

# CARTER TRIBLEY BUTTS

## CONTACT INFORMATION:

- WORK:

Department of Sociology  
SSPA 2145  
University of California – Irvine  
Irvine, CA 92697  
Tel: (949)824-8591  
Lab: Calit2 3301

- ONLINE:

Email: [buttsc@uci.edu](mailto:buttsc@uci.edu)  
Lab Page: <http://www.ncasd.org/>  
Research Page: <http://research.carterbutts.com/>

## EDUCATION:

- Ph.D. in Sociology, Carnegie Mellon University, May 2002  
“Spatial Models of Large-Scale Interpersonal Networks” (Kathleen M. Carley, Chair)
- M.S. in Sociology, Carnegie Mellon University, May 1998  
“Canonical Labeling to Facilitate Graph Comparison” (Kathleen M. Carley, Chair)
- B.S. in Systems Theory (with distinction), Duke University, May 1996
- Diploma, Jordan High School, May 1992

## CURRENT POSITION:

- Chancellor’s Professor, Departments of Sociology, Statistics (Courtesy), Computer Science (Courtesy), and Electrical Engineering and Computer Science (Courtesy), and Institute for Mathematical Behavioral Sciences, University of California – Irvine

## CAMPUS AFFILIATIONS:

- Department of Sociology
- Department of Statistics
- Department of Computer Science
- Department of Electrical Engineering and Computer Science
- Institute for Mathematical Behavioral Sciences
- California Institute for Telecommunications and Information Technology (Calit2)
- Chemistry and Materials Physics Program (ChAMP)
- Networked Systems Program (NetSys)
- UCI Graduate Program in Networked Systems
- UCI Center for Networks and Relational Analysis
- UCI Center for Machine Learning and Intelligent Systems
- UCI Center for Emergency Response Technology
- UCI Center for Organizational Research

- UCI Synthetic and Chemical Biology Club

#### RESEARCH INTERESTS

- Mathematical Sociology
- Social and Biophysical Networks
- Computational, Bayesian, and Applied Statistics
- Simulation and Computational Methods
- Molecular Modeling and Analysis
- Human Judgment and Decision Making
- Disasters

#### AWARDS AND HONORS:

- Elected Member, Sociological Research Association, 2022
- Chancellor's Professor, University of California, Irvine, 2021
- William D. Richards Software Award for the `statnet` Library for **R** (with the `statnet` development team), INSNA, 2019
- Elected Fellow, American Association for the Advancement of Science, 2018
- Best Methodological Poster Award for "Contending Parties: a Logistic Choice Analysis of Inter and Intra-group Blog Citation Dynamics in the 2004 US Presidential Election" (with Zack Almquist), 4th Annual Political Networks Conference, Ann Arbor, MI, 2011.
- Leo A. Goodman Award, ASA Section on Methodology, 2010
- James Coleman Paper Award for "Rational and Empirical Play in the Simple Hot Potato Game" (with David Rode), ASA Section on Rationality and Society, 2009
- Linton C. Freeman Award for Distinguished Scholarship, International Network for Social Network Analysis, 2008
- Best Paper Award for "Emergency Phase Networks During the World Trade Center Disaster" (with Miruna Petrescu-Prahova and Remy Cross), Third Joint US-Japan Conference on Mathematical Sociology, Sapporo, Japan, 2005
- Kavli Fellow (2004, 2008, and 2012 Frontiers of Science Symposia)
- Herbert A. Simon Dissertation Award for "Spatial Models of Large-Scale Interpersonal Networks," Carnegie Mellon University, 2002
- Outstanding Working Paper Award for "Analyzing Life Course Patterns with the Interval Graph Approach" (with Joy Pixley), Cornell Careers Institute, 2002
- Outstanding Graduate Student Paper Award for "Analyzing Life Course Patterns with the Interval Graph Approach" (with Joy Pixley), ASA Section on Aging and the Life Course, 2001
- Three Rivers Network Certification and Award in Social Network Analysis, 1999
- Outstanding Graduate Student Paper Award for "A Bayesian Model of Panic in Belief," ASA Section on Mathematical Sociology, 1999

#### GRANTS AND FELLOWSHIPS:

- Butts, Carter T. (PI) and Martin, Rachel W. (Co-I). (9/24/2021-7/31/2025). "DMS/NIGMS 2: Statistical Network Models for Protein Aggregation." Grant #1R01GM144964-01, NIH

NIGMS. \$1,180,141.

- Butts, Carter T. (PI). (5/1/2020-4/30/2022). “RAPID/Collaborative Research: Agency COVID-19 Risk Communication on Social Media: Characterizing Drivers of Message Re-transmission and Engagement.” Grant #CMMI-2027475, NSF CMMI. \$93,350.
- Martin, Rachel W. (PI) and Butts, Carter T. (Co-I). (2/1/2020-1/31/2023). “Molecular Evolution and Minimal Functional Requirements of Extremophilic Proteases.” Grant #80NSSC20K0620, NASA Exobiology. \$711,727.
- Markopoulou, Athina (PI); Butts, Carter T. (Co-PI); and Chandramowlishwaran, Aparna (Co-PI). (9/1/19-8/31/22). “EAGER: N-Body Algorithms for Mobile and Social Data.” Grant #IIS-1939237, NSF IIS. \$300,000.
- Butts, Carter T. (PI). (10/1/2018–9/30/22). “Statistical Models for Dynamic Networks with Endogenous Vertex Migration.” Grant #SES-1826589, NSF MMS. \$441,705.
- Butts, Carter T. (PI). (10/1/2015–8/31/2020). “Collaborative Research: Online Hazard Communication in the Terse Regime: Measurement, Modeling, and Dynamics.” Grant #CMMI-1536319, NSF CMMI. \$458,876.
  - Supplemental award: Butts, Carter T. (PI). “Collaborative Research: Message Re-transmission and Amplification in the Context of Meteorological Hazards.” NOAA. \$49,743.
- Markopoulou, Athina (PI) and Butts, Carter T. (Co-PI). (9/1/2015-8/31/2019). “III: Small: Network Sampling and Construction Methods for Inference and Anonymization.” Grant #IIS-1526736, NSF IIS. \$499,758.
- Butts, Carter T. (PI) and Martin, Rachel W. (Co-PI). (10/1/2014–9/30/2020). “Bayesian Methods for Protein Fibrillization: Model Integration and Network Dynamics.” Grant #DMS-1361425, NSF DMS. \$1,308,441.
- Butts, Carter T. (PI). (8/10/2014–10/9/2017). “Advancing Statistical Methods for Analysis of Multiple Networks.” Grant #W911NF-14-1-0552, ARO. \$448,706.
- Butts, Carter T. (PI) and Almquist, Zack W. (Co-PI). (3/2013–3/2014). “Doctoral Dissertation Research: Dynamic Network Models for the Scalable Analysis of Networks with Missing or Sampled Joint Edge/Vertex Evolution.” Grant #SES-1260798, NSF SBE, MMS. \$15,140.
- Anandkumar, Anima (PI) and Butts, Carter T. (Co-PI). (9/1/2013–8/30/2016). “BIG-DATA: Small: DA: DCM: Measurement and Learning in Large-Scale Social Networks.” Grant #IIS-1251267, NSF IIS. \$746,783.
- Lakon, Cynthia M. (PI); Butts, Carter T. (Co-Investigator); Hipp, John R. (Co-Investigator); Timberlake, David. (6/1/2012–5/30/2015). “Cascades of Network Structure and Function: Pathways to Adolescent Substance Use.” Grant #1R21DA031152-01A1, NIH NIDA. \$402,820
- Morris, Martina (PI); Butts, Carter T. (Co-Investigator); Steven M. Goodreau (Co-Investigator); Hunter, David (Co-Investigator); Bender-deMoll, Skye (Co-Investigator); and Krivitsky, Pavel (Co-Investigator). (5/2011–4/2016). “Statistical Methods for Network Epidemiology.” Grant #1R01HD068395-01, NIH NICHD. \$3,092,315.00.
- Butts, Carter T. (PI). (10/2010–9/2014). “Collaborative Research: Informal Online Communication in Extreme Events: Content, Dynamics, and Structure.” Grant #CMMI-1031853, NSF CMMI, Infrastructure Management and Extreme Events. \$404,948.00.

