

American Sociological Association

# Mathematical Sociologist

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## Message from the Outgoing Chair: James A. Kitts

I write this letter at the close of a conference that was at once both depressing and exciting for the section. We missed our rich discussions and networking in the lobby and sadly honored our awardees with only Zoom applause, but we saw a record number of stimulating presentations and the high attendance at our sessions and business meeting was also unprecedented. Along with two open topics sessions, we had another Computational Sociology session (with 79 participants) organized jointly with the Methodology section, and a special session on Emerging Scholars in Mathematical and Computational Sociology.



Beyond our own events, this year also saw an explosion of computational work by graduate students on other sections' roundtables, including Sociology of Culture, Education, Sex and Gender, Religion, Community and Urban Sociology, International Migration, and others. Those who remember the days, decades ago, when we would struggle to fill a single session can delight in this wave of research employing mathematical and computational lenses now filling four of our sessions and spreading throughout the discipline.

I will briefly address this wave of young sociologists inspired by the interdisciplinary fields of computational social science, network science, and data science, some of whom were

## Section Officers

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James A. Kitts  
U. of Massachusetts

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New York U.

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Carter T. Butts  
UC Irvine

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U. of Georgia

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**Student Representative**

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Diego F. Leal  
U. of South Carolina

**Webmaster**

Matthew E. Brashears  
U. of South Carolina

## ASA Mathematical Sociology Election Results

Congratulations to our new officers. Thank you for your service.

### Chair

Guillermina Jasso,  
New York University

### Chair Elect

Lynn Smith-Lovin,  
Duke University

### Council

Matt Brashears,  
University of South Carolina

Kevin Lewis, University  
of California, San Diego

### Student Representative on Council

Kelsey Gonzalez,  
University of Arizona

wondering out loud why there is no ASA section to serve these communities. In fact, members of the Mathematical Sociology section were pioneers in those domains before the buzzwords existed. Section members studied messaging on online bulletin boards before the web browser was invented, used wearable sensors to collect dynamic network data in the days before smartphones, and developed computational models in Fortran or Pascal on floppy disks. We also helped create many of the conferences, journals, programs, and institutes that promote the above cross-cutting fields with the physical sciences, computer science, and engineering. Every five or ten years the section entertains a proposal to boost membership by including more specific descriptors in our section title, but by tradition so far we have retained the simple and esoteric title. We are a very broad tent, including formal theory and modeling, formal demography, network science, computational social science, and social science applications of data science.

Even as mathematical and computational sociology has finally begun to take off, the section itself only managed to keep a steady membership as ASA lost 23% of its members from 2009 to 2019. This past year I announced an aggressive drive to build and diversify the section by reaching out directly to non-members who submitted papers to our awards or conference sessions, to participants in our events, and to researchers who were recommended as relevant by our members. This outreach led our membership to an unprecedented growth of 30% (to 259) already this year, even as ASA collapsed due to the pandemic. Also, with a predominance of older white male members going back over our 23 year history, we are heartened to see our section now growing more diverse in age, gender, and race than ever before. We have a long way to go, and our Council has just convened a committee to help us chart a course toward diversity, equity, and inclusiveness. If you personally know anyone who should be a member, please lean on them to join the section at this link: <http://asa.enoah.com/Home/My-ASA/Join-a-Section>. Or tell our section Secretary ([zalmquist@uw.edu](mailto:zalmquist@uw.edu)) about them and we'll give them an offer they won't refuse, like a gift membership to let them experience the value of the section.

We have a few bylaws revisions for you to ratify on the next ballot. First, the 54 members attending our Business Meeting voted unanimously to add Geoffrey Tootell's name to the title of our dissertation award (currently \$5,000), which was endowed as a product of Geoff's initiative and generosity. Second, we voted unanimously to clarify in our bylaws, in compliance with ASA policy, that only section members are eligible for our awards. Third, we voted unanimously to increase the annual dues for regular members from \$10 to \$12 to support section operations. Consider the dues optional: If dues are an obstacle for anyone, anonymous colleagues in the section have provided funds to cover the expense.

