Christopher Quarles

PhD Candidate, Information cquarles@umich.edu

STRENGTHS & SKILLS

- Broad background and ability to combine ideas from multiple disciplines
- Leading and performing all steps of the research process
- Broad range of mathematical, statistical, and machine learning techniques
- Experience with a variety of statistical and mathematical programming software
- Communicating complex topics effectively with diverse audiences
- Computational social science
- Education research
- Complex systems
- Experimental design
- Mathematical & statistical modeling
- Leadership & mentoring

PUBLICATIONS

Quarles, C.L., Bozarth, P. (In review) How the term "white privilege" affects online communication.

Quarles, C.L., Budak, C. & Resnick, P. (2020) The shape of educational inequality. *Science Advances.* 6(29). doi: 10.1126/sciadv.aaz5954

Quarles, E., Basisty, N., Chiao, Y., Merrihew, G., Sweetwyne, M., Nguyen, N., Kooiker, K., Moussavi-Harami, F., Regnier, M., Frederickson, J., **Quarles, C.**, MacCoss, M., Rabinovitch, P. (2019) Rapamycin persistently improves cardiac function in aged, male and female BL/6 mice, even following cessation of treatment. *Aging Cell*. e13086 doi: 10.1111/acel.13086

Kaikkonen, D. A. & **Quarles, C. L.** (2018) The effect on earnings of the applied baccalaureate degree. *Community College Review. 46*(4), 347-367. doi: 10.1177/0091552118782619.

Quarles, C. L. & Davis, M. (2017). Is learning in developmental math associated with community college outcomes? *Community College Review*. *45*(1), 33-51. doi: 10.1177/0091552116673711.

Charles A. Dana Center at the University of Texas at Austin. (2015). *Statistical Reasoning* (2nd ed.). Austin, TX: Pearson. (Co-author)

SELECTED WORK EXPERIENCE

Research Assistant University of Michigan 2021 – Present

Explored hierarchies within Kindergarten classrooms in collaboration with a sociologist and a pediatrician. Drew upon sociological and early childhood research to conceptualize and measure hierarchies and their relationship to health outcomes. Analyzed data using mixed-effects regression, multiple visualization techniques, Monte Carlo methods, and Bradley-Terry models. Created a new metric for hierarchical rigidity.

Graduate Student Instructor/Mentor University of Michigan 2018 – 2021
Lead instructor for Python-based data manipulation class. Led discussion sections for classes on statistics and game theory, networks & markets. Supported, mentored, and performed observations for other instructors. Designed online orientation course using Coursera for data science instructors.

Professor of Mathematics Everett Community College 2008-2017
Taught adult students with a variety of needs, mathematical skill levels, and socio-economic backgrounds. Classes taught range from basic arithmetic to statistics to differential equations. Mentored new faculty. Provided consistent, reliable department and college leadership. Served on over 20 college committees and chaired 8 of those. Advocated for and supported the teaching of math in a variety of interdisciplinary contexts.

Math Department Chair Everett Community College 2014-2015
Responsible for hiring, scheduling, running meetings, and general leadership. Supported faculty in their goals of providing quality instruction, leadership, and innovation, especially associate faculty. Organized Faculty Learning Communities to facilitate collaboration between professors.

EDUCATION

PhD, Information (in progress) University of Michigan 2023
Master of Science, Mathematics University of Washington
Dissertation: "Krull-Schmidt Rings & Noncommutative Resolutions of Singularities"
Bachelor of Science, Physics University of Illinois

LEADERSHIP & PROFESSIONAL DEVELOPMENT

Professional Development Leader
Rackham Graduate School University of Michigan 2019-2020
Participated in training on professional development. Served on the coordinating board for Pro-D conference for grad students. Designed workshop focused on making research matter.

Complex Systems Summer School Santa Fe Institute 2019
Engaged in a month-long school focused on interdisciplinary, complex systems research. Formed research collaborations with researchers from around the world.

Institute for Social Change University of Michigan 2018
Participated in this week-long program focused on public scholarship.

Project Lead, Digital Navigator Everett Community College 2015 – 2016
Led development and design of interactive, customized website designed to help new and first-generation students navigate college procedures.

Teacher & Curriculum Support
New Mathways Project Charles A. Dana Center at UT-Austin 2016
Supported teachers in classroom practice. Performed quality control during the launch of NMP on a new online platform.