- Markopoulou, Athina (PI); Przulj, Natasa (Co-PI); and Butts, Carter T. (Co-PI). (10/2010–8/2016). “CDI-Type II: Topology and Function in Computer, Social and Biological Networks.” Grant #NSF OIA-1028394, Cyber-enabled Discovery and Innovation. \$2,152,181.00.
- Butts, Carter T. (PI); Hipp, John (Co-PI); Nagle, Nicholas N. (Co-PI). (10/2008-3/2014). “DHB: Large-scale Spatially Embedded Interpersonal Networks: Measurement, Modeling, and Dynamics.” Grant #BCS-0827027, NSF BCS, Human Social Dynamics. \$749,245.00.
- Smyth, Padhraic (PI); Butts, Carter T. (Co-PI); Eppstein, David (Co-PI); Goodrich, Michael T. (Co-PI); Handcock, Mark S. (Co-PI); Hunter, David R. (Co-PI); Mount, David (Co-PI). (5/2008–5/2015). “Scalable Methods for the Analysis of Network-based Data.” Award #N00014-08-1-1015, ONR. \$5,381,300.00.
- Mendonça, David (PI); Butts, Carter T. (Co-PI); Webb, Gary (Co-PI). (10/2006–9/2011). “AOC: Improvisation in Emergency Response: Linking Cognition, Behavior and Social Interaction.” Grant #CMS-0624257, NSF CMS, Human Social Dynamics. \$710,000.00.
- Butts, Carter T. (PI). (2/2006–7/2007). “SGER: Collaborative Research: Mapping and Analyzing Emergent Multiorganizational Networks in the Hurricane Katrina Response.” Grant #CHE-0555125, NSF CHE, Statistics and Simulations. (Awarded through HSD SGER.) \$69,372.00.
- Butts, Carter T. (PI). (1/2005–3/2005). “Modeling HIV and STD in Drug User and Social Networks.” Subaward 918197 of award 5 R01 DA012831-05, NIH. \$13,294.00.
  - Extension to 1/2006–5/2006, \$26,764.00.
  - Extension to 1/2007–5/2007. \$13,940.00
- Mehrotra, Sharad (PI); Butts, Carter T. (Co-PI); Eguchi, Ronald (Co-PI); Venkatasubramanian, Nalini (Co-PI); and Winslett, Marianne (Co-PI). (10/2003–9/2008). “Collaborative Research: Responding to the Unexpected.” Grant #IIS-0331707, NSF ITR. \$8,957,651.00.
- Carley, Kathleen M. (PI), and Butts, Carter T. (Co-PI). (4/2001). “Dissertation Improvement: Spatial Models of Large-Scale Interpersonal Networks.” Grant #SES-0100999, NSF SBE, Sociology. \$6,512.00.
- Butts, Carter T. (PI). (6/2000). “Monte Carlo Methods for Simulating Large-Scale Interpersonal Networks.” Research Proposal Award from the Center for Computational Analysis of Social and Organizational Systems, NSF IGERT “Integrated Graduate Education and Research Training in Computational Analysis of Social and Organizational Systems.” \$965.75.
- National Science Foundation Graduate Research Fellowship, 1997-2000

#### ARTICLES AND PEER REVIEWED CONFERENCE PAPERS:

- Butts, Carter T. (2023). “Continuous Time Graph Processes with Known ERGM Equilibria: Contextual Review, Extensions, and Synthesis.” *Journal of Mathematical Sociology*. DOI: 10.1080/0022250X.2023.2180001
- Diessner, Elizabeth M.; Freitas, J. Alfredo; Tobias, Douglas J.; and Butts, Carter T. (2023). “Network Hamiltonian Models for Unstructured Protein Aggregates, with Application to  $\gamma$ D-Crystallin.” *Journal of Physical Chemistry, B*, 127(3), 685–697. DOI: 10.1021/acs.jpcc.2c07672
- Diessner, Elizabeth M.; Takahashi, Gemma R.; Martin, Rachel W.; and Butts, Carter T. (2023). “Comparative Modeling and Analysis of Extremophilic D-Ala-D-Ala Carboxypeptidases.” *Biomolecules*, 13(2), 328. DOI: 10.3390/biom13020328

- Diessner, Elizabeth M.; Takahashi, Gemma R.; Cross, Thomas J.; Martin, Rachel W.; and Butts, Carter T. (2023). “Mutation Effects on Structure and Dynamics: Adaptive Evolution of the SARS-CoV-2 Main Protease.” *Biochemistry*. DOI: 10.1021/acs.biochem.2c00479
- Gibson, C. Ben and Butts, Carter T. (2023). “Effects of Temporal Resolution Adjustments on Dynamic Sexual Contact Models.” *Social Networks*, 73, 104–113. DOI: 10.1016/j.socnet.2022.10.003
- Gravel, Jason; Valasik, Matthew; Mulder, Joris; Leenders, Roger; Butts, Carter T.; Brantingham, P. Jeffrey; and Tita, George E. (2023). “Rivalries, Reputation, Retaliation, and Repetition: Testing Plausible Mechanisms for the Contagion of Violence Between Street Gangs Using Relational Event Models.” *Network Science*, 11(2), 324–350. DOI: 10.1017/nws.2023.8
- Hipp John R.; Boessen, Adam; Butts, Carter T.; Nagle, Nicholas N.; and Smith, Emily J. (2023). “The Spatial Distribution of Neighborhood Safety Ties: Consequences for Perceived Collective Efficacy?” *Journal of Urban Affairs*. DOI: 10.1080/07352166.2023.2192940
- Huang, Peng and Butts, Carter T. (2023). “California Exodus? A Network Model of Population Redistribution in the United States.” *Journal of Mathematical Sociology*, forthcoming.
- Huang, Peng and Butts, Carter T. (2023). “Rooted America: Immobility and Segregation of the Inter-county Migration Networks.” *American Sociological Review*, forthcoming.
- Huang, Peng and Butts, Carter T. (2023). “Parameter Estimation Procedures for Exponential-family Random Graph Models on Count-valued Networks: A Comparative Simulation Study.” *Social Networks*, 76, 51–67. <https://doi.org/10.1016/j.socnet.2023.07.001>
- Jiang, Xiwen; Livas, Selena M.; Yin, Fan; Banerjee, Sayantan; Butts, Carter T.; and Shen, Weining. (2023). “Structure Recovery and Trend Estimation for Dynamic Network Analysis.” *Stat*, 12(1), e593. <http://doi.org/10.1002/sta4.593>
- Lee, Francis; Butts, Carter T.; and Schneider, John A. (2023). “Measuring Structural HIV Stigma.” *Social Networks*, 74, 275–284. DOI 10.1016/j.socnet.2023.04.001
- Long, Zane G.; Le, Jonathan V.; Katz, Benjamin B.; Lopez, Belen G.; Tenebaum, Emily D.; Semmling, Bonnie; Schmidt, Ryan J.; Grun, Felix; Butts, Carter T.; Martin, Rachel W. (2023). “Spatially Resolved Detection of Small Molecules from Press-dried Plant Tissue Using MALDI Imaging.” *Applications in Plant Sciences*, forthcoming.
- Renshaw, Scott L.; Livas, Selena M.; Petrescu-Prahova, Miruna G.; and Butts, Carter T. (2023). “Modeling Complex Interactions in a Disrupted Environment: Relational Events in the WTC Response.” *Network Science*, 11(2), 295–323. DOI: 10.1017/nws.2023.4
- Thomas, Loring; Huang, Peng; Hipp, John R.; and Butts, Carter T. (2023). “Marginal-preserving Imputation of Three-way Array Data in Nested Structures, with Application to Small Areal Units.” *Sociological Methodology*, forthcoming.
- Zong, Xixiao; Yang, Mengway; Ley, Justin; Butts, Carter T.; and Markopoulou, Athina. (2023). “Privacy by Projection: Federated Population Density Estimation by Projecting on Random Features.” *Proceedings on Privacy Enhancing Technologies*, 309-324. DOI: 10.56553/popets-2023-0019
- Alimpertis, Emmanouil; Butts, Carter T.; Markopoulou, Athina; and Psounis, Konstantinos. (2022). “A Unified Prediction Framework for Signal Maps: Not All Measurements are Created Equal.” *IEEE Transactions on Mobile Computing*. DOI: 10.1109/TMC.2022.3221773
- Butts, Carter T. (2022). “A Dynamic Process Reference Model for Sparse Networks with

Reciprocity.” *Journal of Mathematical Sociology*, 46(1), 1–27.  
<https://doi.org/10.1080/0022250X.2020.1795652>