I am delighted to turn over leadership of the section to Guillermina Jasso's eminent hands as the new Chair, welcome incoming Council members Matt Brashears, Kevin Lewis, Kelsey Gonzalez, and Lynn Smith-Lovin (ex-officio, in her Chair-Elect role for 2020-21), and give deep thanks to outgoing Council members (Dawn Robinson, Kazuo Yamaguchi, and Scott Duxbury). We continue our gratitude to Pam Emanuelson and Diego Leal for their excellent work on the newsletter and appreciate Zack Almquist for taking on the section web page. Many more of you will join the Council and Officers on committees and in other service. I encourage you to find a way to join in our important work by [visiting this link](#) to volunteer for section service.

I close with a note to all of our new members: I hope you will find the section to be a valuable community of peers and mentors, as it was for me over the past 23 years. Seniors of this section are highly invested in your success and will be important to you as your specialist referees, editors, and recommenders. Many sociologists may now think your work is cool, but your colleagues in this section understand *why* it is cool. And that is a community worth keeping.

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## Section Awards 2020

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### James S. Coleman Distinguished Career Achievement Award

**Noah Friedkin, University of California, Santa Barbara**

Committee: Elisa Bienenstock (Arizona State University), Ronald Breiger (Chair, University of Arizona), Benjamin Cornwell (Cornell University), David Schaefer (University of California, Irvine), John Skvoretz (University of South Florida)

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### Outstanding Dissertation-in-Progress Award

**Austin C. Kozlowski, University of Chicago**

Committee: Robin Gauthier (University of Nebraska-Lincoln), Michael Genkin (Singapore Management University), Jaemin Lee (Northeastern University), Yongren Shi (University of Iowa), Jeffrey Smith (Chair, University of Nebraska-Lincoln)

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### Outstanding Article Publication Award

**Xiang Zhou (Harvard University),**

“Equalization or selection? Reassessing the ‘meritocratic power’ of a college degree in intergenerational income mobility.” in *American Sociological Review*. <https://doi.org/10.1177/0003122419844992>

**Elizabeth Wrigley-Field (University of Minnesota),**

“Multidimensional mortality selection: Why individual dimensions of frailty don’t act like frailty” in *Demography*. <https://doi.org/10.1007/s13524-020-00858-8>

Committee: Kelsey Gonzalez (University of Arizona), Jim Adams (University of Colorado, Denver), David Melamed (Ohio State University), Kimberly Rogers (Chair, Dartmouth College), and Marshall Taylor (New Mexico State University).

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### Outstanding Graduate Student Paper Award

**Alina Arseniev-Koehler, University of California, Los Angeles**

“Machine learning as a model for cultural learning: Teaching an algorithm what it means to be fat” <https://arxiv.org/abs/2003.12133>

Committee: Andrei Boutyline (University of Michigan), Scott Feld (Purdue University), Shuyin Liu (University of Massachusetts, Amherst), Dawn Robinson (Chair, University of Georgia), Scott Thomas (University of Vermont)

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## ASA Events

### REGULAR SESSION: MATHEMATICAL SOCIOLOGY

**Organized by Diego F. Leal, U of South Carolina**

*Dimensions of Social Networks: A Taxonomy and Operationalization* by Michael Genkin (Singapore Management University), Nicholas Harrigan (Macquarie University), Rajee Kanagavel, Janice Yap

*The Social Contagion of Cheating through Victimization and Observation: Evidence from Online Gaming.* Ji Eun Kim (London School of Economics); Milena Tsvetkova (London School of Economics)

*Going Beyond Accuracy: Estimating Homophily in Social Networks Using Predictions.* George Berry (Cornell); Antonio Sirianni (Dartmouth); Ingmar Weber (QCRI), Jinsun An (QCRI), Michael Macy (Cornell);

*Automated Text Analysis for Understanding Activism: Topical Agenda of the North American Animal Liberation Movement* by Zack W. Almquist (U of Washington) and Benjamin E. Bagozzi (University of Delaware)

### COMPUTATIONAL SOCIOLOGY (Joint with Methodology Section)

**Organized by Carter Butts, UC Irvine; James Kitts, U of Massachusetts**

*Discourses of Death: Introducing a New Topic Model Based on Word Embeddings.* Alina Arseniev-Koehler (UCLA); Susan Cochran (UCLA); Vickie Mays (UCLA); Kai-Wei Chang (UCLA); Jacob G. Foster (UCLA).

