SWK: 8408 Statistics I for Social Work

~Avoid the top of the Bell Curve - Everyone there is Normal~

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Class Website

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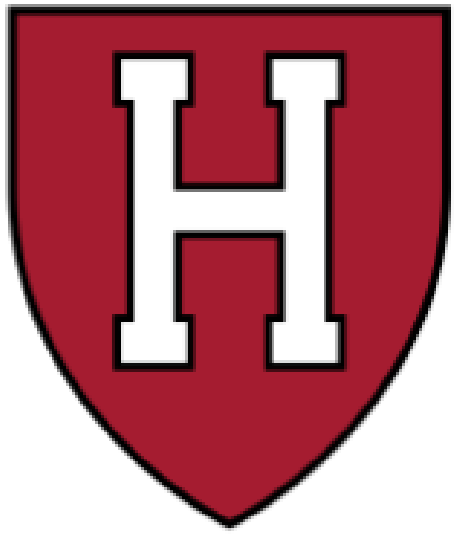
Introduction



Substantive Focus

1. violence & victims
2. drug fatality & overdose
3. systems overlap
4. trauma sequelae

Methodological Focus

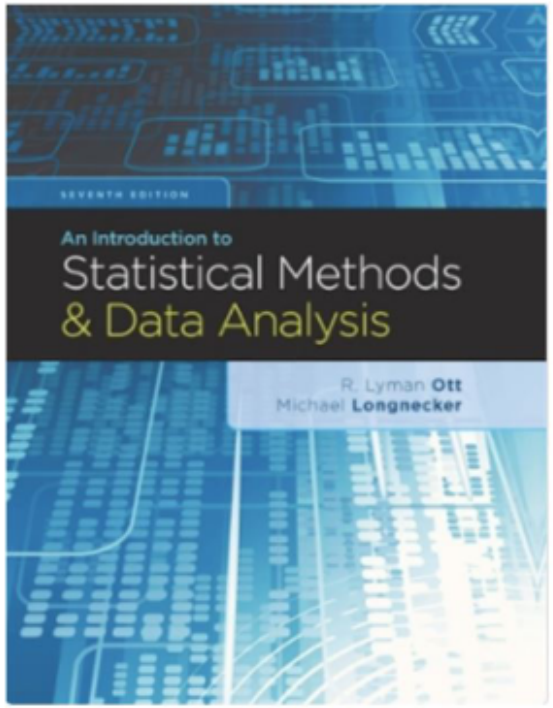
1. spatial & spatiotemporal analyses
2. latent variable models
3. structural equation models
4. multilevel models

Frameworks

1. socio-ecological
2. social vulnerability
3. polyvictimization
4. anti-racist

Textbooks

An Introduction to Statistical Methods and Data Analysis, 6th Edition. **Lyman Ott and Micheal T. Longnecker, Duxbury, 2010; ISBN-13: 978-1305269477**



Textbooks

OpenIntro: Data Sets and Supplemental Functions from 'OpenIntro' Textbooks and Labs. Çetinkaya-Rundel M, Diez D, Bray A, Kim A, Baumer B, Ismay C, Paterno N, Barr C (2023).

Class Policies

1. Meeting times

- We will meet in person on Fridays from 1-3:45.
- *Note:* There will be times when we have to meet on Zoom

2. Exams

- There will be a midterm exam on
- There will be an optional final exam

Class Policies

1. Assignments

- Upload to Canvas by 11:59pm on due date
- Lowest grade will be dropped

2. Labs

- There will be a midterm exam on
- There will be an optional final exam

Websites

ALL materials will be available on Canvas, my databootcamp website or my github repository

- Syllabus
- Announcements
- Lecture slides/notes
- Homework
- Exam and Assignment Schedules
- Data sets for labs and homework
- R code, JASP files