- Luo, Xiaoshuang Iris; Hipp, John R.; and Butts, Carter T. (2022). “Does the Spatial Distribution of Social Ties Impact Neighborhood and City Attachment? Differentials among Urban/Rural Contexts.” *Social Networks*, 68, 374–385.
- Thomas, Loring J.; Huang, Peng; Yin, Fan; Xu, Junlan; Almquist, Zack W.; Hipp, John R.; Butts, Carter T. (2022). “Geographical Patterns of Social Cohesion Drive Disparities in Early COVID Infection Hazard.” *Proceedings of the National Academy of Sciences*, 119(12), e2121675119. <https://doi.org/10.1073/pnas.2121675119>
- Yin, Fan and Butts, Carter T. (2022). “Highly Scalable Maximum Likelihood and Conjugate Bayesian Inference for ERGMs on Graph Sets with Equivalent Vertices.” *PLoS ONE*, 17(8): e0273039. <https://doi.org/10.1371/journal.pone.0273039>
- Wang, Cheng; Hipp, John R.; Butts, Carter T.; and Lakon, Cynthia. (2022). “Insight into Selecting Adolescents for Drinking Intervention Programs: A Simulation Based on Stochastic Actor-Oriented Models.” *Prevention Science*, 23(1): 48-58. <https://doi.org/10.1007/s11121-021-01261-4>
- Wang, Cheng; Hipp, John R.; Butts, Carter T.; and Lakon, Cynthia. (2022). “The Moderating Role of Context: Relationships between Individual Behaviors and Social Networks.” *Sociological Focus*, 55(2): 191-212.
- Yin, Fan; Shen, Weining; and Butts, Carter T. (2022). “Finite Mixtures of ERGMs for Modeling Ensembles of Networks.” *Bayesian Analysis*, 17(4), 1153–1191. DOI: 10.1214/21-BA1298
- Butts, Carter T. (2021). “Phase Transitions in the Edge/Concurrent Vertex Model.” *Journal of Mathematical Sociology*, 45(3), 135-147. DOI: 10.1080/0022250X.2020.1746298
- Butts, Carter T. and Martin, Rachel W. (2021). “Bayesian Estimation of the Hydroxyl Radical Diffusion Coefficient at Low Temperature and High Pressure from Atomistic Molecular Dynamics.” *Journal of Chemical Physics*, 155(19), 194504. <https://doi.org/10.1063/5.0064995>
- Duong, Vy T.; Diessner, Elizabeth M.; Grazioli, Gianmarc; Martin, Rachel W.; and Butts, Carter T. (2021). “Neural Upscaling from Residue-level Protein Structure Networks to Atomistic Structures.” *Biomolecules*, 11, 1788. <https://doi.org/10.3390/biom11121788>
- Fitzhugh, Sean M. and Butts, Carter T. (2021). “Staying Connected Under Fire: Effects of Individual Roles and Organizational Specialization on the Robustness of Emergency-Phase Communication Networks.” *Social Networks*, 64. <https://doi.org/10.1016/j.socnet.2020.07.006>
- Jose, Rupa; Hipp, John R.; Wang, Cheng; Butts, Carter T.; and Lakon, Cynthia. (2021). “A Multi-Contextual Examination of Non-School Friendships and their Impact on Adolescent Deviance and Alcohol Use.” *PLoS ONE*, 16(2), e0245837. <https://doi.org/10.1371/journal.pone.0245837>
- Kreutzer, Adam G.; Krumberger, Maj; Diessner, Elizabeth M.; Parrocha, Chelsea Marie T.; Morris, Michael A.; Guaglianone, Gretchen; Butts, Carter T.; and Nowick, James S. (2021). “A Cyclic Peptide Inhibitor of the SARS-CoV-2 Main Protease.” *European Journal of Medicinal Chemistry*, 221(5), 113530. DOI:10.1016/j.ejmech.2021.113530
- Renshaw, Scott; Mai, Sabrina; Dubois, Elisabeth; Sutton, Jeannette; and Butts, Carter T. (2021). “Cutting Through the Noise: Predictors of Successful Online Message Retransmission in the First Eight Months of the COVID-19 Pandemic.” *Health Security*, 19(1), 31–43.

<http://doi.org/10.1089/hs.2020.0200>

- Yin, Fan; Khago, Domarin; Martin, Rachel W.; and Butts, Carter T. (2021). “Bayesian Analysis of Static Light Scattering Data for Globular Proteins.” *PLoS ONE*, 16(1), e0258429. <https://doi.org/10.1371/journal.pone.0258429>
- Yu, Yue; Grazioli, Gianmarc; Phillips, Nolan N.; and Butts, Carter T. (2021). “Local Graph Stability in Exponential Family Random Graph Models.” *SIAM Journal on Applied Mathematics*, 81(4), 1389-1415. <https://doi.org/10.1137/19M1286864>
- Cross, Thomas J.; Takahashi, Gemma R.; Diessner, Elizabeth M.; Crosby, Marquise G.; Farahmand, Vesta; Zhuang, Shannon; Butts, Carter T.; and Martin, Rachel W. (2020). “Sequence Characterization and Molecular Modeling of Clinically Relevant Variants of the SARS-CoV-2 Main Protease.” *Biochemistry*, 9(39), 3741-3756. DOI: 10.1021/acs.biochem.0c00462
- Gibson, C. Ben; Vos, Sarah K; Sutton, Jeannette; and Butts, Carter T. (2020). “Practical Methods for Imputing Follower Count Dynamics.” *Sociological Methods and Research*. <https://doi.org/10.1177/0049124120926210>.
- Lee, Francis and Butts, Carter T. (2020). “Incorporating Structural Stigma into Network Analysis.” *Social Networks*, 63, 91–99. <https://doi.org/10.1016/j.socnet.2020.05.005>
- Lee, Francis and Butts, Carter T. (2020). “On the Validity of Perceived Social Structure.” *Journal of Mathematical Psychology*, 98, 102384. <https://doi.org/10.1016/j.jmp.2020.102384>
- Schweinberger, Michael; Krivitsky, Pavel N.; Butts, Carter T.; and Stewart, Jonathan. (2020). “Exponential-Family Models of Random Graphs: Inference in Finite-, Super-, and Infinite-Population Scenarios.” *Statistical Science*, 35(4), 627–662. <http://dx.doi.org/10.1214/19-STS743>
- Sprague-Piercy, Marc; Bierma, Jan; Crosby, Marquise; Carpenter, Brooke; Takahashi, Gemma; Paulino, Joana; Hung, Ivan; Zhang, Rongfu; Kelly, John; Kozlyuk, Natalia; Chen, Xi; Butts, Carter T; and Martin, Rachel W. (2020). “The Droserasin 1 PSI: A Membrane-interacting Antimicrobial Peptide from the Carnivorous Plant *Drosera capensis*.” *Biomolecules*, 10(7), 1069. <https://doi.org/10.3390/biom10071069>
- Sutton, Jeannette; Renshaw, Scott; and Butts, Carter T. (2020). “The First 60 Days: American Public Health Agencies’ Social Media Strategies in the Emerging COVID-19 Pandemic.” *Health Security*, 18(6). DOI: 10.1089/hs.2020.0105
- Sutton, Jeannette; Renshaw, Scott; and Butts, Carter T. (2020). “COVID-19 Retransmission of Official Communications in an Emerging Pandemic.” *PLoS ONE*, 15(9), e0238491. <https://doi.org/10.1371/journal.pone.0238491>
- Thomas, Loring J.; Huang, Peng; Yin, Fan; Luo, Xiaoshuang Iris; Almquist, Zack W.; Hipp, John R.; and Butts, Carter T. (2020). “Spatial Heterogeneity Can Lead to Substantial Local Variations in COVID-19 Timing and Severity.” *Proceedings of the National Academy of Sciences*, 202011656. DOI: 10.1073/pnas.2011656117
- Vos, Sarah C.; Sutton, Jeannette; Gibson, C. Ben; and Butts, Carter T. (2020). “#Ebola: Emergency Risk Messages on Social Media.” *Health Security*, 18(6), 461–472. <http://doi.org/10.1089/hs.2019.0158>
- Wang, Cheng; Butts, Carter T.; Hipp, John R.; and Lakon, Cynthia M. (2020). “Model Adequacy Checking/Goodness of Fit Testing for Behavior in Joint Dynamic Network/Behavior Models, with an Extension to Two-Mode Networks.” *Sociological Methods and Research*. DOI: 10.1177/0049124120914933

