

# CURRICULUM VITAE

## Yi Zuo, MPH

### Contact Information

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### Education

Expected 2022	PhD in Biostatistics	Vanderbilt University
2017	MPH in Biostatistics	Boston University
2015	BS in Statistics	Central Univ. of Finance and Economics, China

### Additional Trainings

2017	Summer Institute in Statistics for Big Data	University of Washington
2014	Longitudinal Data Analysis	University of Michigan

### Work Experience

November 2015 – May 2017	Lead Biostatistician	Bindu Kalesan lab Boston University
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### Honors

2017	Travel Award
	Summer Institute in Statistics for Big Data
	University of Washington
2014	Meritorious Winner
	Mathematical Contest in Modeling
2013	Yongjin Research Award
	Central University of Finance and Economics, China
2013	Research Scholarship
	Central University of Finance and Economics, China
2012	Outstanding Student Researcher Award
	Central University of Finance and Economics, China

## Teaching Experience

Teaching assistant to Modeling and Machine Learning II August 2020 – Dec. 2020  
Designed and coded for six homework on deep learning using Python with GPU capabilities  
Topics included deep convolutional neural network, LSTM time series forecast, ResNet-50 image classification, text classification, and Mask R-CNN object detection/segmentation.  
Graded homework for 30 graduate students pursuing Data Science MS degree  
Held weekly 4-hour office hours

## Mentee

Max Rosenthaler First-year medical student October 2017 - May 2018

## Collaborative Experience

*Prediction of Brugada syndrome penetrance* PI: Dr. Brett Kroncke  
EM algorithm was used to derive Bayesian priors for Brugada syndrome penetrance from variant-specific features (e.g. function, structural context, and sequence conservation)  
*Role: Statistician; provided methodological expertise; conducted statistical analysis; contributed in the manuscript writing*

*Prediction of Autism Spectrum Disorder prevalence* PI: Dr. Zachary E. Warren  
Various machine learning algorithms were used to predict the prevalence of Autism Spectrum Disorder in Tennessee and multiple predictors were identified.  
*Role: Statistician; conducted statistical analysis; created a poster for conference*

*Temporal trend of firearm injuries ED visits* PI: Dr. Sandro Galea  
It is discovered that there was a significant decline in firearm injuries ED rates from 2006 to 2013 followed by an insignificant rise afterwards, and that is driven by both genders, unintentional intent, and 16-45 years old adults.  
*Role: Statistician; conducted statistical analysis; contributed to manuscript preparation*

*Joinpoint analysis of firearm injury severity from ED* PI: Dr. Sandro Galea  
We documented the temporal trend of injury severity by joinpoint analysis under survey weighting setting from Nationwide Emergency Department Sample (NEDS) from 2006 to 2015. We found a significant annual increase in firearm injury severity and increase in subgroups of age groups, gender and intent.  
*Role: Statistician; conducted statistical analysis; contributed to manuscript preparation*

*Validation of Dementia Screening Indicator in NHANES* PI: Dr. Mekala Raman  
We concluded that it is not recommended that patients with low-risk of dementia go for cognitive screening, and that could save, on average, \$250/cognitive screen in addition to other time- and cost-savings for patients, physicians, Medicare, and healthcare system  
*Role: Statistician; conducted statistical analysis; drafted an abstract for conference*

*Obesity paradox in a diabetes free cohort*

PI: Dr. Vasan Ramachandran

It is found that obesity paradox existed in both diabetes positive and diabetes free cohorts among FHS cohort, though not significant; while it was gone in JHS cohort, and being overweight/obese had protective effect in all-cause mortality on African Americans.

*Role: Statistician; conducted statistical analysis; contributed to manuscript preparation*

*Multi-study data resource for diabetes research*

PI: Dr. Bindu Kalesan

A multi-study data consortium were created to identify the effect on modifiable risk factors in Type 2 diabetes, and determine the progression of disease in a patient with modifiable and non-modifiable risk factors, differences in treatment protocols in various countries and related health outcomes.

