practices in focus groups, and in-depth interviews:** April 8 (Friday), 12-1, Zoom <https://csusb.zoom.us/meeting/register/tZYof-mtqDwrEtE0RZ6VAV48sRukQS59Ujhq>
15. **Social media as a medium of research:** April 13 (Wednesday), 12-1, Zoom <https://csusb.zoom.us/meeting/register/tZYpc-2tqz0iHtaeSL7zrgO68WOB0rMsSrrM>
16. **BayesFactor (software program):** April 15 (Friday), 12-1, Zoom https://csusb.zoom.us/meeting/register/tZUrfuCorjwoHtEq4esvWQmm3_70hOSOX9DH
17. **How to publish case studies:** April 22 (Friday), 12-1, Zoom <https://csusb.zoom.us/meeting/register/tZYvd-Cgrj8jE9Nd-c6lt4qXHIaksO6Z-a9B>

CSUSB seminars with dates to be determined:

1. **Tips on Publishing Research with Small Samples**
2. **Exploratory factor analysis**

The UCR seminar series component:

The UCR Graduate Quantitative Methods Center (GradQuant; <https://gradquant.ucr.edu>) series are available to all CSUSB faculty and UCR doctoral students & postdoctoral scholars. Visit <https://ucr.mywconline.com/> to register.

1. **Introduction to GitHub**
Thursday, January 13, 2022; 11 am - 1 pm; Zoom
2. **ANOVA**
Tuesday, January 18, 2022; 11 am - 1 pm; Zoom
3. **Categorical Data Analysis**
Tuesday, January 25, 2022; 10 am - 12 pm; Zoom
4. **Introduction to SQL**
Thursday, February 3, 2022; 3-5 pm; Zoom
5. **Experimental Design**
Monday, February 7, 2022; 2-4 pm; Zoom
6. **Introduction to Python**
Tuesday, February 8, 2022; 11 am - 1 pm; Zoom
7. **Multidimensional Data Analysis**
Tuesday, February 15, 2022; 10 am - 12 pm; Zoom
8. **Data Visualization in Python**
Wednesday, February 16, 2022; 2-4 pm; Zoom
9. **Introduction to ImageJ**
Wednesday, February 23, 2022; 2-4 pm; Zoom
10. **Data Visualization in R**
Thursday, February 24, 2022; 10 am - 12 pm; Zoom
11. **Introduction to Bioinformatics**
Wednesday, March 2, 2022; 2-4 pm; Zoom
12. **Introduction to Web APIs Using Python**
Thursday, March 10, 2022; 3-5 pm; Zoom

For workshop descriptions, visit <https://gradquant.ucr.edu/programs/workshops/winter-2022>.

SEMINAR DESCRIPTIONS; PRESENTERS/DISCUSSANTS

1. **Using GIS in research: Bo Xu, Jennifer Alford, Yolonda Youngs, Rajrani Kalra**

The use of GIS in social science and humanities research can help to create a better analysis of studied interactions and phenomena. Maps are able to supplement ethnographic approaches – and while grafting data into visual form may prove to be tricky, it provides a more robust analysis of the data. GIS can also help a researcher cross disciplinary boundaries when working on an interdisciplinary project or question. Areas like Geography, Psychology, Sociology, Economics, and Political Science can be better explored with GIS when spatial data is a part of the study. Examples include analyzing political elections, population distribution, land use, environmental degradation, along with how any of these (or other) variables interact with each other.

2. **Tips on creating a good survey and getting a good response: Brittany Bloodhart**

Survey research is defined as "the collection of information from a sample of individuals through their responses to questions." This type of research allows for a variety of methods to recruit participants, collect data, and utilize various methods of instrumentation. Survey research has developed into a rigorous approach to do research, with scientifically tested strategies detailing who to include (representative sample), what and how to distribute (survey method), and when to initiate the survey and follow up with non-responders (reducing non-response error), in order to ensure a high-quality research process and outcome.

3. **Tidyverse: Pablo Gomez**

As scientists, we spend a considerable amount of our time cleaning, selecting, and managing our data; yet, most of us never received formal instruction on such methods and hence have developed idiosyncratic ways to wrangle data. These methods are often not sharable, not reproducible, and —I will speak for myself— are not practices we are particularly proud of. This workshop will demonstrate how a set of tools within R called the Tidyverse can streamline your data management by making it transparent, shareable, and computationally reproducible. These tools are widely used in Data-Science and are intuitive and easy to learn. The last part of the hour will include a hands-on exercise in which participants will transform a raw and noisy data file and select the relevant information to make it suitable for analyses and tables.