Open Source Software

- **R**: IMHO the best statistical analysis tool ever created (yes, better than python for statistics)
  - I will not be covering R but both R and RStudio (the GUI for R) can be downloaded here RStudio Desktop - Posit
- JASP - A Fresh Way to Do Statistics (jasp-stats.org)
  - "Just Another Statistics Program" JASP offers another great alternative to SPSS
  - In some ways JASP is better than jamovi, but it seems less stable and so it is my second best option
  - There are some benefits to using JASP including flexibility in making plots and nice visualizations for the statistical analyses you are conducting
  - Click here to download JASP
  - JASP in particular provides a great way to both learn statistics and R at the same time
  - Let's take a look at the data library in JASP now

Proprietary Software

OSU has obtained a license for the following software packages:

- **SPSS**: its like a necessary evil - everyone must know how to use SPSS. There are some things that are actually easier in SPSS
- **SAS**: ugh!
- **EXCEL**: can be great to clean your data, particularly if you use the built-in functions.
- **jmp**: this is a very cool data science program from the makers of SAS (the archaic and soon to be extinct software program)

Visit OBF @ OSU to download these packages

Mapping Software

1. Open Source

- **QGIS**: "Quantum Geographical Information Systems" allows you to do geospatial analysis like a (ArcGIS) pro -- QGIS is great for creating, editing, visualizing, analyzing and publishing geospatial information
- The Applications (qgis.org) page gives you a sense of all the cool things you can do with QGIS
- **ArcGIS Map, Pro**

Examples

Let's look at some applications that demonstrate what these packages do

1. Web scraping
2. Data Wrangling
3. Map making
4. Visualization
5. Statistical Analyses

Web Scraping

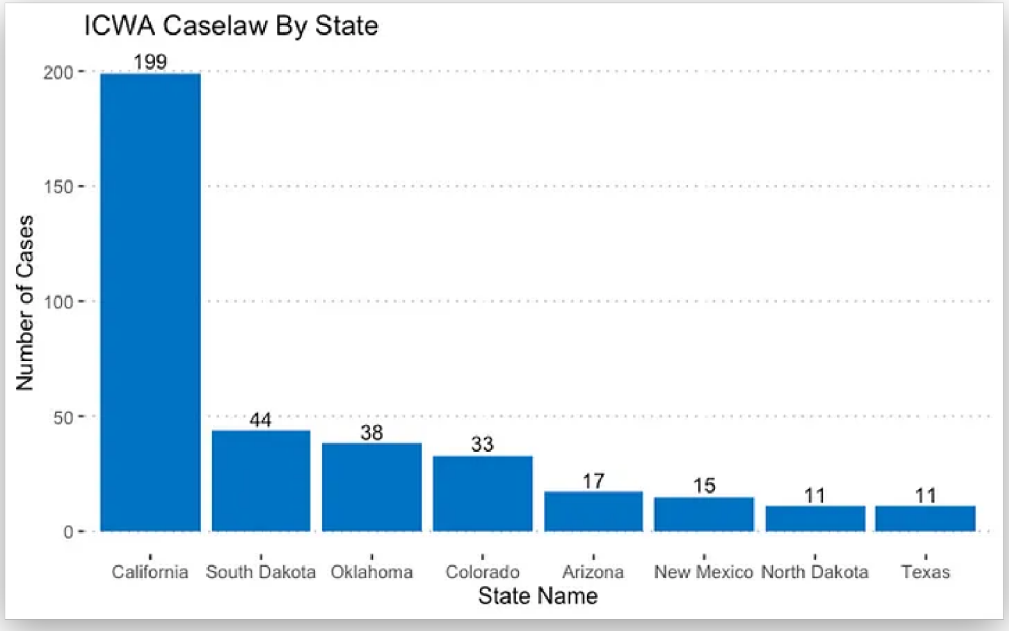
Allows you to **create** a dataset or download lots of data quickly

1. Using RSelenium & Docker to Analyze Child Fatality and Non-Fatalities in Pennsylvania | by Big Data for Social Justice

Web Scraping

Allows you to **visualize** lots of data quickly

2. Mining the “Indian Child Welfare Act” (ICWA) using Harvard Law School’s Caselaw API| by Big Data for Social Justice | Medium



