DANRONG CHEN

270 Bay State Road
Boston MA 02215 USA
Cell: (609)-321-4401
Email: dchen14@bu.edu
Web site: https://blogs.bu.edu/dchen14

EDUCATION

Ph.D., Economics, Boston University, Boston, MA, May 2024 (expected)
    Dissertation Title: *Enhancing Healthcare Decisions Using Big Data*
    Dissertation Committee: Randall P Ellis, Daniele M Paserman, and Marc S Rysman

M.S., Actuarial Science on Mathematical Finance, Boston University, Boston, MA, 2019

B.S., Mathematics (*magna cum laude*), and B.A., Economics *with high honors*, St. Lawrence University, Canton, NY, 2014-2017

FIELDS OF INTEREST

Health Economics, Applied Microeconomics, Industrial Organization, Public Economics

PUBLICATIONS

Maleyeff, J., & **Chen, D**. (2020). Consumer Health Informatics Approach for Personalized Cancer Screening Decisions Using Utility Functions. *Health Informatics Journal*, 26(4), 2877-2891.

WORKING PAPERS

"School Closing Policy and Infectious Diseases" October 2023. Job Market Paper.
"Modeling Days in School from Public School Opening, Vacation, and Closing Dates, 2010-2019" (with Ying Liu, Yuhan Chen, Sarah Ma, Maxim Slobodchikov, and Randall Ellis) September 2021.
"Medicaid Dental Benefit Generosity for Low-Income Older Adults" (with Astha Singhal), September 2023.
"How Was the Board of Directors Age Related to Their Companies' Risk-Taking Behavior" May 2017.

WORK IN PROGRESS

"Topcoding, Reinsurance, and Outlier Adjustments to the Diagnostic Cost Group (DCG) Risk Adjustment Payment Model (joint with Corinne Andriola)
"Medicaid Dental Benefit Generosity for Low-Income Pregnant Women with Big Data" (joint with Astha Singhal)

PRESENTATIONS

Maleyeff, J. and **Chen, D**., Experiments on Ways to Improve Communication Between Patients and Physicians on Whether to Take Screening Test or Not, ITCH, University of Victoria, Victoria, Canada, February 14-17, 2019 (Presented by **Chen, D**.)
Maleyeff, J. and **Chen, D**., Cancer Screening Decision Making Based on Health Status Utilities, International Conference on Healthcare Service Management, University of Tsukuba, Japan, June 8-10, 2018 (Presented by Maleyeff, J.)
Chen, D., Liu, Y., Chen, Y., Ma, S., Slobodchikov, M., Ellis, R., Modeling Days in School from Public School Opening, Vacation and Closing Dates, 2010-2021, ASHEcon, zoom, June 21-23, 2021 (Presented by Chen, D.)

FELLOWSHIPS AND AWARDS
Graduate Assistant Award, Boston University 2017-2019
Economics Honor Project, St. Lawrence University 2017
Honor Society of Economics, St. Lawrence University 2017
Honor Society of Mathematics, St. Lawrence University 2017
Dean's List, St. Lawrence University 2015-2017
Pi Mu Epsilon Award: Outstanding underclass student based on performance in Mathematics courses
through the sophomore year, St. Lawrence University 2016

WORK EXPERIENCE
Research Assistant to Professor Astha Singhal, University of Florida, Florida   Fall 2022-Present
Department Research Assistant, Boston University, Boston   Spring 2023
Research Assistant to Professor John Maleyeff, Boston University, Boston   Fall 2017- Spring 2019
Actuarial Science Intern, PwC, Beijing   Summer 2018
Public relations manager of the Chinese student union, St. Lawrence University   Fall 2014-Spring 2016
Marketing Intern, Yunxuetang, Beijing   Summer 2015

TEACHING EXPERIENCE
Department of Economics, Boston University
Teaching Fellow, Introductory Microeconomic Analysis   Fall 2020 – Fall 2022
Teaching Assistant, Energy and Environmental Economics   Fall 2023
Teaching Assistant, Health Economics   Fall 2023, Fall 2022, Spring 2022
St. Lawrence University,
Math Tutor, Calculus I, II, III, Linear Algebra, Real Analysis   Fall 2016 – Spring 2017
Economics Tutor, Introductory Microeconomics, Intermediate Microeconomics   Fall 2017

LANGUAGES: English (fluent), Mandarin (native)

COMPUTER SKILLS: SAS, SQL, STATA, R, Python, MATLAB, LaTeX, Mathematica, JAVA, Excel, Minitab