Achieving the Dream Co-Lead Everett Community College 2011 – 2015
Led college-wide student success efforts involving a $250,000 grant. Advocated for and supported the use of data & evidence at the college. Designed the structure of the program. Co-chaired leadership committee. Wrote parts of grant proposal and evaluation. Chaired a committee which awarded research grants for faculty & staff, and provided research support. Led a team which oversaw and evaluated Supplemental Instruction in developmental math classes. Performed some duties of college's research director during a transition period. Worked with the national organization and colleagues from around the country. Helped coordinate a statewide meeting of Achieving the Dream colleges. Because of our work, EvCC received national recognition as a "Leader College".

Gifted Advisory Committee Edmonds School District 2014 – 2017
Worked with issues of equity in the district's gifted program.

Founded Statewide Math Awards Washington State 2014
Created this set of awards to recognize excellence among Washington community college math teachers. Awards are presented at an annual conference by the Washington Mathematical Association of Two-Year Colleges.

Rethinking Precollege Math Everett Community College 2009 – 2012
Member of the leadership team in grant-funded education reform project. Designed organizational structure of the college's work. Led a team which developed a contextualized, active-learning algebra course. Created original, active-learning curriculum. Actively participated in the restructure of the math curriculum. Spearheaded data collection and analysis of the program's effectiveness.

PRESENTATIONS

"The Shape of Educational Inequality"
International Conference on Computational Social Science 2020

"A Different Conversation: How Whites and Non-Whites Respond to the Term *'White Privilege'* in Online Spaces"
International Conference on Computational Social Science 2020

"Community College Student Success & Directed Human Capital"
University of Michigan Information Analysis & Retrieval Seminar 2018

"Conceptual Understanding in a World of Complexity"
Northwest Two-Year College Mathematics Conference 2016

"Investigating Learning and Success: Innovating in college remediation"
National Council of Teachers of Mathematics Research Conference, with Mickey Davis 2016

"The Dimensions of Student Success"
Achieving the Dream Conference on Student Success 2016

"Learning from Research on Learning"
American Mathematical Association of Two-Year Colleges, with Mickey Davis 2015

"A Research Approach to Learning & Student Success"
Washington Community College Math Conference 2015

"Mystery Theater: The Case of the Asphyxiated Algebra Class"
Achieving the Dream Conference on Student Success, with Al Friedman 2014
Also at Washington Community College Math Conference 2014

"Using Classroom Level Data to Improve Student Learning"
Everett Community College Opening Week 2012

"Math in Context"
Snohomish County High School Summer Math Institute 2011

"Data-Based Decision Making for the Lazy Educator"
Joint WAMATYC/ORMATYC Conference 2011

"Greening Your Class"
Everett Community College All-Campus Retreat 2010

AWARDS & MEDIA COVERAGE

Media Coverage – Michigan News [link w/video] 2020
"New way to measure educational success: 'Student capital'"

Service Award WA Mathematical Association of Two-Year Colleges 2017

Media Coverage - Seattle Times [link] 2016
"New study by Everett instructor shows value of real-world context in teaching algebra"

Inspirational Teacher Award Univ. Washington - Computer Science & Engineering 2016

Extra Effort Award Everett Community College 2012

GRANTS & FELLOWSHIPS

Poverty Solutions Research Funding

"A Community's Effect on Educational Success"

College Spark Community Research Grant

"How Student Learning Impacts Student Success in Mathematics"

Advanced Technology Environmental & Energy Center Fellowship

Designed high school math & science curriculum around wind energy

GK-12 Fellowship University of Washington

Supported elementary school teachers & children at a low income school with a focus on inquiry-based lessons.

COURSES & PROFESSIONAL DEVELOPMENT

Science Policy Workshop	Amer. Assoc. for the Advancement of Science	2021
Professional Development Leader	University of Michigan	2019 - 2020
Complex Systems Summer School	Santa Fe Institute	2019
Theory of Complex Systems	University of Michigan	2019
Multivariate Analysis	University of Michigan	2019
Institute for Social Change	University of Michigan	2018
Social & Technological Networks	University of Michigan	2018
Data Mining	University of Michigan	2018
Information Research Methods	University of Michigan	2018
Social Network Experiments	University of Michigan	2017
Theories in Information Research	University of Michigan	2017
Machine Learning	Coursera (Stanford)	2016
Agent-based Modeling	Complexity Explorer (Santa Fe Institute)	2016
Bayesian Statistics	Coursera (Duke)	2016
Introduction to Information Theory	Complexity Explorer (Santa Fe Institute)	2015
Maximum Entropy Methods	Complexity Explorer (Santa Fe Institute)	2015
Online Education Planning & Pedagogy	Everett Community College	2015
Introduction to Complexity	Complexity Explorer (Santa Fe Institute)	2014
Computing for Data Analysis (using R)	Coursera (Johns Hopkins University)	2014
Workplace Communications	Everett Community College	2012
Focus Group Facilitation Workshop	Achieving the Dream	2011