*Role: Statistician; conducted statistical analysis; contributed to manuscript preparation*

*Survival analysis on thoracic endovascular aortic repair*

PI: Dr. Jeffrey J Siracuse

We concluded that patients with more comorbidities and advanced age were at higher risk for readmission after undergoing thoracic endovascular aortic repair, and the majority of patients were readmitted for non-aortic indications and overall rate of reoperation was low.

*Role: Statistician; conducted statistical analysis; contributed to manuscript preparation*

*Variable selection and competing risk for pneumonia*

PI: Dr. Allan J. Walkey

We evaluated the association of proteomic and genomic biomarkers with risk for incident pneumonia using competing risk model with model selection, and determined associations and developed pathways linking demographic clinical and proteomic risk factors.

*Role: Statistician; conducted statistical analysis; contributed to manuscript preparation*

*Mediation analysis on prenatal women at psychiatric risk.*

PI: Dr. Snezana Milanovic

We evaluated access to various psychiatric care resources: medication management, psychotherapy, and/or case management and associated costs, and assessed outcomes of pregnancy such as mothers' psychiatric improvement and infants' weight and Apgar score.

*Role: Statistician; conducted statistical analysis; contributed to manuscript preparation*

*Opioid use trend by hospital region and race/ethnicity*

PI: Dr. Vasan Ramachandran

We described and compared temporal trend of opioid use by hospital region (Northeast, Midwest, South, and West) and race/ethnicity (white, black, Hispanic, and other) among three data sets (National Inpatient Sample, Nationwide Emergency Department Sample, and Deaths and Mortality data from CDC) from 2006 to 2014.

*Role: Statistician; conducted statistical analysis; contributed to manuscript preparation*

*Temporal trend of heart failure and atrial fibrillation*

PI: Dr. Vasan Ramachandran

We calculated and compared the rates for overall heart failure, and heart failure preserved ejection fraction-, heart failure reduced ejection fraction-, and heart failure unspecified-, as

well as Atrial Fibrillation-specific rates among gender, race/ethnicity, and age groups using National Inpatient Sample data from 1993 to 2014.

*Role: Statistician; conducted statistical analysis; contributed to manuscript preparation*

*Survival analysis on firearm injury gender difference*

PI: Dr. Bindu Kalesan

We concluded that there is no gender difference in firearm index hospitalization mortality, 30-, 60-, 90-, and 180-day readmission rate, number of readmissions, and overall hospital costs using Nationwide Readmissions Database 2013.

*Role: Statistician; conducted statistical analysis; contributed to manuscript preparation*

*Temporal trend of uterine prolapse*

PI: Dr. Padmasini Kandadai

We examined trends of mesh surgery following the July 2011 FDA mesh warning and compared differences based on race/ ethnicity: especially Black and Non-black Hispanic patients versus White patients. We concluded that mesh-use declined, but only following the 2011 FDA warning. Declines in mesh-use were less prominent among Black women.

*Role: Statistician; conducted statistical analysis; contributed to manuscript preparation*

*Temporal trend of opiate use (MEPS 1996 to 2013)*

PI: Dr. Allan J. Walkey

We described the temporal trend of opiate use regarding the Joint Commission on Accreditation of Healthcare Organization (JCAHO) pain mandate on Jan. 1<sup>st</sup>, 2001. We found a rising trend of opioid use prior to the mandate, and after the mandate, there was still an increasing trend, but the extent is smaller than that in the pre-mandate period.

*Role: Statistician; conducted statistical analysis*

*Readmission analysis on Whipple procedure*

PI: Dr. Teviah E. Sachs

We compared 30- and 90- day readmission rate of these patients from hospitals of three categories: low Whipple and low mix procedure volume, low Whipple and high mix procedure volume, and high PD and high mix procedure volume.