*The Meanings of Class: Using Word-Embeddings and Etiquette Manuals to Uncover the Dimensions of Social Class.* Andrea Voyer (Stockholm U), Zachary Kline (UConn); and Madison Danton (UConn)

*Science and Technology Advance Through Surprise.* Feng Shi (Amazon); James A. Evans (U of Chicago)

*Dynamics of School Segregation: Assessing the Role of Preferences and Opportunities.* Selcan Mutgan (Linköping University); Peter Hedström (Linköping University); Martin Arvidsson (Linköping University)

### EMERGING SCHOLARS IN MATHEMATICAL AND COMPUTATIONAL SOCIOLOGY

**Organized by Neha Gondal, Boston University**

*Diffusion as the Bridging of Cultural Holes.* Diego F. Leal (U of South Carolina)

*School, Studying, and Smarts: The Gender of Education Across 80 Years of American Print Media.* Alina Arseniev-Koehler (UCLA)

*Network Mechanisms of Localized Knowledge Spillovers.* Malte Doehne (U of Zürich)

*Online, Anonymous, and Suicidal: How Anonymity Influences Receiving Social Support.* Darla Marie Still (U of Arizona)

### OPEN TOPICS IN MATHEMATICAL SOCIOLOGY

**Organized by James Kitts, U of Massachusetts**

*Better Use of the Underutilized Eigenvector Centrality.* Elisa Jayne Bienenstock (Arizona State U); Phillip Bonacich (UCLA)

*Models of Networks with Vertex and Edge Dynamics Containing Arbitrary Dependence.* Loring Thomas (UC Irvine); Carter T. Butts, (UC Irvine)

*Optimal Seeding Strategies for Social Contagions.* Douglas Guilbeault (U of Pennsylvania)

*Precise Event-Level Prediction for Urban Crime and Regional Terrorism with Granger Networks.* Ishanu Chattopadhyay (Chicago); Timmy Li (Chicago); Yi Huang (Chicago); James A. Evans (Chicago)

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## News Related to Members of Our Community

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**New Position: Jaemin Lee** started a new position as Assistant Professor of Sociology at The Chinese University of Hong Kong.

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## New Work by Members of Our Community

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DellaPosta, Daniel. 2020. "Pluralistic Collapse: The "Oil Spill" Model of Mass Opinion Polarization." *American Sociological Review*. 85(3): 507-536. <https://doi.org/10.1177/0003122420922989>

Jasso, Guillermina. 2020. "Is and Ought: From Ideas to Theory to Empirics." Pp. 105-127 in Alexander Max Bauer and Malte Ingo Meyerhuber (eds.), *Empirical Research and Normative Theory*. Berlin, Germany: Walter de Gruyter. <https://doi.org/10.1515/9783110613797-008>

Jasso, Guillermina. In press. "New Results Linking Inequality and Justice." *Journal of Mathematical Sociology*. Prepublished 26 March 2020. <https://doi.org/10.1080/0022250X.2020.1715970>

Jasso, Guillermina, and Mark R. Rosenzweig. In press. "What is the Size and Legal Composition of the US Foreign-Born Population?" *International Migration Review*. Prepublished 21 January 2020. <https://doi.org/10.1177/0197918319893287>

Jasso, Guillermina, and Mark R. Rosenzweig. In press. "What is the Size and Legal Composition of the US Foreign-Born Population?" *International Migration Review*. Prepublished 21 January 2020. <https://doi.org/10.1177/0197918319893287>

Lewis, Kevin, and Andrew V Papachristos. 2020. "Rules of the Game: Exponential Random Graph Models of a Gang Homicide Network." *Social Forces*. 98(4): 1829-1858, <https://doi.org/10.1093/sf/soz106>

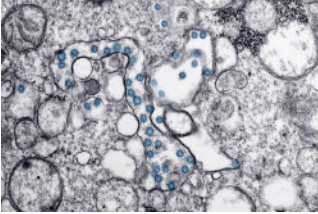
Light, Ryan, and Moody, James (Editors). 2020. *The Oxford Handbook of Social Networks*. Oxford University Press. [Editors and many authors are section members.] <https://global.oup.com/academic/product/the-oxford-handbook-of-social-networks-9780190251765>

Manzo, Gianluca. 2020. "Complex Social Networks are missing in the Dominant COVID-19 Epidemic Models." *Sociologica* 14(1):31-49. <https://sociologica.unibo.it/issue/view/869>

Meeker, Barbara Foley. 2020. "Nonlinear models of distribution of talking in small groups" *Social Science Research* 85 <https://doi.org/10.1016/j.ssresearch.2019.102367>