- Yu, Yue; Smith, Emma J.; and Butts, Carter T. (2020). “Retrospective Network Imputation from Life History Data: The Impact of Designs.” *Sociological Methodology*, 50(1), 131-167. DOI: 10.1177/0081175020905624
- Yu, Yue; Grazioli, Gianmarc; Unhelkar, Megha; Martin, Rachel W.; and Butts, Carter T. (2020). “Network Hamiltonian Models Reveal Pathways to Amyloid Fibril Formation.” *Nature Scientific Reports*, 10, 15668. DOI: 10.1038/s41598-020-72260-8
- Alimpertis, Emmanouil; Markopoulou, Athina; Butts, Carter T.; and Psounis, Konstantinos. (2019). “City-wide Signal Strength Maps: Prediction with Random Forests.” *Proceedings of the 2019 World Wide Web Conference (ACM WWW)*. DOI: 10.1145/3308558.3313726
- Baldesi, Luca; Markopoulou, Athina; and Butts, Carter T. (2019). “Spectral Graph Forge: A Framework for Generating Synthetic Graphs with a Target Modularity.” *IEEE/ACM Transactions on Networking*, 27(5), 2125-2136. DOI: 10.1109/TNET.2019.2940377
- Butts, Carter T. (2019). “A Dynamic Process Interpretation of the Sparse ERGM Reference Model.” *Journal of Mathematical Sociology*, 43(1), 40–57. <https://doi.org/10.1080/0022250X.2018.1490737>
- Grazioli, Gianmarc; Martin, Rachel W.; and Butts, Carter T. (2019). “Comparative Exploratory Analysis of Intrinsically Disordered Protein Dynamics using Machine Learning and Network Analytic Methods.” *Frontiers in Molecular Biosciences, Biological Modeling and Simulation*, 6(42). DOI: 10.3389/fmolb.2019.00042
- Grazioli, Gianmarc; Roy, Saswata; and Butts, Carter T. (2019). “Predicting Reaction Products and Automating Reactive Trajectory Characterization in Molecular Simulations with Support Vector Machines.” *Journal of Chemical Information and Modeling*, 59(6), 2753-2764. DOI: 10.1021/acs.jcim.9b00134
- Grazioli, Gianmarc; Yu, Yue; Unhelkar, Megha H.; Martin, Rachel W.; and Butts, Carter T. (2019). “Network-based Classification and Modeling of Amyloid Fibrils.” *Journal of Physical Chemistry, B*, 123(26), 5452-5462. DOI: 10.1021/acs.jpcc.9b03494
- Olson, Michele K.; Sutton, Jeannette; Vos, Sarah C.; Prestley, Robert; Renshaw, Scott L.; and Butts, Carter T. (2019). “Build Community Before the Storm: The National Weather Service’s Social Media Engagement.” *Journal of Contingencies and Crisis Management*, 27(4), 359–373. DOI: <https://doi.org/10.1111/1468-5973.12267>
- Sutton, Jeannette; Renshaw, Scott L.; Vos, Sarah C.; Olson, Michele K.; Prestley, Robert C.; Gibson, C. Ben; and Butts, Carter T. (2019). “Getting the Word Out, Rain or Shine: The Impact of Message Features and Hazard Context on Message Passing Online.” *Weather, Climate, and Society*, 11, 763–776, DOI: 10.1175/WCAS-D-19-0021.1
- Tillman, Balint; Markopoulou, Athina; Butts, Carter T.; Gjoka, Minas. (2019). “2K+ Graph Construction Framework: Targeting Joint Degree Matrix and Beyond.” *IEEE/ACM Transactions on Networking*, 27(2), 591-606. DOI: 10.1109/TNET.2019.2895853
- Vos, Sarah C.; Sutton, Jeannette; Gibson, C. Ben; Butts, Carter T. (2019). “Celebrity Cancer on Twitter: Mapping a Novel Opportunity for Cancer Prevention.” *Cancer Control*, 26(1). DOI: 10.1177/1073274819825826
- Wong, Eric K.; Prytkova, Vera; Freitas, J. Alfredo; Butts, Carter T. and Tobias, Douglas J. (2019). “Molecular Mechanism of Aggregation of the Cataract-related  $\gamma$ D-Crystallin W24R Variant from Multiscale Atomistic Simulations.” *Biochemistry*, 58(35), 3691–3699. DOI: 10.1021/acs.biochem.9b00208



- Almquist, Zack W. and Butts, Carter T. (2018). “Dynamic Network Analysis with Missing Data: Theory and Methods.” *Statistica Sinica*, 28, 1245–1264. DOI: 10.5705/ss.202016.0108
- Baldesi, Luca; Butts, Carter T.; and Markopoulou, Athina. (2018). “Spectral Graph Forge: Graph Generation Targeting Modularity.” *Proceedings of the 2018 IEEE Conference on Computer Communications* (IEEE INFOCOM), 1727–1735. DOI: 10.1109/INFOCOM.2018.8485916
- Butts, Carter T. (2018). “A Perfect Sampling Method for Exponential Family Random Graph Models.” *Journal of Mathematical Sociology*, 42(1), 17–36. DOI: 10.1080/0022250X.2017.1396985
- Duong, Vy T.; Unhelkar, Megha H.; Kelly, John E.; Kim, Suhan H.; Butts, Carter T.; and Martin, Rachel W. (2018). “Protein Structure Networks Provide Insight into Active Site Flexibility in Esterase/Lipases from the Carnivorous Plant *Drosera capensis*.” *Integrative Biology*, 10, 768–779. DOI: 10.1039/C8IB00140E
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- Butts, Carter T. (2007). Comment on Mark S. Handcock, Adrian E. Raftery, and Jeremy M. Tantrum, “Model-based Clustering for Social Networks.” *Journal of the Royal Statistical Society, Series A*, 170(2), 333.
- Butts, Carter T. (2007). Review of Carrington, Peter J.; Scott, John; and Wasserman, Stanley (eds.), *Models and Methods in Social Network Analysis*, Cambridge, Cambridge University Press. *Social Networks*, 29(4), 603–608.
- Butts, Carter T. (2001). Review of Gerald Jay Sussman and Jack Wisdom, *Structure and Interpretation of Classical Mechanics*, Cambridge, MA, MIT Press. *Computational and Mathematical Organization Theory*, 7(4), 319–342.

#### GENERAL AUDIENCE PUBLICATIONS:

- Sutton, Jeannette; Johnson, Britta; Spiro, Emma S.; and Butts, Carter T. (2013). “Tweeting What Matters: Information, Advisories, and Alerts Following the Boston Marathon Events.” Online Research Highlight. <http://www.heroicproject.org/>
- Sutton, Jeannette; Spiro, Emma S.; Johnson, Britta; Fitzhugh, Sean; and Butts, Carter T. (2013). “Tweeting Boston: The Influence of Microstructure in Broadcasting Messages through Twitter.” Online Research Highlight. <http://www.heroicproject.org/>
- Sutton, Jeannette; Spiro, Emma S.; Johnson, Britta; and Butts, Carter T. (2013). “Following the Bombing.” Online Research Highlight. <http://www.heroicproject.org/>
- Spiro, Emma S.; Sutton, Jeannette; Johnson, Britta; Fitzhugh, Sean; and Butts, Carter T. (2012). “Superstorm Sandy: Exploring the Twitter Response.” Online Research Highlight. <http://www.heroicproject.org/>
- Spiro, Emma S.; Sutton, Jeannette; Johnson, Britta; Fitzhugh, Sean; and Butts, Carter T. (2012). “HEROIC Team Explores Waldo Canyon Wildfire in Colorado.” Online Research Highlight. <http://www.heroicproject.org/>
- Mendonça, David; Butts, Carter T.; and Webb, Gary. (2007). “Learning from the Response

to Two Extreme Events.” *Contingency Today*, June 4, 2007.  
[http://www.contingencytoday.com/online\\_article/  
Learning-from-the-Response-to-Two-Extreme-Events-/356](http://www.contingencytoday.com/online_article/Learning-from-the-Response-to-Two-Extreme-Events-/356)

#### SOFTWARE:

- Packages for the R Statistical Computing System:
  - Handcock, Mark S.; Hunter, David R.; Butts, Carter T.; and Morris, Martina M. (2005–Present). *ergm*: Exponential Random Graph Modeling of Network and Graph Data.
  - Butts, Carter T. (2001–2011). *metamatrix*: Metamatrix Analysis of Organizational Structure.
  - Butts, Carter T.; Handcock, Mark S.; Hunter, David R.; and Morris, Martina M. (2005–Present). *network*: Classes for Relational Data.
  - Butts, Carter T. (2005–2011). *netperm*: Permutation Models for Relational Data.
  - Butts, Carter T. (2004–2011). *nettheory*: Routines for Exploring Social Network Theory.
  - Butts, Carter T. (2010–Present). *relevent*: Tools to Fit Relational Event Models.
  - Butts, Carter T. (2000–Present). *sna*: Tools for Social Network Analysis.
  - Handcock, Mark S.; Hunter, David R.; Butts, Carter T.; Goodreau, Steven M.; and Morris, Martina M. (2006–Present). *statnet*: Statistical Modeling of Network and Graph Data.
  - Butts, Carter T. (2009–Present). *yacca*: Yet Another Canonical Correlation Analysis Package.
  - Butts, Carter T. (2023–Present). *ergmgp*: Tools for Modeling ERGM Generating Processes.
- Butts, Carter T. (2000–2002). *NETSTAT*: A General-purpose Library for the Analysis of Social and Organizational Network Data in the C Language.