CITIZENSHIP/VISA STATUS: US Permanent Resident (Green Card), Chinese citizen

CERTIFICATIONS
Actuarial Science Probability Exam   2018
Actuarial Science Financial Mathematics Exam   2018

REFERENCES

Professor Randall P. Ellis
Department of Economics
Boston University
Phone: (617) 353-2741
Email: ellisrp@bu.edu

Professor Daniele M. Paserman
Department of Economics
Boston University
Phone: (617) 353-5695
Email: paserman@bu.edu

Professor Marc S, Rysman
Department of Economics
Boston University
Phone: (617) 353-3086
Email: mrysman@bu.edu

Professor Astha Singhal
Department of Community
Dentistry & Behavioral Science
University of Florida
Phone: (352) 273-5971
Email: asinghal@dental.ufl.edu

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School Closure Policies and Infectious Diseases (Job Market Paper)

COVID-19 has drawn people's attention to public schools' influence on infection rates, but understanding its magnitude remains highly imperfect. To deepen our knowledge of factors affecting the transmission of infectious diseases with properties similar to COVID-19, I study influenza, pneumonia, and respiratory infection to uncover intertemporal, within-family, and across-age cohort infection patterns. The key policy question is the extent to which changing school vacations, opening, and closing dates affects infection transmission, which affects not only School-age children but also preschool, college, and adult populations. I combine patient information and diagnoses from the Merative® (formerly IBM) MarketScan® Commercial Database between July 1. 2010, and June 30, 2019, with MSA-level weekly school data previously collected by the author with coauthors documenting school opening and closing dates over the same pre-pandemic period (Chen et al., 2021). I use linear probability models that also include weather and other MSA-level control variables on a sample of 122,487,230 individuals and their weekly diagnostic data. I find that within-family infection rates of pneumonia, influenza, and respiratory infection, especially high school students' infection rates, rise as the number of days schools are open. Infected primary and high school students are the main introducers of pneumonia, influenza, and respiratory infections. School boards and local governance can use the methodology and results of this study to shape school closure policies that improve student welfare and limit the spread of infectious diseases.

Synthetic Index of Medicaid Dental Benefit Generosity among Older Adults (with Astha Singhal, DDS)

The high cost of dental care remains a major barrier for low-income older adults. Apart from the absence of a universal measure that determines Medicaid dental benefits generosity across states, the employment of annual maximum limits (AML) by Medicaid programs makes dental services less affordable. In this study, we first develop an unbiased synthetic measure of Medicaid dental benefits coverage for a nationally representative sample of 4219 older adults from the 2019 Medicare Current Beneficiary Survey (MCBS). This measure calculates the proportion of dental procedures that each state's Medicaid dental policy can cover. We then use this measure to estimate Medicaid payment generosity by examining the proportion of older adults whose dental payment is under the AML of each state. Results show the most common dental services are exams, x-rays, and cleanings, which sum up to more than 70 percent of 19,950 dental services. We calculate that states that excluding Medicaid coverage for these common dental services, frees up 10 percent of their dental payments to use by Medicaid for covering other services while remaining below the same AML. Understanding this tradeoff may be helpful to policymakers examining state variation in Medicaid dental coverage and payment generosity, informing future policies that improve the quality of life for older people.

Topcoding, reinsurance, and outlier adjustments to the Diagnostic Cost Group (DCG) risk adjustment payment model *(with Corinne Andriola)*

Andriola et al. (2023) just completed a major project that build on the rich Diagnostic Items (DXI) classification system of Ellis et al. (2022) by developing a new machine learning algorithm that enables researchers and policymakers to calibrate ready-to-use risk adjustment payment formulas that achieve high predictive power, avoid underpaying rare diagnoses, minimize use of vague and gameable diagnostic information, and groups together DXIs with similar cost implications so as to reduce incentives for upcoding and keep the model parsimonious in the number of parameters used. This Diagnostic Cost Group (DCG) framework was developed and thus far has only been evaluated for predicting only one outcome: concurrent year total health care spending topcoded at $250,000. In this paper, we use the DCG clustering algorithm on concurrent year untopcoded total spending and prospective year spending with and without topcoding. Also, drawing upon the work of Tom McGuire and Richard Van Kleef, we examine the performance of the DCG framework when combined with mixed payment formulas, outliers, and reinsurance strategies in order to evaluate its performance relative to the existing payment formulas.