4. **3D Scanning, Modelling, and Analysis: Matthew des Lauriers + TBA**

Photogrammetry is the science and technology of obtaining reliable information about physical objects and the environment through the process of recording, measuring and interpreting photographic images and patterns of electromagnetic radiant imagery and other phenomena. There are many variants of photogrammetry. One example is the extraction of three-dimensional measurements from two-dimensional data (i.e. images); for example, the distance between two points that lie on a plane parallel to the photographic image plane can be determined by measuring their distance on the image, if the scale of the image is known..

5. **Tips on secondary data analysis in the health and social sciences: Benjamin Becerra**

Research does not always involve collection of data from the participants. There is huge amount of data that is being collected through the routine management information systems and other surveys or research activities. The existing data can be analyzed to generate new hypotheses or answer critical research questions. This saves lots of time, money and other resources. Also, data from large sample surveys may be of higher quality and representative of the population. It avoids repetition of research & wastage of resources by detailed exploration of existing research

data and also ensures that sensitive topics or hard to reach populations are not under-researched. However, there are certain ethical issues pertaining to secondary data analysis which should be taken care of before handling such data.

6. Researching energy storage and distribution: Alfredo Martinez-Morales or designee (UCR)

An important part of climate change is devising better energy storage and distribution, particularly in the area of renewable sources. This seminar will explore some of the research methods being used by the Winston Chung Global Energy Center at UCR. Some of the areas that will be reviewed relate to battery and fuel cells, super capacitors, energy grid-integration, and challenges with renewable energy storage.

7. Dialogue on Diversity, equity, and inclusion (DEI) research at CSUSB: Facilitated by Francisca Beer, Jane Chin Davidson, Deirdre Lanesskog, Wagner Prado, Karen Escalante

There is an enormous amount of diversity, equity, and inclusion research at CSUSB. The seminar will provide a short overview of the field of DEI research, and then provide current examples. Time will be set aside for a discussion about how to better collaborate on DEI research at CSUSB.

8. Participatory Action Research: John Reitzel

Participatory action research (PAR) is an approach to action research emphasizing participation and action by members of communities affected by that research. It seeks to understand the world by trying to change it, collaboratively and following reflection. PAR emphasizes collective inquiry and experimentation grounded in experience and social history. Within a PAR process, communities of inquiry and action evolve and address questions and issues that are significant for those who participate as co-researchers. PAR contrasts with mainstream research methods, which emphasize controlled experimentation, statistical analysis, and reproducibility of findings. PAR practitioners make a concerted effort to integrate three basic aspects of their work: participation (life in society and democracy), action (engagement with experience and history), and research (soundness in thought and the growth of knowledge).

9. Discourse analysis: Sunny Hyon

Discourse analysis is a blanket term for a range of qualitative research approaches used in analyzing the use of language in social contexts. Researchers employ these techniques to understand the world by investigating the underlying meaning of what people say and how they say it, whether in face-to-face conversation, documents, non-verbal interaction, or images. For example, qualitative researchers may examine how people in a given setting use a particular word to understand their upbringing or the influences other people have on them. Likewise, researchers may deconstruct and analyze words written centuries ago to understand the writer's situation and get some general evidence about the writer's society at that particular time. In general, discourse analysis involves the examination of language beyond the sentence to understand how it functions in a social context. Some of the materials researchers use for discourse analysis include books, newspapers, marketing materials, government documents, conversations, and interviews.

10. Genetic editing and engineering: Alan McHughen (UCR)

Genome or gene editing has "come of age" in the last decade, and has become increasingly accessible for a broader set of researchers to take advantage of as technologies have been refined. There are a number of gene engineering and editing systems such as CRISPR (clustered regularly interspersed short palindromic repeat) site-specific nuclease system. This short

seminar will briefly review (1) the differences/similarities in genetic engineering and gene editing, and (2) examples of how these methods are being used at UCR and CSUSB.

11. Structural equation modeling (SEM) Jody Ullman

Structural equation modeling (SEM) is a label for a diverse set of methods used by scientists in both experimental and observational research across the sciences, business, and other fields. It is used most in the social and behavioral sciences. A definition of SEM is difficult without reference to highly technical language, but a good starting place is the name itself. SEM involves the construction of a model, an informative representation of some observable or theoretical phenomenon. In this model, different aspects of a phenomenon are theorized to be related to one another with a structure. This structure is a system of equations, but it is usually designed on paper or using a computer with arrows and symbols (also known as path notation). The structure implies statistical and often causal relationships between variables, error terms and can include multiple equations. The equation (or equations) in SEM are mathematical and statistical properties that are implied by the model and its structural features, and then estimated with statistical algorithms (usually based on matrix algebra and generalized linear models) using experimental or observational data.

