

ZIQUIANG CHEN

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EDUCATION

- University at Buffalo, Buffalo, NY** *Feb 2021*
Ph.D. in Biostatistics (Advisor: Dr. Gregory E. Wilding)
- *Dissertation: Selected topics in statistical methods for drug and diagnostic device development.*
- University at Buffalo, Buffalo, NY** *Jul 2015*
M.A. in Biostatistics
- The Second Institute of Oceanography, Hangzhou, China** *Jul 2013*
M.S. in Marine Biology
- Shandong University, Weihai, China** *Jul 2009*
B.Sc. in Biological Science

PROFESSIONAL EXPERIENCE

- Merck & Co. Inc.** North Wales, PA
Sr. Scientist, Biostatistics *Dec 2020 - pres.*
- Statistical support for the design of vaccine clinical trials, protocol authoring, database specifications, study monitoring/data review, and analysis of data.
 - Support internal R program training and R package development for vaccine study design.
- HTG Molecular Diagnostic, Inc.** Tucson, AZ
Biostatistician, Intern *Jan 2018 - Jan 2019*
- Provided statistical support for companion diagnostics (CDx) classifier build projects collaborated with AbbVie and QIAGEN.
 - Experienced in statistical programming including data visualization, method implementation, parallel computing on Slurm and version control, etc.
- Clinical and Translational Science Institute** Buffalo, NY
Research Assistant *Aug 2014 - Dec 2020*
- Designed and implemented statistical strategy for more than 50 research projects ([full list](#)).
 - Built an “in-house” R package and Shiny apps of various statistical analyses for consulting purpose.
- Department of Biostatistics, University at Buffalo** Buffalo, NY
Research Assistant *Jun 2014 - Jun 2016*
- Worked with professors in methodology development and implementation in genomics and survey data.
 - Built and maintained an RStudio server on Linux for the department use.

PROFESSIONAL SERVICE

- Reviewer**, *Emerging Infectious Diseases*
Reviewer, *Public Health Reports*
Reviewer, *Pharmaceutical Statistics*

SOFTWARE AND SKILLS

Proficient in R (and Shiny), SAS, SPSS, Arc-GIS, MS Office and knowledge of Windows/Linux.

SELECTED RESEARCH PROJECTS

Methodology development:

A novel ROC method for diagnostic testing in the presence of intermediate results.

- Proposed a multistage diagnostic testing algorithm for handling intermediate (grey zone) results.
- Established a generalized ROC analysis framework including summary indices, empirical, parametric and non-parametric estimation, inference and hypothesis testing methods.
- Developed an R package that integrated all analytic functions and visualization.

Exact tests based on multiple comparisons for Poisson rate.

- Proposed an exact multiple comparison procedure for Poisson random variables based on conditional and unconditional approaches, with application to Leukemia incidence data.

Confidence interval of Cronbach's alpha with application to complex survey data.

- Developed a novel bootstrap method for the inference of the alpha coefficient.
- Incorporated complex survey design and applied in National Comorbidity Survey (NCS-R) data.

A novel exact method for Top-K family-wise error control

- Proposed an exact test for the inference of top-K selected features in a two-stage genomic study.
- Developed an R package and corresponding Shiny apps.

Industry projects:

Lung Subtyping Assay (LSA) CDx classifier build.

- Built classifier to subtype non-small-cell lung cancer and applied in Veliparib clinical trial samples.
- Participated in statistical analysis plan, QC metric investigation, classifier build, repeatability, analytical sensitivity and robustness studies.

Tumor Mutational Burden (TMB) exploratory analysis.

- Member of a two-person team that conducted TMB association study and enrichment study.
- Responsible for analysis of RNAseq and whole exome sequencing data, including visualization, feature selection, clustering, and p-value adjustment via permutation.

Collaborative projects:

Salivary metals, age, and gender correlate with cultivable oral *Candida* carriage levels.

- Addressed the LoD issue in metal measurement using a conditional expected value algorithm.
- Evaluated and utilized zero inflated negative binomial model (ZINB) for excess zeros in outcome.

Disease modifying effect in Alzheimer's disease with cholinesterase inhibitors.

- Two pharmacogenetic observational studies to evaluate a human specific fusion gene accounts for the translational gap for cholinergic strategies in Alzheimer's disease.
- Longitudinal analysis with autoregressive linear mixed-effects model.

Randomized pilot study to improve child asthma care through multiple health centers.

- A randomized control trial comparing a novel multifaceted health services intervention to usual care.
- Implemented permuted block randomization; longitudinal analysis with linear mixed-effects model.

HONORS AND AWARDS

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| Best Young Researchers' Award, The Upstate Chapter of American Statistical Association | 2017 |
| Poster of Distinction at UB Research Day, University at Buffalo | 2017 |
| Perry Poster Day 2016 Winner, Biostatistics, University at Buffalo | 2016 |
| Outstanding Graduate, The Second Institute of Oceanography | 2013 |
| Outstanding Graduate, Shandong University | 2009 |

SELECTED PUBLICATIONS

Sridhar, N. R., **Chen, Z.**, Yu, G., Lambert, J., Muscarella, M., Nanjundegowda, M., & Panesar, M. (2023). Effect of dialysate bicarbonate and sodium on blood pH in maintenance hemodialysis—A prospective study. *Therapeutic Apheresis and Dialysis*, 27(2), 270-277.