Data Wrangling

Allows you to **analyze** lots of data quickly

1. Analyzing Places Data from the Centers for Disease Control (CDC)

- It would be great to now merge this data with data from DataOhio

3. A note on data mining

Lahaina, Maui (August, 2023)

Sources

- CDC Social Vulnerability Index
- Office of Planning & Sustainable Development
- NASA products for Hawaii Wildfires

Visualization

ASSOCIATIONS BETWEEN NON-SUICIDAL SELF-HARM, WITH AND WITHOUT CO-OCCURRING SUICIDALITY AND ADVERSE CHILD EXPERIENCES (ACES) AMONG GENDER CONFORMING AND NON-CONFORMING ADULTS

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PREVALENCE, CO-OCCURRENCE, AND ADVERSE CHILD EXPERIENCES CUMULATIVE RISK (CR)

Non-Suicidal Self-Injury (NSSI)

- NSSI is defined as "intentionally self-inflicted damage to the surface of the body *without suicidal intent* during the past year, on five or more days.[1] The prevalence of NSSI in the United States is between 4-23%.[2]
- NSSI is strongly associated with suicidal thoughts and behaviors. Lifetime suicide attempt prevalence is 7 times higher among clinical patients with NSSI behavior.[3]
- The prevalence of NSSI is higher among transgender and gender non-conforming adults compared to cisgender adults. About 53% of transgender individuals participate in NSSI.[4]

Adverse Childhood Experiences (ACEs)

- Adverse child experiences are defined as stressful or traumatic events experienced prior to age 18 such as witnessing domestic violence, child maltreatment, living with an alcoholic, and/or someone who has a significant mental health problem.[6] The prevalence of ACEs, particularly child physical abuse and exposure to domestic violence, is higher among transgender youth compared to cisgender youth.
- Individuals who experience one type of adversity typically experience more than one. Trans- and cis- gender individuals differ by *at least* one ACE, on average.[7]
- Multiple compared to singular risk exposures are relatively more damaging from a developmental perspective. The ACE "sum score," defined as the number of adversities experienced before 18, is a commonly used measure of cumulative risk (CR) exposure.[8]

Negative sequelae of cumulative ACE burden

- Previous research demonstrates a "dose-response" relationship between NSSI and ACEs CR such that more ACEs result in greater likelihood of engaging in NSSI behaviors.[9] No previous study has explored associations between NSSI with co-occurring suicidal ideation (SI) and ACEs by gender identity.

METHODOLOGY

Participants and sample

- The current study examined data from a national probability sample of cisgender and transgender individuals in the United States collected between 2016-2018.

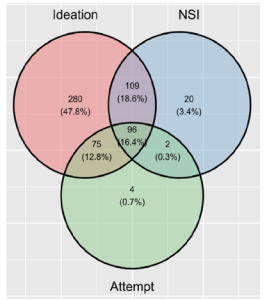
Measures

- Suicidal behavior was measured using the modified version of the "Study to Assess Risk and Resilience in Service Members" (STARRS).[10] Respondents were asked: "Did you ever in your life have thoughts of killing yourself?" (SI) and "Did you ever do something to hurt yourself on purpose, but without wanting to die (e.g., cutting yourself)?" (NSSI). Only those reporting NSSI with co-occurring SI (vs. no NSSI) were analyzed for this study.
- The Adverse Childhood Experiences (ACEs)[11] instrument was used to measure traumatic childhood experiences before age 18.
- We controlled for age, sexual orientation, race, sex at birth, education, and income.

RESEARCH QUESTIONS

- Is there a relationship between ACEs cumulative risk and NSSI with co-occurring SI?
- Does gender identity and/or discriminatory experiences moderate the relationship between ACEs and NSSI with co-occurring SI?

