Chengyang Gao

44-07517559609 | zczlcga@ucl.ac.uk |

Research Interest

- Application of Bayesian causal inference methods in indirect treatment comparisons
- Modelling heterogeneous treatment effects using flexible Bayesian methods
- Value of information analysis accounting for heterogeneous treatment effects in population health decision making

Education

University College London London, UK
PhD Statistical Science *Sep. 2021 – Now*

- Supervised by Prof. Gianluca Baio and Dr. Anna Heath
- Thesis topic: The role heterogeneous treatment effects in population health decision making

London School of Economics and Political Science London, UK
MSc International Health Policy (Health Economics) *Sep. 2019 – Sep 2020*

- Dissertation: A Best-Worst Scaling study to estimate relative importance of different elements of end-of-life care

University College London London, UK
BSc Statistics, Economics and Finance *Sep. 2016 – June 2019*

- Honours: Graduated with top grades and awarded a place on the Dean's list for 2019 in MAPS faculty

Teaching

Postgraduate Teaching assistant in statistical Science Sep 2021 - Mar 2025
University College London *London, UK*

- Lead tutorial sessions for introductory statistics;
- Demonstrator for introductory workshops for data analysis in R, introduction for Bayesian statistics.

Research experience

Visiting Research Student August 2023 – Sep 2023
Hopspital for Sick Children *Toronto, Canada*

- Exploring flexible modelling methods for uncertain heterogeneous treatment effects in the context of decision modelling

Summer research Intern June 2020 – Sep 2020
Office of Health Economics *London, UK*

- Led two literature reviews: (i) QALY framework for end-of-life care, (ii) Best-Worst Scaling vs. Discrete-Choice Experiments.
- Built random-parameter logit models in R to analysing best-worst scaling data accounting for scale and preference heterogeneity.
- Results questioned NICE's end-of-life premium by showing greater utility for quality gains than for short life-extension.

Research Assistant Apr. 2020 – June. 2020
London School of Economics and Political Science *London, UK*

- Research assistant to Professor Alistair McGuire, Dr Laia Maynou-Pujolras
- Merged and cleaned hospitalisation and mortality micro-data for England, Scotland and Wales.
- Ran exploratory regressions testing the "deaths of despair" hypothesis in the Brexit context.

UCL Summer research project June 2019 – Aug 2019
University College London *London, UK*

- Contributor on the R package 'distr6', writing the plot function in collaboration of other team members

Conferences

Joint Statistical Meeting 2023 *Aug 2023*

- Poster presentation: **Regression augmented weighting adjustment for indirect comparisons**

International Society for Pharmacoeconomics and Outcomes Research *Nov 2024*

- Poster presentation: **Modelling Uncertain Heterogeneity for Decision Analytic Models: An Early Exploration**

International Society for Pharmacoeconomics and Outcomes Research *Nov 2024*

- Poster presentation: **Expected Value of Sample Information Accounting for Heterogeneous Treatment Effects**

Relevant Research Projects

Value of information analysis accounting for conditional average treatment effects

- Proposed a new framework for using existing methods in Expected value of sample information to account for subgroup-specific effects;
- Formulated an optimisation problem for trial planning: future trials should consider subgroup allocation ratios that maximises the expected value of sample information;
- Manuscript in preparation.

How robust are doubly-robust estimators in limited data indirect treatment comparisons

- Adapted augmented inverse propensity score weighting and target maximum likelihood methods in the context of limited data indirect comparisons in health technology assessment
- Explores robustness standard doubly-robust methods to 'population mis-specification';
- Manuscript in preparation

Modelling uncertain heterogenous treatment effects for decision modelling

- Exploring whether modelling heterogeneous treatment effects is worthwhile when it is still uncertain;
- Studies flexible Bayesian methods with structured priors for stable extrapolation;
- Manuscript in preparation.

Regression augmented weighting adjustment for indirect comparisons

- Develop new method $G - MAIC$ by combining Matching-adjusted indirect comparisons (MAIC) with G-computation
- Propose a Bayesian bootstrap estimator for variance estimation
- Manuscript under revision at *Research Synthesis Methods*

Skills and Interest

Languages: Native speaker of Mandarin, fluent in English
Technical skills: Skillful at R and Stata; experienced in data wrangling using *tidyverse*, data visualization using *ggplot*; good knowledge of doing Bayesian analysis using *brms* and *stan*
Interest: long walks in the city; average gym-goer; philosophy of statistics