#### SELECTED WORKING PAPERS AND TECHNICAL REPORTS:

- Huang, Peng and Butts, Carter T. (2023). “California Exodus? A Network Model of Population Redistribution in the United States.” arXiv:2308.06465
- Livas, Selena M.; Renshaw, Scott L.; and Butts, Carter T. (2023). “Calling The Dead: Resilience In The WTC Communication Networks.” arXiv:2308.06917
- Mai, Sabrina; Renshaw, Scott L.; Sutton, Jeannette; and Butts, Carter T. (2023). “Common Ground In Crisis: Causal Narrative Networks of Public Official Communications During the COVID-19 Pandemic.” arXiv:2309.03528
- Alimpertis, Emmanouil; Markopoulou, Athina; Butts, Carter T.; Bakapoulou, Evita; and Psounis, Konstantinos. (2022). “A Unified Prediction Framework for Signal Maps.” arXiv:2202.03679
- Butts, Carter T. (2022). “Continuous Time Graph Processes with Known ERGM Equilibria: Contextual Review, Extensions, and Synthesis.” arXiv:2203.06948
- Huang, Peng and Butts, Carter T. (2022). “Rooted America: Immobility and Segregation of the Inter-county Migration Networks.” arXiv:2205.02347
- Renshaw, Scott C.; Livas, Selena M.; Petrescu-Prahova, Miruna G.; and Butts, Carter T. (2022). “Modeling Complex Interactions in a Disrupted Environment: Relational Events in the WTC Response.” arXiv:2204.07890

- Snow, Samuel S.; Patricelli, Gail L.; Butts, Carter T.; Krakauer; Alan H.; Perry, Anna C.; Logsdon; Ryane; Prum, Richard O. (2022). “Fighting Isn’t Sexy in Lekking Greater Sagegrouse (*Centrocercus urophasianus*).” bioRxiv 2022.08.26.505294. <https://doi.org/10.1101/2022.08.26.505294>
- Huang, Peng and Butts, Carter T. (2021). “Parameter Estimation Procedures for Exponential-Family Random Graph Models on Count-Valued Networks: A Comparative Simulation Study.” arXiv:2111.02372
- Duong, Vy; Diessner, Elizabeth; Grazioli, Gianmarc; Martin, Rachel W.; and Butts, Carter T. (2021). “Neural Upscaling from Residue-level Protein Structure Networks to Atomistic Structure.” arXiv:2109.06700
- Butts, Carter T. and Martin, Rachel W. (2021). “Bayesian Estimation of the Hydroxyl Radical Diffusion Coefficient at Low Temperature and High Pressure from Atomistic Molecular Dynamics.” arXiv:2108.11511
- Yin, Fan and Butts, Carter T. (2021). “Highly Scalable Maximum Likelihood and Conjugate Bayesian Inference for ERGMs on Graph Sets with Equivalent Vertices.” arXiv:2110.13527
- Yin, Fan; Khago, Domarin; Martin, Rachel W.; and Butts, Carter T. (2020). “Bayesian Analysis of Static Light Scattering Data for Globular Proteins.” arXiv:2011.00321
- Butts, Carter T. (2020). “Phase Transitions in the Edge/Concurrent Vertex Model.” arXiv:2001.01138
- Cross, Thomas J.; Takahashi, Gemma R.; Diessner, Elizabeth M.; Crosby, Marquise G.; Farahmand, Vesta; Zhuang, Shannon; Butts, Carter T.; and Martin, Rachel W. (2020). “Sequence Characterization and Molecular Modeling of Clinically Relevant Variants of the SARS-CoV-2 Main Protease.” bioRxiv:2020.05.15.097493. doi: 10.1101/2020.05.15.097493
- Thomas, Loring J.; Huang, Peng; Yin, Fan; Iris Luo Xiaoshuang; Almquist, Zack W.; Hipp, John R.; and Butts, Carter T. (2020). “Spatial Heterogeneity Can Lead to Substantial Local Variations in COVID-19 Timing and Severity.” arXiv:2005.09850
- Yin, Fan and Butts, Carter T. (2020). “Kernel-based Approximate Bayesian Inference for Exponential Family Random Graph Models.” arXiv:2004.08064
- Butts, Carter T. (2019). “A Dynamic Process Reference Model for Sparse Networks with Reciprocity.” arXiv:1912.13144
- Lee, Francis and Butts, Carter T. (2019). “Incorporating Structural Stigma into Network Analysis.” arXiv:1908.01500
- Yin, Fan; Phillips, Nolan E.; and Butts, Carter T. (2019). “Selection of Exponential-Family Random Graph Models via Held-Out Predictive Evaluation (HOPE).” arXiv:1908.05873
- Yin, Fan; Shen, Weining; and Butts, Carter T. (2019). “Finite Mixtures of ERGMs for Ensembles of Networks.” arXiv:1910.11445
- Yu, Yue; Grazioli, Gianmarc; Phillips, Nolan E.; and Butts, Carter T. (2019). “Local Graph Stability in Exponential Family Random Graph Models.” arXiv:1908.09470
- Baldesi, Luca; Markopoulou, Athina; and Butts, Carter T. (2018). “Spectral Graph Forge: Graph Generation Targeting Modularity.” arXiv:1801.01715
- Butts, Carter T. (2018). “A Dynamic Process Interpretation of the Sparse ERGM Reference Model.” arXiv:1801.09911.
- Lee, Francis and Butts, Carter T. (2018). “Mutual Assent or Unilateral Nomination? A

Performance Comparison of Intersection and Union Rules for Integrating Self-reports of Social Relationships.” arXiv:1802.07838

- Butts, Carter T. (2017). “Baseline Mixture Models for Social Networks.” arXiv:1710.02773.
- Schweinberger, Michael; Krivitsky, Pavel N.; and Butts, Carter T. (2017). “Foundations of Finite-, Super-, and Infinite-Population Random Graph Inference.” arXiv:1707.04800.
- Schweinberger, Michael; Krivitsky, Pavel N.; and Butts, Carter T. (2017). “A Note on the Role of Projectivity in Likelihood-based Inference for Random Graph Models.” arXiv:1707.00211.
- Gjoka, Minas; Smith, Emma; and Butts, Carter T. (2013). “Estimating Clique Composition and Size Distributions from Sampled Network Data.” arXiv:1308.3297.
- Krivitsky, Pavel N. and Butts, Carter T. (2012). “Exponential-Family Random Graph Models for Rank-Order Relational Data.” arXiv:1210.0493.
- Kurant, Maciej; Butts, Carter T.; and Markopoulou, Athina. (2012). “Graph Size Estimation.” arXiv:1210.0460.
- Kurant, Maciej; Gjoka, Minas; Wang, Yan; Almquist, Zack W.; Butts, Carter T.; and Markopoulou, Athina. (2011). “Coarse-Grained Topology Estimation via Graph Sampling.” arXiv.org:cs.SI:1105.5488.
- Almquist, Zack W. and Butts, Carter T. (2011). “Logistic Network Regression for Scalable Analysis of Networks with Joint Edge/Vertex Dynamics.” IMBS Technical Report MBS 11-03, University of California, Irvine.
- Butts, Carter T. (2010). “Bayesian Meta-Analysis of Social Network Data via Conditional Uniform Graph Quantiles.” IMBS Technical Report MBS 10-04, University of California, Irvine.
- Butts, Carter T. (2010). “Bernoulli Graph Bounds for General Random Graphs.” IMBS Technical Report MBS 10-07, University of California, Irvine.
- Butts, Carter T. (2010). “A Note on Generalized Edges.” IMBS Technical Report MBS 10-03, University of California, Irvine.
- Gjoka, Minas; Butts, Carter T.; Kurant, Maciej; and Markopoulou, Athina. (2010). “Multi-graph Sampling of Online Social Networks.” arXiv.org:1008.2565v1.
- Gjoka, Minas; Kurant, Maciej; Butts, Carter T.; and Markopoulou, Athina. (2009). “A Walk in Facebook: Uniform Sampling of Users in Online Social Networks.” arXiv.org:0906.0060.
- Butts, Carter T. (2006). “Cycle Census Statistics for Exponential Random Graph Models.” IMBS Technical Report MBS 06-05, University of California, Irvine.
- Butts, Carter T. (2006). “A Relational Event Model for Social Action, with Application to the World Trade Center Disaster.” IMBS Technical Report MBS 06-06, University of California, Irvine.
- Butts, Carter T. (2005). “Building Inferentially Tractable Models of Complex Social Systems: a Generalized Location Framework.” IMBS Technical Report MBS 05-08, University of California, Irvine.
- Butts, Carter T. (2005). “Permutation Models for Relational Data.” IMBS Technical Report MBS 05-02, University of California, Irvine.
- Butts, Carter T. and Petrescu-Prahova, Miruna. (2005). “Radio Communication Networks in the World Trade Center Disaster.” IMBS Technical Report MBS 05-04, University of California, Irvine.