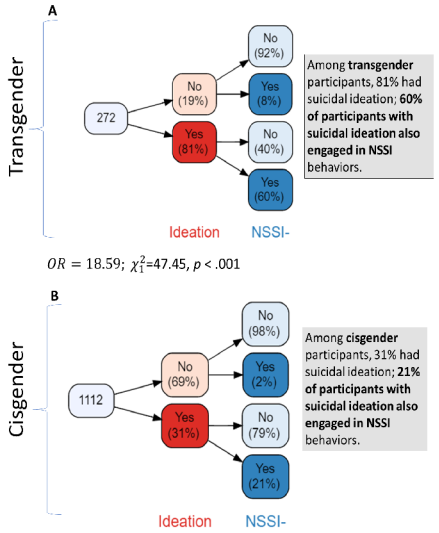
RESULTS



1 in every 6 respondents demonstrates NSSI behavior with co-occurring engagement in both suicidal behavior and ideation during their lifetime.

More than **two-thirds** of the sample reported experiencing co-occurring NSSI and suicidal ideation during their lifetime (N = 205, 35%).

Figure 1. Proportional Venn diagram of lifetime suicide ideation (LSI), attempts (LSA) and NSSI prevalence and co-occurrence among all study participants



Among **transgender** participants, 81% had suicidal ideation; **60% of participants with suicidal ideation also engaged in NSSI** behaviors.

Among **cisgender** participants, 31% had suicidal ideation; **21% of participants with suicidal ideation also engaged in NSSI** behaviors.

Figure 2. Decision tree of suicidal ideation and NSSI for (A) transgender and (B) cisgender individuals

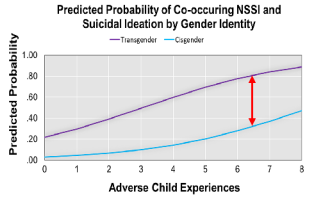
RESULTS

Table 1. Estimated Marginal Means: Predicted Probability of Co-occurring NSSI & Suicidal Ideation by ACEs and Gender Identification

	Probability	
ACEs	*Transgender*	*Cisgender*
0.25⁻ (low)	0.23	0.04
2.33ª (Med)	0.41	0.07
4.40⁺ (High)	0.63	0.14

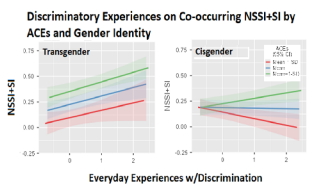
Note. ⁻ mean - 1SD; ª mean; ⁺ mean + 1SD. Analysis controls for race, income, age and sex at birth.

The predicted probability of NSSI+SI for transgender persons is more than **5.75 times higher** when ACEs CR is low and **4.5 times higher** when ACEs is high.



Each additional ACE increases the predicted probability of NSSI+SI regardless of gender identity. The **magnitude** of the differences between trans- and cis-gender individuals increases as ACEs CR increase.

Figure 3. Probability of Co-occurring NSSI+SI by ACEs & gender identity



For trans persons, discrimination increases the probability of co-occurring NSSI+SI at all levels of ACEs CR. Cis persons with more discriminatory experiences are more likely to engage in co-occurring NSSI+SI only when ACEs CR is high.

Figure 4. Probability of Co-occurring NSSI+SI by ACEs & gender identity

POLICY IMPLICATIONS/FUTURE DIRECTIONS

- Trans men and women experience high levels of ACEs (child maltreatment, witnessing domestic violence, living with an alcoholic) and face multiple forms of discrimination.
- The relative impact of ACEs on co-occurring NSSI+SI for those experiencing discrimination is higher among transgender individuals compared to cisgender individuals.
- The number of anti-LGBTQ bills introduced by US lawmakers increased by at least 476.47% between 2014 and June 2023.[12]
- Future studies would benefit from a deeper understanding of how gender-based experiences of discrimination, both institutional and personally mediated, further magnify mental health disparities across diverse gender identities.

Week 1 Lab

For today's lab

1. Make sure you have all required software for the course (Excel, SPSS, R and JASP)
2. Complete the pre-course self-assessment and upload your responses to canvas
3. Navigate the weblinks and datasets presented in this file