ZHUOHUI LIANG

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EDUCATION

- **INSTITUTE : COLUMBIA UNIVERSIY** — New York City, U.S.
  MAJOR : MASTER CANDIDATE IN BIOSTATISTICS — 09/2020-PRESENT
- **INSTITUTE : SHANDONG UNIVERSIY** — Jinan, China
  MAJOR : BACHELOR OF PUBLIC HEALTH — 09/2014-06/2019

RESEARCH EXPERIENCE

- **Case Study: eHealth Resource Allocation in Shandong Province** — Jinan, China
  Lead Researcher; Advisor: Prof. Jiajia Li — 01/2019-06/2019
  - Led a research team to collect data on the use of electronic health (eHealth) resources from an online healthcare community involving more than 441,000 doctors and 31 provinces in China, by using Python packages, such as lxml and pandas.
  - Cleaned and analyzed data with R-ggplot; utilized techniques such as visualizing the spatial distribution and density of highly-ranked hospitals and experienced professionals.
  - Performed statistical analysis on eHealth online-to-offline spillover effects using the Spatial Durbin Panel Model to reduce autocorrelation by the Pesaran CD test; improved model fitness.
  - Identified the spillover effects of eHealth services on health care inequity; provided ideas and strategies to address healthcare disparities using widely accessible eHealth resources.
  - Drafted and submitted a report to the 2020 Health Technology Assessment International Conference and 2019 Global Young Scholars Forum on Health Management
- **Project: Effect of Insurance Plans on Catastrophic Healthcare Expenditures** — Jinan, China
  Lead Researcher; Advisor: Prof. Jiajia Li — 10/2018-06/2019
  - Led a research group to conduct a longitudinal study on the effects of different insurance types on catastrophic healthcare expenditures.
  - Conducted data cleansing and validation using R package – tidyverse; processed information from 44,417 observational sessions and identified 3,300 missing units of data and outliers.
  - Collected information on geographical locations with Google Maps API and matched this with the insurance coverage provided by each plan as an instrumental variable for addressing the endogeneity introduced by insurance selection bias.
  - Performed two-stage least square regression analysis to build a model with instrumental variables using R package -AER; concluded that China's new health insurance program has decreased the odds of catastrophic health expenditures but has failed to control total health expenditures.
  - Provided quantitative evidence to forecast the financial expenditures of different healthcare insurance plans and to provide a reference for other researchers in the selection of instrumental variables.
- **Mapping Health: Tracking Population Health in Shandong Province, China** — Jinan, China
  Research Assistant; Advisor: Dr. Fuzhong Xue — 06/2018-11/2018
  - Refined medical information from more than 161 handbooks on atrial fibrillation and hypercholesterolemia; coded them into a graph database that covered more than 3,000 specific nodes and relationships.

- Designed and constructed a Knowledge Graph in Neo4j, including processes for screening, diagnosis, treatment, and education.

- **Urban-Rural Disparities in Catastrophic Health Expenditures in China** Jinan,China
  Lead Researcher; Advisor: Prof. Jiajia Li 03/2018-10/2018
  - Compared datasets with 44,417 observational sessions with individuals and 11,130 observational sessions with households from the ten waves of the China Health and Nutrition Survey (CHNS); examined registered residency status using R package-tidyverse.
  - Calculated prevalence of catastrophic healthcare expenditures since 1989 in households with chronic disease patients, and used this as a response variable; created an interaction of time with rural-urban identities as an independent variable to use in future regression analysis.
  - Performed logistics regression, concluding that healthcare disparities have diminished due to the development of financial protection and rising standard of living, but that actual risk has not been significantly reduced.
  - Conducted a review of China's Health Reform progress and promoted critical illness insurance among rural populations.
  - Drafted a paper summarizing findings which was accepted by the 2019 International Health Economics Association and 2018 Healthcare Management Forum, hosted by Chinese Preventive Medicine Association.

WORK EXPERIENCE

- National Health Development and Research Center of China Health Committee Beijing, China
  INTERN 06/2019-06/2020
  - Provide advice on sampling method, model selection, and result interpretation as well as data visualization.
  - Estimate national health expenditure in 2019, and analyze the distribution of different demographic characteristics, such as age and gender, to optimize healthcare resource allocation.
  - Build ICD-10 auto-coding and data format auto-standardizing in Python for annual health accounting, improving working efficiency, data accuracy, and integrity.
  - Conduct a literature review on data mining methods for detecting healthcare fraud; provide data support for a pilot feasibility project.
  - Participated in data visualization of healthcare indicators and healthcare access for an unpublished review of 10 years of healthcare reform in China.
  - Assisted with study design and data processing in Python for two confidential projects

- Jinan Center for Disease Control and Prevention Jinan, China
  INTERN 03/2019-05/2019
  - Completed a three-month rotation with various departments, including Chronic Diseases Control, Occupation Disease Control, and Infectious Disease Control Centers.
  - Monitored survival data in patients who presented with emergency cases and chronic diseases in Jinan using R programming, following established procedures.

- Center of Health Data Science at Shandong University Jinan, China
  INTERN 06/2018-11/2018
  - Conducted research on covariates adjustment and single nucleotide polymorphisms (SNPs) identification in the Genome-wide Association Study (GWAS).
  - Reviewed more than 200 published articles on cancer and cardiovascular diseases, categorized them based on studied traits.
  - Designed and constructed a database for all the articles, documenting specific SNPs, statistical methods, adjusted covariates, interval validation results, and other parameters of each study

- Qianfoshan Hospital Jinan, China
  INTERN 05/2017-10/2017
  - Monitored nutritional and health status of patients and collaborated with surgeons from the spine surgery department, gynecology department, obstetrics department, and pediatrics department.

SKILLS

- Statistical Computing: Python(& Tensorflow), R
- Languages : Mandarin and Cantonese Chinese(Native) and English(Fluent)