- Butts, Carter T.; Petrescu-Prahova, Miruna; and Cross, Remy. (2005). “Responder Communication Networks in the WTC Disaster: IT Implications.” RESCUE Research Highlights Volume, University of California, Irvine.
- Petrescu-Prahova, Miruna and Butts, Carter T. (2005). “Emergent Coordination in the World Trade Center Disaster.” IMBS Technical Report MBS 05-03, University of California, Irvine.
- Butts, Carter T. (2004). “Exact Bounds for Degree Centralization.” IMBS Technical Report MBS 04-08, University of California, Irvine.
- Butts, Carter T. and Leite, Fabio. (2004). “Bayesian Inference from Continuously Arriving Informant Reports, with Application to Crisis Response.” IMBS Technical Report MBS 04-08, University of California, Irvine.
- Butts, Carter T. and Hilgeman, Christin (2003). “Latent Algebraic Structure in American Religious Belief.” IMBS Technical Report MBS 03-05, University of California, Irvine.
- Butts, Carter T. (2002). “Predictability of Large-scale Spatially Embedded Networks.” IMBS Technical Report MBS 02-13, University of California, Irvine.
- Butts, Carter T. and Carley, Kathleen M. (2002). “Structural Change and Homeostasis in Organizations: A Decision-Theoretic Approach.” CASOS Working Paper, Carnegie Mellon University. (Also appears as IMBS Technical Report MBS 03-04, University of California, Irvine.)
- Butts, Carter T. (2001). “How Much Does Distance Tell Us?: Residual Information in Spatially Embedded Interpersonal Networks.” CASOS Working Paper, Carnegie Mellon University.
- Butts, Carter T. (2001). “Interregional Relations from Spatially Embedded Interpersonal Networks.” CASOS Working Paper, Carnegie Mellon University.
- Pixley, Joy E. and Butts, Carter T. (2001). “Analyzing Life Course Patterns with the Interval Graph Approach.” Bronfenbrenner Life Course Center Working Paper 01-10, Cornell University.
- Butts, Carter T. (2000). “Network Inference, Error, and Informant (In)Accuracy: A Bayesian Approach.” CASOS Working Paper, Carnegie Mellon University.
- Butts, Carter T. (2000). “Stochastic Models of Spatially Embedded Interpersonal Networks: Simulations from Tie Frequency Data.” CASOS Working Paper, Carnegie Mellon University.
- Anderson, Brigham S., Butts, Carter T., and Carley, Kathleen M. (1998). “The Interaction of Size and Density with Graph Level Measures.” ICES Research Report 88-05-98, Carnegie Mellon University.
- Butts, Carter T. (1998). “‘An Invisible and Insuperable Barrier’: Enculturation, Stratification, and Ritual Interaction.” ICES Research Report 88-01-98, Carnegie Mellon University.
- Butts, Carter T. (1998). “Generating Panic within Populations.” ICES Research Report 88-03-98, Carnegie Mellon University.
- Butts, Carter T. (1998). “Cluster Analysis of Unlabeled Structures.” ICES Research Report 88-04-98, Carnegie Mellon University.
- Butts, Carter T. and Carley, Kathleen M. (1998). “Canonical Labeling to Facilitate Graph Comparison.” ICES Research Report 88-06-98, Carnegie Mellon University.

- Miller, John H.; Butts, Carter T.; and Rode, David C. (1998). “Communication and Cooperation.” Santa Fe Institute Working Paper, 98-04-37.

INVITED TALKS:

- Butts, Carter T. (10/2023). “Emergent Coordination and Organizational Resilience from Norms and Routines.” Invited Lecture, New York University. New York, NY.
- Butts, Carter T. (10/2023). “Probing Emergent Social Structure with *In Silico* Experiments.” Invited Lecture, Emory University. Atlanta, GA.
- Butts, Carter T. (9/2023). “An Informal Introduction to Relational Event Models.” Invited Group Presentation, Notre Dame University. South Bend, IN.
- Butts, Carter T. (5/2023). “*In Silico* Network Experiments to Probe Mechanisms and Inform Study Design.” Invited Lecture, Social Networks and Health Workshop, Duke University. Durham, NC.
- Butts, Carter T. (4/2023). “Missing Friends, Broken Norms, and Entropy: Lessons from Simple Network Models.” Invited Lecture, Duke Network Analysis Center, Duke University. Durham, NC.
- Butts, Carter T. (11/2022). “Inference with Many Networks.” Invited Lecture, Department of Software and Societal Systems, Carnegie Mellon University. Pittsburgh, PA.
- Butts, Carter T. (8/2022). “Remembering the Life and Work of Tom Fararo.” Invited Panel Presentation, ASA Meeting. Los Angeles, CA.
- Butts, Carter T. (3/2022). “Parametric Network Models for Sets of Relations.” Invited Lecture, DAGStat 2022. Hamburg, Germany.
- Butts, Carter T. (3/2022). “Some Kernel Tricks for Analyzing Molecular Trajectories.” Invited Lecture, ICTP Atomistic Webinar, Abdus Salam International Centre for Theoretical Physics. Trieste, Italy.
- Butts, Carter T. (6/2021). “Progress in the Statistical Mechanics of Social Networks.” Invited Lecture, Institute for Analytical Sociology Seminar, Linköping University. Norrköping, Sweden.
- Butts, Carter T. (11/2020). “The Dynamics of Online Attention and Hazard Message Amplification in Agency/Public Communications.” Invited Presentation, 2020 Nuclear Security Summit, Georgetown University. Virtual conference.
- Butts, Carter T. (5/2020). “Why Don’t You Have More Friends? Deep Insights from Humble Reference Measures.” Invited Lecture, QMSS Colloquium, University of California-Santa Barbara. Santa Barbara, CA.
- Butts, Carter T. (9/2019). “The Relational Event Perspective on Social Systems: Origins and Directions.” Invited Keynote Presentation, EUSN Workshop on Relational Event Models. Zürich, Switzerland.
- Butts, Carter T. (9/2019). “Leveraging Time-scale Separated Processes to Model Social and Biophysical Networks.” Invited Lecture, SG Seminar, ETH. Zürich, Switzerland.
- Butts, Carter T. (9/2019). “Toward Belief Models We Can Believe In.” Invited Discussant, 3rd European Symposium on Societal Challenges in Computational Social Science. Zürich, Switzerland.
- Butts, Carter T. (6/2019). “Better Baselines for Social (and Other) Network Models.” Invited Lecture, Statistics Colloquium, University of California-Riverside. Riverside, CA.

- Butts, Carter T. (5/2019). “Advances in Exponential Family Random Graph Modeling: Parameterization, Assessment, and Understanding.” Invited Presentation, 20th Anniversary Conference of the Center for Statistics in the Social Sciences, University of Washington. Seattle, WA.
- Butts, Carter T. (5/2019). “Large Scale Network Structure, Ecological Disruption, and Network Dynamics.” Invited Presentation, Workshop on Multi-scale Theory on Coupled Human Mobility and Environmental Change, University of Florida. Gainesville, FL.
- Butts, Carter T. (2/2018). “Attention, Amplification, Resilience, and Hazard Messaging at the Organizational/Public Interface.” Keynote Address, Social Web for Disaster Management 2018 Workshop. Los Angeles, CA.
- Butts, Carter T. (5/2017). “From Conversation to Plant Carnivory: Using Data Science to Tackle Complex Problems.” Invited Presentation, Data Science Initiative Colloquium, University of California, Davis. Davis, CA.
- Butts, Carter T. (10/2016). “Leveraging Computational Advances to Approach Hard Problems.” Invited Keynote Presentation, Informatics Institute, University of Georgia. Athens, GA.
- Butts, Carter T. (8/2016). “Some Applications of Graph Mixtures for Social Network Analysis.” Invited Panel Presentation, Joint Statistical Meeting. Chicago, IL.
- Butts, Carter T. (5/2016). “Some Properties of Stochastic Network Models.” Nonlinear Physics Group Seminar, Institute of Physical Sciences (Instituto de Ciencias Físicas), National Autonomous University of Mexico. Cuernavaca, Mexico.
- Butts, Carter T. (5/2016). “Mechanisms, Context, and Interaction in a Messy World: Statistical Models for Complex Relational Systems.” Invited Presentation, Center for Complexity Sciences, National Autonomous University of Mexico. Mexico City, Mexico.
- Butts, Carter T. (2/2016). “Geography, and the Warped Fabric of Social Ties.” Invited Presentation, Informatics Institute, University of Florida. Gainesville, FL.
- Butts, Carter T. (1/2016). “Inferring Complex Behavioral Mechanisms in Difficult Places.” Invited Lecture, Data Science Colloquium, University of Washington. Seattle, WA.
- Butts, Carter T. (11/2015). “Geography and the Structure of Interpersonal Networks.” Transportation Seminar, Institute for Transportation Studies, University of California, Berkeley. Berkeley, CA.
- Butts, Carter T. (10/2015). “Modeling Interaction Dynamics: Mechanisms, Contexts, and Roles.” Invited Lecture, Sociology, Criminology, and Law Department Colloquium, University of Florida. Gainesville, FL.
- Butts, Carter T. (11/2014). “Measuring ‘Bulk’ Online Communication Dynamics in Response to Hazard Events: Some Methodological Innovations.” Invited Presentation, Hazard Communication Workshop, University of Kentucky. Lexington, KY.
- Butts, Carter T. (9/2014). Keynote Address, Applied Statistics 2014, Statistical Society of Slovenia. “Statistical Models for Interaction Dynamics.” Ribno, Slovenia.
- Butts, Carter T. (8/2014). “Measuring and Modeling Online Communication Dynamics in Response to Hazard Events.” Keynote Address, KDD Workshop on Learning about Emergencies from Social Information. New York, NY.
- Butts, Carter T. (5/2014). “Sampling in a Brave New World: Promises and Cautionary Notes.” Invited Presentation, Population Association of America Meeting. Boston, MA.