*Role: Statistician; conducted statistical analysis*

*Child nutrition intervention program*

Ministry of Finance of China

We visited 6 town-level health administrations and 32 families who were covered by Child Nutrition Intervention Program in Southwest China, conducted semi-structured interviews with 9 senior leaders of China Women's Federation and China Centers for Disease Control and Prevention, and created a report to Ministry of Finance, and National Health and Family Planning Commission of Peoples' Republic of China.

*Role: Statistician; conducted interviews and statistical analysis*

*KPI reform in public hospitals*

French Embassy to China

We carried out group interviews and questionnaire surveys with 16 physicians at Beijing Children's Hospital in 5 days, analyzed data, and presented research update at a multi-disciplinary seminar. A working paper summarizing findings in this research was collected by International Seminar on Public Hospital in China: Reform and Evaluation.

*Role: Statistician; conducted statistical analysis; submitted working paper to a conference*

### **Oral Presentations**

Zuo, Y. (Mar. 17, 2021) Feature Selection by Second-Generation P-Values Can Outperform Oracle Adaptive Lasso. (Session 90) Eastern North American Region International Biometric Society 2021, Virtual

Zuo, Y. (Mar. 23, 2020) An Investigation of Fully Relaxed Lasso and Second-Generation P-Values for High-Dimensional Feature Selection. (Session 24) Eastern North American Region International Biometric Society 2020, Nashville

Zuo, Y. (Nov. 6, 2017) Patterns of injury severity in firearm hospitalizations from 1993 to 2013: A repeated cross-sectional study. (Session 3277.0, Abstract Number 389707) American Public Health Association Annual Meeting & Expo 2017, Atlanta

### **Poster Presentations**

Can Computational Surveillance of Autism Spectrum Disorder Fuel Big-Data Science? International Society for Autism Research 2019, May 2, 2019, Montreal, QC, Canada

Temporal trend of injury severity in firearm hospitalizations, Evans Days Poster Session. Nov. 13, 2016, Boston University School of Medicine, Boston, MA, 2016

### **Original Publications (peer-reviewed)**

Banerdt JK, Mateyo K, Yan Y, Liu D, **Zuo Y**, Di Gravio C, Thome JC, Riviello ED, Saylor D, Ely EW, Heimburger DC. Risk factors for delirium among hospitalized patients in Zambia. *PLoS One*. 2021 Apr 8;16(4):e0249097. doi: 10.1371/journal.pone.0249097. PMID: 33831010.

Janeway MG, Zhao X, Rosenthaler M, **Zuo Y**, Balasubramaniyan K, Poulson M, Neufeld M, Siracuse JJ, Takahashi CE, Allee L, Dechert T. Clinical diagnostic phenotypes in hospitalizations due to self-inflicted firearm injury. *Journal of Affective Disorders*. 2020 Sep 15.

Kalesan B, Zhao S, Poulson M, Neufeld M, Dechert T, Siracuse JJ, **Zuo Y**, Li F. Intersections of firearm suicide, drug-related mortality, and economic dependency in rural America. *Journal of surgical research*. 2020 Dec 1;256:96-102.

Kroncke BM, Smith DK, **Zuo Y**, Glazer AM, Roden DM, Blume JD. A Bayesian method to estimate variant-induced disease penetrance. *PLoS genetics*. 2020 Jun 22;16(6):e1008862.

Kalesan B, **Zuo Y**, Vasan RS, Galea S. Risk of 90-day readmission in patients after firearm injury hospitalization: a nationally representative retrospective cohort study. *Journal of Injury and Violence Research*. 2019 Jan;11(1):65.

Pino EC, **Zuo Y**, Schor SH, Zatwarnicki S, Henderson DC, Borba CP, Milanovic SM, Kalesan B. Temporal trends of co-diagnosis of depression and/or anxiety among female maternal and non-maternal hospitalizations: Results from Nationwide Inpatient Sample 2004–2013. *Psychiatry Research*. 2019 Feb 1;272:42-50.