Melamed, David, Matthew Sweitzer, Brent Simpson, Jered Z. Abernathy, Ashley Harrell, and Christopher W. Munn. 2020. "Homophily and Segregation in Cooperative Networks." *American Journal of Sociology* 125(4): 1084-1127. <https://doi.org/10.1086/708142>

## Research Highlight: Covid-19



CDC image  
Coronavirus

### Study of Cultural Sentiments about Essential and Non-essential Occupations

Robert Freeland, Jesse Hoey, Joseph Quinn,  
Kimberly B. Rogers, Lynn Smith-Lovin

Most studies of the novel coronavirus involve networks, infections, and changes in social arrangements. We had an opportunity to look at a very different topic: have the massive changes in employment in our society created changes in the cultural meanings of occupations? A very important ASR paper in 2018 (Freeland and Hoey 2018) described and validated a new occupational status scale (a “deference score”) based on affect control theory (ACT). Freeland and Hoey (2018) simulated how likely different occupational identities were to defer to other occupations, under the theory. They only had 300 occupations to work with, from an earlier compilation of cultural sentiments toward occupational identities. So, we fielded a study that would estimate the sentiments for occupational identities for all 650 U.S. Census occupational codes in fall of 2019. Almost all of the data collection was complete just before the covid-19 outbreak.

*“Understanding the changes in people's perceptions and feelings about occupations is necessary for understanding the human behavioral aspects of pandemic response, which is a highly significant factor in the modelling of disease spread.”*

Our economy has changed so much as a result of the outbreak. There are essential workers who we may have never thought of as “essential” before. There are heroes who come to the rescue of the sick, and who are featured regularly in the news. Have the meanings of these occupational identities changed as a result of these massive social changes? Understanding the changes in people's perceptions and feelings about occupations is necessary for understanding the human behavioral aspects of pandemic response, which is a highly significant factor in the modelling of disease spread. We are now going back into the field using the same methods and protocols to answer the question. In the original study, we collected a core module of both the General Social Survey's core set of occupations for their prestige measure (cite) and a small set of occupational identities that spans affect control theory's three-dimensional sentiment space (evaluation—good-bad, potency—powerful-weak, and activity—lively or quiet). We are using these as a control group in the new study. In addition, we are collecting new ratings of both essential and decidedly non-essential (and therefore now unemployed) occupational identities.

There are at least three possibilities: (1) The usual assumptions that ACT makes about the stability and consensus of cultural sentiments could hold. No change from our major study to the new post-covid-19 period. (2) The members of our society could be experiencing a large, but temporary, movement from our fundamental understandings of these identities. Nurses always seemed nice, but now they seem heroic. Grocery store clerks used to be taken for granted, but now we



realize just how central to our existence they are. (3) The changes might be permanent in the sense that they change our culture in the long run. Firefighters seem to have become more revered in our society after 9/11, and that change has not disappeared quickly. Could nurses, grocery clerks, delivery drivers and truckers be similarly elevated?

Clearly, option (3) would require both a change that we can measure now, and a later study to show whether or not the change remained after the pandemic has passed. Now, we are excited to be analyzing the results of the first large occupational identity study, and to be fielding the second study of essential and non-essential occupations to see what has changed.

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## **Coevolution of Interaction, Sentiments, Role Relations, and Access Among Urban Adolescents During the COVID-19 Shutdown**

**James A. Kitts, Mark C. Pachucki, Lindiwe Sibeko, and John R. Sirard**

Previous work (Kitts 2014) has elucidated four distinct ways of thinking about social ties – as social *sentiments* (e.g., liking, respect), *interaction* (e.g., conversations, play), *role relations* (e.g., friend, coauthor), and *access* (e.g., opportunities or availability for interaction). In an NIH-supported interdisciplinary study, we are measuring and modeling 10 dynamic networks in four diverse urban middle schools at 12 points in time over three years. Our measures target all of the basic network concepts above: liking/disliking, friendship, online interaction, shared classes/clubs/teams, and five contexts of face to face interaction such as sitting together at school lunch, exercising together, or spending time together outside of school.

A key aim of the study is to understand the dynamic interplay of health behavior (screen time, physical activity, diet), health outcomes, and these interpersonal networks. However, the COVID-19 pandemic led to a school shutdown and statewide stay-at-home advisory at the exact midpoint of data collection. While still collecting data and pursuing the original aims, we also hope to see how the shutdown and subsequent reopening of schools, clubs, and activities affect both face to face and online interaction networks, as well as sentiments and friendship relations. These interventions on the structure of access and face to face interaction may indeed offer some leverage on the puzzle of peer influence in behavior.