- Butts, Carter T. (10/2013). “Curved, Warped, and Lumpy: Some Initial Results from the American Social Fabric Project.” Invited Lecture, Sociology Colloquium, University of Chicago. Chicago, IL.
- Butts, Carter T. (6/2013). “Space, Heterogeneity, and Relational Dynamics.” Invited Talk, Fifth International Workshop on Social Network Analysis (ARS 2013). Rome, Italy.
- Butts, Carter T. (12/2012). “Challenges and Directions in Modeling Large-scale Networks.” Invited Talk, NIPS Workshop on Algorithmic and Statistical Approaches for Large Social Networks. Lake Tahoe, CA.
- Butts, Carter T. (12/2012). “The Aftermath of Disasters.” Invited Talk, Kavli/National Academy of Sciences US/Japan Frontiers of Science Conference. Irvine, CA.
- Butts, Carter T. (4/2012). “Social Fields In and From Spatially Embedded Networks.” Invited Talk, Quantifying Social Fields Workshop, University of California, Berkeley. Berkeley, CA.
- Butts, Carter T. (12/2011). “Parametrizing Order-Stable Exponential Family Random Graph Models.” Invited Talk, IASC-ARS Joint Taipei Symposium. Taipei, Taiwan.
- Butts, Carter T. (6/2011). “Dynamic Logit Models for Emergent Collaboration Networks.” Invited Talk, Third International Workshop on Social Network Analysis – Collaboration Networks and Knowledge Diffusion: Theory, Data, and Methods (ARS 2011). Naples, Italy.
- Butts, Carter T. (3/2011). “Detecting Structural Biases Across Networks: Bayesian Meta-Analysis of Social Network Data Using Reference Quantiles.” Invited Lecture, Computational Social Science Colloquium, University of Massachusetts, Amherst. Amherst, MA.
- Butts, Carter T. (1/2011). “Modeling Complex Social Interaction Within and Across Settings via Relational Events.” Invited Lecture, Workshop on Complex Networks: The Dynamics of Networks, Statistical and Applied Mathematical Sciences Institute. Research Triangle Park, NC.
- Butts, Carter T. (12/2010). “Social Networks, Coordination, and Resilience During Disasters: Some Basic Lessons.” Invited Lecture, UASI Shared Strategies for Homeland Security Workshop. Denver, CO.
- Butts, Carter T. (12/2010). “Bounding Complex Network Models with Bernoulli Graphs.” Invited Lecture, Workshop on Networks Across Disciplines, 2010 Neural Information Processing Systems Conference. Whistler, BC.
- Butts, Carter T. (6/2010). “Error, Missing Data, and Network Inference.” Invited Lecture, 2010 PIMS Summer School on Social Networks. Whistler, BC.
- Butts, Carter T. (5/2010). “Modeling Interaction Dynamics Using Relational Events.” Invited Lecture, MAPSS Series, Stanford University. Palo Alto CA.
- Butts, Carter T. (4/2010). “Statistical Models for Social Networks: Overview and Prospect.” Keynote Address, 29th Annual Workshop on Applied Statistics, Southern California Chapter of the American Statistical Association, RAND Corporation. Santa Monica, CA.
- Butts, Carter T. (4/2010). “Robustness in Emergency Response Networks: Basic Principles and New Directions.” Departmental Colloquium, Bush School of Government, Texas A&M University. College Station, TX.
- Butts, Carter T. (4/2010). “Modeling Complex Interactions in a Disrupted Environment: Relational Events in the WTC Response.” Frontiers in Network Science Lecture Series,



Penn State University. University Park, PA.

- Butts, Carter T. (3/2010). “Inferring Behavioral Mechanisms Using Cross-Sectional Network Models.” UCLA Social Network Workshop, UCLA. Los Angeles, CA.
- Butts, Carter T. (1/2010). “Modeling Action and Interaction in Complex Environments.” Marschak Colloquium, Anderson School of Management, UCLA. Los Angeles, CA.
- Butts, Carter T. (12/2009). “Dynamic Robustness in Emergent Communication Networks.” Program on Networked Governance Colloquium, Kennedy School of Government, Harvard University. Cambridge, MA.
- Butts, Carter T. (9/2009). “Geographic Variability and Network Structure.” Invited presentation, 2009 Northwestern Institute on Complex Systems (NICO) Complexity Conference. Northwestern University, Evanston, IL.
- Butts, Carter T. (7/2009). “Assessing Resilience in Networked Systems.” Invited panel presentation, Community and Regional Resilience Institute/Natural Hazards Center Resilience Research Workshop, Broomfield, CO.
- Butts, Carter T. (6/2009). “Merging Space and Structure: Modeling Spatially-Embedded Networks.” Invited presentation, “Capturing Context” Conference, Columbia University. New York, NY.
- Butts, Carter T. (3/2009). “The Importance of Simple Things.” Freeman Award Lecture, 29th Sunbelt Network Conference (INSNA), San Diego, CA.
- Butts, Carter T. (3/2009). “Coping with Disruption: Emergent Networks During Disasters.” Stern School of Business Colloquium, New York University. New York, NY.
- Butts, Carter T. (2/2009). “Ground Zero Personnel, Impacted Populations, and Emergent Networks: ‘Soft’ Infrastructure During Disasters.” Invited Panel Session, National Academy of Science Disaster Roundtable Workshop, “Cascading Disasters: How Disasters Unfold.” Irvine, CA.
- Butts, Carter T. (8/2008). “Modeling Reality Without Sacrificing Data: Inferentially Tractable Models for Complex Social Systems.” Keynote Address, “Challenges and Visions In the Social Sciences” Conference, Zurich, Switzerland.
- Butts, Carter T. (7/2008). “Parameterizing Exponential Family Models for Random Graphs: Current Methods and New Directions.” Invited presentation, “Formation and Function of Social Networks” Mini-Conference, 2008 SIAM Meeting, San Diego, CA.
- Butts, Carter T. (1/2008). “Is There a Viable Social Physics? Yes, No, and In Part.” Invited presentation, SFI Workshop “Is There A Physics of Society?” Santa Fe Institute, Santa Fe, NM.
- Butts, Carter T. (10/2007). “Network Structure In Spatial Contexts.” Department of Anthropology Colloquium, Stanford University. Palo Alto, CA.
- Butts, Carter T. (9/2007). “Social Networks In the Physical World.” Keynote Address, 2007 Workshop on Spatial and Geographical Structure (in conjunction with COSIT 2007). Mt. Edna, Victoria, Australia.
- Butts, Carter T. and Hilgeman, Christin. (9/2007). “Latent Structure in Religious Belief.” Department of Psychology Colloquium, University of Melbourne. Melbourne, Victoria, Australia.
- Butts, Carter T. (8/2007). “Advancing Mathematical Sociology: Opportunities and Open