Vil, N. M. S., Bay-Cheng, L. Y., Ginn, H. G., & **Chen, Z.** (2022). Perceptions of monogamy, nonconsensual nonmonogamy and consensual nonmonogamy at the intersections of race and gender. *Culture, Health & Sexuality*, 24(1), 109-124.

Holmes, L. C., Orom, H., Lehman, H. K., Lampkin, S., Halterman, J. S., ... **Chen, Z.**, Wilding, G. E. (2021). A Pilot School-Based Health Center Intervention to Improve Asthma Chronic Care in High-Poverty Schools. *Journal of Asthma*, 1-16.

Szigeti, K., Ihnatovych, I., Birkaya, B., **Chen, Z.**, et al. (2020). A human specific fusion gene, accounts for the translational gap for cholinergic strategies in Alzheimer's disease. *EBioMedicine*, 59, 102892.

Lamoshi, A., Ham III, P. B., **Chen, Z.**, et al. (2020). Timing of the definitive procedure and ileostomy closure for total colonic Aganglionosis HD: Systematic review. *Journal of Pediatric Surgery*, 55(11), 2366-2370.

Lamoshi, A., Wagner, N., **Chen, Z.**, Fabiano, T., Wilding, G. E., Rothstein, D. H., & Bass, K. (2020). Predictive model for operative intervention after blunt abdominal trauma in children with equivocal CT findings. *Journal of Pediatric Surgery*. 255, 449-455.

Yu, J., **Chen, Z.**, Wang, K., Tezal, M. (2019). Suggestion of the confidence interval of the Cronbach alpha in application to complex survey data. *Survey Methodology*, 45(3), 465-484.

Train, A. T., Naseem, H. U. R., **Chen, Z.**, et al. (2019). Predictors and Outcomes of Laparoscopy in Pediatric Trauma Patients: A Retrospective Cohort Study. *Journal of Laparoendoscopic & Advanced Surgical Techniques*, 29(12), 1598-1604.

Perez, A. C., Johnson, A., **Chen, Z.**, Wilding, G. E., Malkowski, M. G., Murphy, T. F. (2018). Mapping protective regions on a three-dimensional model of the Moraxella catarrhalis vaccine antigen oligopeptide permease A. *Infection and Immunity*, 86(3), e00652-17.

Norris, H. L., Friedman, J., **Chen, Z.**, Puri, S., et al. (2018). Salivary metals, age, and gender correlate with cultivable oral Candida carriage levels. *Journal of Oral Microbiology*, 10(1), 1447216.

Cairo, S. B., Arbuthnot, M., Boomer, L., ... **Chen, Z.** (2018). Comparing percutaneous to open access for extracorporeal membrane oxygenation in pediatric respiratory failure. *Pediatric Critical Care Medicine*, 19(10), 981-991.

Castilla-Earls, A., Pérez-Leroux, A. T., Restrepo, M. A., Gaile, D. P., **Chen, Z.** (2018). The complexity of the Spanish subjunctive in bilingual children with SLI. *Language Acquisition*, 25(1), 72-84.

Castilla-Earls, A. P., Restrepo, M. A., Perez-Leroux, A. T., Gray, S., Holmes, P., Gaile, D. P., **Chen, Z.** (2016). Interactions between bilingual effects and language impairment: Exploring grammatical markers in Spanish-speaking bilingual children. *Applied psycholinguistics*, 37(5), 1147-1173.

Shou, L., Zeng, J., Liao, Y., Xu, T., Gao, A., **Chen, Z.**, Chen, Q., Yang, J. (2013). Temporal and spatial variability of benthic macrofauna communities in the Yangtze River estuary and adjacent area.

Aquatic Ecosystem Health and Management, 16(1): 31-39.

Chen, Z., Sun, Q., Chen, Q., Sun, J., Zeng, J. (2013). Effect of acid stress on the early life stages of *Sargassum horneri*. *Asian Journal of Ecotoxicology*, 8(6), 864-870.

Chen, Z., Shou, L., Liao, Y., Zeng, J. (2013). Advance in the effect of microalgal diets and nutritional value on the growth of early life stages of bivalves. *Bulletin of Science and Technology*, 29(7): 46-55.

Chen, Z., Shou, L., Liao, Y., Gao, A., Zeng, J., Chen, Q. (2013). Community structure of benthic algae and its seasonal variation in the intertidal zone of Sanya. *Acta Ecologica Sinica*, 33(11), 3370-3382.

PRESENTATIONS

Paper presentation, PharmaSUG, Austin, TX

May 2022

- Two Methods to collapse two treatment groups into one group (co-auth).

Paper presentation, Joint Statistical Meetings, Virtual Conference

Aug 2021

- More on multistage diagnostic testing procedures: cost function and inference.

Paper presentation, Joint Statistical Meetings, Denver, CO

Jul 2019

- ROC analysis for multistage diagnostic testing procedures in the presence of intermediate results.

Poster and oral, Sixth Annual Conference of The Upstate Chapter of American Statistical Association, Rochester, NY

Apr 2017

- On The Strong Control of Top-K Error Rates.