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## **Moving Forward to Catch up with the Past. Covid-19, Social Interaction, and our (In)ability to Cope with Change.**

**Jorge Zazueta**

The typical SIR (Susceptible, Infectious, Recovered) framework for infection spread modeling presents two equilibria: the disease-free equilibrium (DFE) where no infected population remains and the endemic equilibrium (EE) where a portion of the population remains infected. Naturally or artificially acquired immunity is necessary for the system to reach the DFE. With still uncertain results about immunity, and an unknown time frame for the successful development of a vaccine, coexistence with Covid-19 might become more than a short-term affair. According to the World Health Organization (WHO), good hygiene

practices, along with consistent social distancing, remain our best available defense strategies.

Fortunately, most necessary technology and business processes to implement social distancing are in place. Remote work and online education have been around for decades. Automated manufacturing and Robotic Business Process Automation are well-established technologies and the global supply chain with e-commerce can manage everything from procuring steel and oil globally to ordering dinner, clothing, or groceries. Our laptops and phones equip us with unprecedented communication capabilities and are quite effective at providing a gamut of entertainment options. Yet, many of us have stoically resisted adoption. Why did it take a global pandemic to force these options into the mainstream?

There is no watercooler in the home-office. Going to work is not only a professional activity but, explicitly or implicitly, a social interaction exercise. We cannot gossip about the new manager or exchange complicit looks when a coworker shows up late or says something embarrassing if we are working remotely. There are no impromptu drinks or tacos after a stressful Zoom meeting, and the excitement of that offsite in Paris rapidly subsides when it becomes a videoconference. Just as at work, many of our activities are intrinsically social in nature. High-end televisions compete in quality with movie theaters, but we cannot engage in people watching or sharing loud reaction with a bunch of strangers while seating at home. Most people would avoid an empty restaurant despite the superiority of its food, and even shopping is not exclusively a provisioning activity as evidenced by the outrage towards the recent restrictions from selling non-essential products in large retail chains in some parts of the United States. It turns out that grocery shopping is partly a social experience.

We are naturally social beings, and the need for human interaction is quite possibly an indispensable element of a healthy lifestyle. But the mode of socializing does not need to be fixed. Our ancestors did not attend concerts with a hundred thousand spectators. The mode by which we satisfy our social interaction needs has evolved, along with our environment. As our environment changes more rapidly, we need to be able to catch up socially. A great deal of our frustration with the current outbreak comes from our inability to cope with social distancing, which is ironically the reason why we were not willing to adopt a technological and lifestyle change that would likely have eased the psychological and economic consequences of the current pandemic. Our resistance to change our social interaction mode might become a serious, and even dangerous, change inhibitor.

To survive a future with technological change arriving at a neck-breaking speed, we need to redefine social interaction. What does it mean to socialize, and what do we get from it? Social interaction management will become a top priority as we move forward into the future.

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## Mission Statement of the Mathematical Sociology Section

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The purpose of the Mathematical Sociology Section of the American Sociological Association is to encourage, enhance and foster research, teaching and other professional activities in mathematical sociology, for the development of sociology and the benefit of society, through organized meetings, conferences, newsletters, publications, awards and other means deemed appropriate by the Section Council. The Section seeks to promote communication, collaboration and consultation among scholars in sociology in general, mathematical sociology and allied scientific disciplines

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### From The Newsletter Co-Editors

*Thank you for your timely contributions to the Spring/Summer 2020 Issue of the Mathematical Sociologist. Please continue to send us your announcements, articles, book reviews, conference announcements, etc. The more you are involved with the newsletter, the better it will be. Please feel free to send us your comments, concerns, corrections, or any ideas you have for the newsletter.*

*We also wanted to let our members know that the Section website (<http://www.mathematicalsociology.org>) is moving to the University of Washington, where it will be administered by Zack Almquist. Thanks to the previous webmaster, Matt Brashears, for keeping the site up and running!*

*Have a great end of the summer and watch your email for future newsletter editor requests!*



Diego F. Leal  
leald@mailbox.sc.edu

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*“Pure mathematics is, in its way, the poetry of logical ideas”*

*- Albert Einstein*

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