

# Zhehao (Kenny) Zhang

Personal Website: [kennyzhang-17.github.io](https://kennyzhang-17.github.io)

Research Interest: Causal Inference, Hypothesis testing, Sensitivity Analysis, Graph Theory

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## EDUCATION

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- **Univeristy of Washington, Seattle** Seattle, WA  
*PhD Student in Statistics (Advisors: Thomas Richardson and Carlos Cinelli)* Sept. 2020 – Current
- **University of California, Santa Barbara** Santa Barbara, CA  
*B.S. in Mathematics; B.S. in Statistics; GPA: 3.94 (Highest Honor)* Sept. 2016 – June. 2020

## PUBLICATION

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C. Segal, Z. Zhang, B. T. Karras, D. Revere, G. Zane, J. G. Baseman. “Early Epidemiological Evidence of Public Health Value of WA Notify, a Smartphone-based Exposure Notification Tool: Modeling COVID-19 Cases Averted in Washington State”. Preprint Available Online.

Z. Zhang, N. LaPierre, B. Hill, C. Cinelli. “PySensemakr: Sensitivity Analysis Tools for Regression Models”. Preprint Available Online.

## RESEARCH EXPERIENCE

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- **Individual Treatment Effect Bounds in Causal Inference** Washington, WA  
*Department of Statistics* Sept.2021 - Present
  - **Research Topics:** Supervised by Professor Thomas Richardson. Characterized prediction intervals for the individual treatment effect (ITE) and established sharp bounds on the distribution functions of ITE. **Preprint will be available on ArXiv soon.**
- **Causal Inference and Sensitivity Analysis** Washington, WA  
*Research Assistant in Department of Statistics* Sept.2021 - Present
  - **Research Topics:** Supervised by Professor Carlos Cinelli. Developed new methods to perform hypothesis testing on causal effects under unmeasured confounders.
  - **Others:** Developed sensitivity analysis tool PySensemakr package. [Github.](#)
- **WA Notify Data Analysis and Evaluation Team; University of Washington** Washington, WA  
*Research Assistant with Department of Public Health* Feb.2021 - Jun.2021
  - **Modeling and Analysis:** Evaluate the effectiveness of Bluetooth notification technology to eliminate the transmission of COVID-19.
- **Toronto Western Hospital; University of Toronto** Toronto, ON  
*Summer IMS Researcher (with Dr. Mojgan Hodaie’s group)* Apr.2020 - Sept 2020
  - **Optimization:** Develop optimization algorithm based on sphere packing and apply to generated multi-modality MRI images.
- **Statistics Department, UCSB** Santa Barbara, CA  
*Researcher, Thesis (with Prof. Alex Shkolnik)* Jan.2019 - Apr.2020
  - **Optimal James-Stein Shrinkage for Regression:** Develop a new James-Stein type estimator for cross-sectional ordinary least square regression with asymptotic optimization guarantee on dispersion bias. Provide theoretical guarantees and numerical experiments. [Thesis.](#)
- **Fields Institute for Mathematical Science** Toronto, ON  
*Summer REU Researcher (with Prof. Andreas Hilfnger)* June.2019 - Sept.2019
  - **Inverse Problem for Stochastic Models:** Inferred rate functions for stochastic models in biological processes. Simulated large-scale continuous time Markov Chain and solved linear network topology models based on Hill functions. [Preprint.](#)
  - **Others:** Presented at Pacific Math Alliance Conference and Undergraduate Mathematics Symposium.
- **Vitality Group** Santa Barbara, CA; Chicago, IL  
*Data Analyst (with Prof. Ian Duncan and Dr. Xiyue Liao)* Sept.2018 - Apr.2019
  - **Multi-Year Longitudinal Diabetes Analysis:** Used Vitality Group dataset to find factors of changing from pre-diabetes to healthy. Used R language to implement elastic net, T-SNE, General Additive Model. [Report.](#)
  - **Others:** Graduate level classes PSTAT 296AB. Presented at URCA and InsurTech Summit.

## PROJECTS

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- **Option Visualization App:** Wrote a Dash App for option visualization. [Link](#).
- **Hull Tactical ERP prediction contest:** Investigated stock return prediction using Long Short Term Memory (LSTM) models. Won most creative category with \$1000 in contest. [Link](#).
- **Time Series Analysis (PSTAT 274):** Built a time series model to predict on 5-year break-even inflation rate. [Link](#).
- **Variational Inference (STAT 538):** A detailed study on a Variational Inference paper used for posterior sampling with implementation. [Link](#).

## INDUSTRIAL EXPERIENCE

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- **Google Cloud Platform** Sunnyvale, CA  
*Software Engineer (PhD) Intern. Deploy G Suite search features.* *Jun.2022 - Sept.2022*
- **Comcast** Washington, DC  
*Research Intern. Run offline experiments.* *Jun.2021 - Sept.2021*

## TEACHING AND SERVICE

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SERVICE: Managing the UAI Mailing List..... Sep 2021 — Sept 2022

TEACHING ASSISTANT: Statistics, UW

STAT 311 Elements of Statistical Methods..... Sep 2020 — Mar 2021

STAT 502 Design and Analysis of Experiments. .... Jan 2022 — Mar 2022

STAT 504 Applied Regression. .... Jan 2022/2023 — Mar 2022/2023

STAT 566 Causal Modeling..... Mar 2023 — Jun 2023

STAT 396 Finite Markov Chains and Monte-Carlo Methods..... Mar 2022 — Jun 2022

DIRECTED READING PROGRAM: Statistics, UW

Teach and guide project on Classification Methods..... Jan 2021 — Mar 2021

Teach and guide project on Causal Inference. .... Sep 2021 — Dec 2021

## HONOR AND AWARDS

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REU FELLOWSHIP AT FIELDS INSTITUTE IN UNIVERSITY OF TORONTO ..... Jun 2019

MOST CREATIVE CATEGORY IN HULL TACTICAL ERP PREDICTION CONTEST ..... May 2019

PUTNAM MATHEMATICAL COMPETITION, TOP 5 IN UCSB ..... Dec 2017

COLLEGE OF CREATIVE STUDIES HONOR..... Jan 2017 — Mar 2020

DEAN'S HONOR IN COLLEGE OF LETTERS AND SCIENCE ..... Sept 2016 — Mar 2020

AMERICAN MATH COMPETITION TOP 5% WORLDWIDE ..... Mar 2016

## COURSEWORK

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Probability Theory (A), Stochastic Calculus (A), Time Series (A), Matrix Analysis (A), Regression Methods (A), Advanced Theory for Statistical Inference (A-), Causal Inference (A), Real Analysis (A), Linear Algebra (A+), Stochastic Process (A+), Probability Theory (A+), Bayesian Analysis (A).

## RESEARCH INTEREST

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- **Research:** Causal Inference, Regression Analysis, Probability Distribution Bounds