Vasan RS, **Zuo Y**, Kalesan B. Divergent Temporal Trends in Morbidity and Mortality Related to Heart Failure and Atrial Fibrillation: Age, Sex, Race, and Geographic Differences in the United States, 1991–2015. *Journal of the American Heart Association*. 2019 Apr 16;8(8):e010756.

Bailey HM, **Zuo Y**, Li F, Min J, Vaddiparti K, Prosperi M, Fagan J, Galea S, Kalesan B. Changes in patterns of mortality rates and years of life lost due to firearms in the United States, 1999 to 2016: A joinpoint analysis. *PLoS One*. 2019 Nov 22;14(11).

Siracuse JJ, Farber A, James T, Cheng TW, **Zuo Y**, Kalish JA, Jones DW, Kalesan B. Readmissions after Firearm Injury Requiring Vascular Repair. *Annals of Vascular Surgery*. 2019 Apr 1;56:36-45.

Siracuse JJ, Cheng TW, Farber A, James T, **Zuo Y**, Kalish JA, Jones DW, Kalesan B. Vascular repair after firearm injury is associated with increased morbidity and mortality. *Journal of Vascular Surgery*. 2019 May 1;69(5):1524-31.

**Zuo Y**, Pino EC, Vyliparambil M, Kalesan B. Sex Differences in Early Cardiovascular and All-Cause Hospitalization Outcomes After Surviving Firearm Injury. *American Journal of Men's Health*.0(0):1557988318761989.

Kalesan B, **Zuo Y**, Xuan Z, Siegel MB, Fagan J, Branas C, Galea S. A multi-decade joinpoint analysis of firearm injury severity. *Trauma Surgery & Acute Care Open*. 2018 Jan 1;3(1):e000139.

Pino EC, **Zuo Y**, De Olivera CM, Mahalingaiah S, Keiser O, Moore LL, Li F, Vasan RS, Corkey BE, Kalesan B. Cohort profile: The MULTI sTudy Diabetes rEsearch (MULTITUDE) consortium. *BMJ Open*. 2018 May 1;8(5):e020640.

Raman MR, **Zuo Y**, Seshadri S, Kalesan B. (2018). VALIDATION OF A DEMENTIA SCREENING INDICATOR IN OLDER ADULTS IN THE NHANES EPIDEMIOLOGIC FOLLOW-UP STUDY. *Alzheimer's & Dementia: The Journal of the Alzheimer's Association*, 14(7), P232-P233.

Pino EC, **Zuo Y**, Borba CP, Henderson DC, Kalesan B. Clinical depression and anxiety among ST-elevation myocardial infarction hospitalizations: Results from Nationwide Inpatient Sample 2004–2013. *Psychiatry research*. 2018 Aug 1;266:291-300.

Kalesan B, Sampson LA, **Zuo Y**, Galea S. Sex and age modify the relationship between life circumstances and use of a firearm in suicide deaths across 17 US states. *Journal of affective disorders*. 2018 Aug 15;236:105-11.

Kalesan B, Vyliparambil MA, **Zuo Y**, Siracuse JJ, Fagan JA, Branas CC, Galea S. Cross-sectional study of loss of life expectancy at different ages related to firearm deaths among black and white Americans. *BMJ evidence-based medicine*. 2018 Nov 22:bmjebm-2018.

Kalesan B, Cheng TW, Farber A, **Zuo Y**, Kalish JA, Jones DW, Siracuse JJ. Readmissions after thoracic endovascular aortic repair. *Journal of vascular surgery*. 2018 Aug 1;68(2):372-82.

Siracuse J, Farber A, Cheng T, **Zuo Y**, Jones D, Kalish J, Kalesan B. Analysis of Vascular Injuries After Gunshot Wounds: IP259. *Journal of Vascular Surgery*. 2018 Jun 1;67(6).