12. Business statistics databases: Hang Pei + Gilna Samuel

Wharton Research Data Services (WRDS) is a comprehensive, Internet-based data research service used by academic, government, non-profit institutions, and corporate firms. It manages the data and delivers it in a unified and consistent form. WRDS provides the user with one location to access over 200 terabytes of data across multiple disciplines including Finance, Marketing, and Economics.

13. Doing action research: Shannon Sparks

Action research is a philosophy and methodology of research generally applied in the social sciences. It seeks transformative change through the simultaneous process of taking action and doing research, which are linked together by critical reflection. Kurt Lewin described it as "a comparative research on the conditions and effects of various forms of social action and research leading to social action" that uses "a spiral of steps, each of which is composed of a circle of planning, action and fact-finding about the result of the action". Action research is common in organizations and education. It tends to be more situationally contextualized, therefore less generalizable, than traditional research. In order to publish the results of action research, generally one must have a well-designed (if evolving plan), have done a solid literature review prior to the research, and keep an eye on the applicability of the results for other professionals.

14. Contrasting the uses and practices in focus groups versus in-depth interviews: Melika Kordrostami

There are variety of methods to conduct qualitative research to help understand consumer's opinions, beliefs, attitudes & perceptions on a given subject of interest. The most common ones being focus group discussions and in-depth interviews. Focus Groups are a group of interacting individuals, brought together by a moderator or interviewer, who drives the group and its interaction to gain information about a specific research topic. In-depth interviews are where the researcher interacts with respondents on an individual level, one respondent at a time. Both methods are equally important & effective.

15. Social media as a medium of research: Meredith Conroy

Social media research is the process of analyzing social media data to conduct quantitative (and at times qualitative) research in order to understand how audiences relate to topics, by using

tools and data extraction techniques. Thanks to advanced social listening and audience intelligence tools and platforms, researchers today are able to aggregate data relating to specific events, topics or within a specific audience group from social media, web, forums, news and blogs. It's a topic that's constantly evolving, with researchers developing new methodologies and techniques to understand the way audiences use social media channels, their behaviors and conversations on those channels. As social media grows in both size and importance, becoming an integral part of daily life, it is a vital new area to apply research tools to begin to understand this rapidly evolving forum for discussion.

16. Bayes Factors: Pablo Gomez

In this seminar, I argue that for most social scientists making inferences about data, a model selection approach based on Bayes factors is well advised. I present a critique of the traditional way to do statistics and argue that p-values are not consistent, are not logical, and do not answer the questions that we tend to care about. A Bayesian approach has important implications in our research agenda, as one can begin to explore differences and invariances. The critique of p-values presented in this demonstration also argues for updating our teaching practices in statistics courses.

17. How to publish case studies: Helena Addae

The case study approach allows in-depth, multi-faceted explorations of complex issues in their real-life settings. The value of the case study approach is well recognized in the fields of business, medicine, law, and policy. Based on our experiences of conducting several business-related case studies, the seminar will reflect on the different types of case study design, the specific research questions this approach can help answer, the data sources that tend to be used, and the particular advantages and disadvantages of employing this methodological approach. Key pointers to aid those designing and appraising proposals for conducting case study research will be provided.

18. Tips on Publishing Research with Small Samples and the Intersection of Qualitative and Quantitative Research: Golge Seferoglu

Given the large number of quality journals today (the Web of Science classifies 25,000 as having an Impact Factor or having an "emerging sources" designation), there are ample opportunities to publish a variety of types of "qualitative" research: theoretical/analytical, ethnographic, normative, case studies, content analysis, etc. This seminar will look at the intersection of qualitative and "quantitative" research: when researchers use numeric data but a small sample size and rely on descriptive statistics instead of multivariate analysis or other more sophisticated techniques. This seminar will discuss two published examples of research using a small number of cases that illustrate effectiveness and best practices. Seminar topics will include: when using small samples make sense, how to make small samples more "robust," and the use of mixed methods (e.g., descriptive data as well as focus groups), and among others.

19. Exploratory factor analysis: exploratory and confirmatory, McIntyre

Exploratory and confirmatory factor analyses are methods commonly used in the social sciences in order to study the structure of relatively large sets of variables. They are known as EFA and CFA respectively. Exploratory factor analysis is normally conducted as an initial tool to determine the better explanations, and confirmatory allows the researcher to test the exact hypothesis that a relationship between the observed variables and the underlying latent factor exists at an acceptable level of confidence. This short seminar will provide a brief overview of when to use these methods, some basics regarding how they are used, and a couple of examples of actual usage. The seminar will be introductory. Future seminars will cover these methods at

an intermediate level. However, researchers who use these methods are strongly urged to participate in this seminar as commenters, advocates, and resources.