- Problems.” ASA Section on Mathematical Sociology Invited Panel Session, “The Future of Mathematical Sociology.” ASA Meeting, New York, NY.
- Butts, Carter T. (7/2007). “Improvisation in Disaster Response.” Invited Panelist, 32nd Annual Hazards Research and Applications Workshop, Boulder, CO.
  - Butts, Carter T. (8/2006). “Error and Missingness in Social Network Data: Problems and Palliatives.” ASA Section on Methodology Invited Panel Session, “Methods for Social Network Analysis.” ASA Meeting, Montreal, Quebec.
  - Butts, Carter T. (5/2006). “Dynamic Communication Networks During Extreme Events: an Intertemporal Analysis of Radio Communication During the World Trade Center Disaster.” Invited Conference Presentation, NetSci International Conference and Workshop on Network Science. Bloomington, IN.
  - Butts, Carter T. (5/2006). “Likelihood-based Network Comparison Using Permutation Models.” Invited Workshop Tutorial, NetSci International Conference and Workshop on Network Science. Bloomington, IN.
  - Butts, Carter T. (5/2006). “Modeling Communication Dynamics During Extreme Events: The Case of the World Trade Center Disaster.” “Age of Networks” Speaker Series, Center for Advanced Study, University of Illinois at Urbana-Champaign. Champaign, IL.
  - Butts, Carter T. (4/2006). “Statistical Mechanical Models for Social Systems with Complex Dependence Structures.” International Workshop on Constructal Theory of Social Dynamics, Duke University. Durham, NC.
  - Butts, Carter T. (12/2005). “Extreme Networking: Communication and Coordination Networks During the WTC Disaster.” Organizational Behavior Seminar Series, Graduate School of Business, Stanford University. Palo Alto, CA.
  - Butts, Carter T. (11/2005). “Social Networks: Introduction and Prospect.” Keynote Address, EII-NICTA Workshop on Large-Scale Network Analysis, National Information and Communications Technology Australia. Sydney, New South Wales, Australia.
  - Butts, Carter T. (11/2005). “Exponential Family Models for Assignment Systems.” Department of Psychology Colloquium, University of Melbourne. Melbourne, Victoria, Australia.
  - Butts, Carter T. (8/2005). “Building Inferentially Tractable Models for Complex Social Systems: a Generalized Location Framework.” ASA Section on Mathematical Sociology Invited Paper Session, “Mathematical Sociology Today: Current State and Prospects.” ASA Meeting, Philadelphia, PA.
  - Butts, Carter T. (12/2004). “Social Networks and the Small World.” Japanese/American Beckman Frontiers of Science Conference (National Academy of Sciences/Japanese Society for Promotion of Science). Irvine, CA.
  - Butts, Carter T. (10/2004). “Beyond QAP: Parametric Permutation Models for Relational Data.” Quantitative Methods for Social Science Colloquium, University of California at Santa Barbara. Santa Barbara, CA.
  - Butts, Carter T. (10/2004). “Physical Distance and the Structure of Large-Scale Interpersonal Networks.” Geography Department Colloquium, University of California at Santa Barbara. Santa Barbara, CA.
  - Butts, Carter T. (11/2002). “Predictability of Large-scale Spatially Embedded Networks.” Panel on Dynamic Social Network Modeling and Analysis, National Academy of Sciences.

Washington, D.C.

- Butts, Carter T. (12/2001). “The Enduring Problem of Error in Network Data, and Some Thoughts on What to Do About It.” Center for Statistics and the Social Sciences Colloquium, University of Washington. Seattle, WA.
- Butts, Carter T. (4/2001). “Empirical Play in the Hot Potato Game.” Janus Game Theory Group, Department of Sociology, Cornell University. Ithaca, NY.
- Butts, Carter T. (11/2000). “Stochastic Models of Spatially Embedded Interpersonal Networks: Simulations from Tie Frequency Data.” Mathematical Behavioral Sciences Colloquium, University of California at Irvine. Irvine, CA.

CONFERENCE PRESENTATIONS:

- Huang, Peng and Butts, Carter T. (8/2023). “Unraveling the California Exodus Using Network-based Models of the U.S. Internal Migration System.” ASA Meeting, Philadelphia, PA.
- Gardner, Richard E. and Butts, Carter T. (8/2023). “Bot Lives Matter: A Retrospective Semantic Network Analysis.” ASA Meeting, Philadelphia, PA.
- Mai, Sabrina; Renshaw, Scott L.; Sutton, Jeannette; and Butts, Carter T. (8/2023). “Semantic Networks of Official Communications During COVID-19.” ASA Meeting, Philadelphia, PA.
- Murray-Watters, Alexander and Butts, Carter T. (8/2023). “Expansiveness, Dependence, and Popularity.” ASA Meeting, Philadelphia, PA.
- Beresford, Frances and Butts, Carter T. (7/2023). “Dirichlet Process Mixtures of ERGMs with Partial Pooling and Heterogeneous Effects.” International Sunbelt Social Network Conference, Portland, OR.
- Butts, Carter T. (7/2023). “Bringing Paths Back In: Component and Non-local Bridging Terms for Exponential Family Random Graph Models.” International Sunbelt Social Network Conference, Portland, OR.
- Gardner, Richard E. and Butts, Carter T. (7/2023). “Catching the Wave: A Dynamic Retrospective Network Analysis of Russian Fake News Bots.” International Sunbelt Social Network Conference, Portland, OR.
- Huang, Peng and Butts, Carter T. (7/2023). “Unraveling the California Exodus Using Network Simulation of the U.S. Internal Migration System.” International Sunbelt Social Network Conference, Portland, OR.
- Mai, Sabrina; Renshaw, Scott L.; Sutton, Jeannette; and Butts, Carter T. (7/2023). “Semantic Network Modeling of COVID-19 Communications.” International Sunbelt Social Network Conference, Portland, OR.
- Murray-Watters, Alexander and Butts, Carter T. (7/2023). “Expansiveness, Popularity, and Dependence.” International Sunbelt Social Network Conference, Portland, OR.
- Thomas, Loring J. and Butts, Carter T. (7/2023). “Models for Endogenous Participation in Social Networks.” International Sunbelt Social Network Conference, Portland, OR.
- Diessner, Elizabeth M.; Takahashi, Gemma R.; Martin, Rachel W.; and Butts, Carter T. (2/2023). “Comparative Dynamics and Structural Analysis of Extremophilic Serine Proteases from Diverse Environments.” Biophysical Society Meeting, San Diego, CA.
- Diessner, Elizabeth M.; Thomas, Loring J.; and Butts, Carter T. (2/2023). “Phase Behavior

of 1-ribbon and 2-ribbon Fibril Self-Assembly in a Simple Network Hamiltonian Model of Protein Fibrillization.” Biophysical Society Meeting, San Diego, CA.

- Long, Zane; Le, Jonathan V.; Katz, Benjamin; Lopez, Belen G.; Tenenbaum, Emily; Semiling, Bonnie; Schmidt, Ryan; Grun, Feliz; Butts, Carter T.; and Martin, Rachel W. (2/2023). “Spatially Resolved Detection of Small Molecules from Press-dried Plant Tissue Using MALDI Imaging.” Biophysical Society Meeting, San Diego, CA.
- Zong, Zixiao and Butts, Carter T. (2/2023). “Machine Learning Analysis of SH-dipeptide Dynamics from Atomistic Molecular Dynamics Simulations.” Biophysical Society Meeting, San Diego, CA.
- Diessner, Elizabeth M.; Takahashi, Gemma R.; Cross, Thomas J., Martin, Rachel W., and Butts, Carter T. (10/2022). “Modeling Variation in Structure and Dynamics of the SARS-CoV-2 Main Protease Across the Mutational Landscape.” 5th Southern California Theoretical Chemistry Meeting (SoCalTheoChem5), Riverside, CA.
- Diessner, Elizabeth M.; Freitas, J. Alfredo; Tobias, Douglas J., and Butts, Carter T. (10/2022). “Scalable Modeling of Transient Aggregation in gamma-D Crystallin via Network Hamiltonian Models.” 5th Southern California Theoretical Chemistry Meeting (SoCalTheoChem5), Riverside, CA.
- Zong, Zixiao and Butts, Carter T. (10/2022). “Characterizing the Dynamics of SH-dipeptide.” 5th Southern California Theoretical Chemistry Meeting (SoCalTheoChem5), Riverside, CA.
- Huang, Peng and Butts, Carter T. (8/2022). “Rooted America: Immobility and Segregation of the Inter-county Migration Networks.” ASA Meeting, Los Angeles, CA.
- Mai, Sabrina; Renshaw, Scott L.; Sutton, Jeannette; and Butts, Carter T. (8/2022). “Hearts for Hazards: ‘Favorites’ As A Means Of Message Interaction.” ASA Meeting, Los Angeles, CA.
- Thomas, Loring; Huang, Peng; Hipp, John R.; and Butts, Carter T. (8/2022). “Marginal-preserving Imputation of Three-way Array Data in Nested Structures, with Application to Small Areal Units.” ASA Meeting, Los Angeles, CA.
- Butts, Carter T. (7/2022). “Exponential-Family Random Graph Models with Endogenous Vertex Sets.” International Sunbelt Social Network Conference, Cairns, Australia.
- Gardner, Richard E. and Butts, Carter T. (7/2022). “Bot Lives Matter: A Retrospective Semantic Network Analysis.” International Sunbelt Social Network Conference, Cairns, Australia.
- Mai, Sabrina; Renshaw, Scott L.; and Butts, Carter T. (7/2022). “Changing the Subject: The Structure of Causal Narratives in Official COVID-19 Communications.” International Sunbelt Social Network Conference, Cairns, Australia.
- Murray-Watters, Alexander and Butts, Carter T. (7/2022). “Degeneracy and Extrapolative Stability in Stochastic Actor Oriented Models: Detection and Avoidance.” International Sunbelt Social Network Conference, Cairns, Australia.
- Renshaw, Scott; Livas, Selina; and Butts, Carter T. (7/2022). “The Microdynamics of Coordination in a Disrupted Environment: Relational Events in the 2001 World Trade Center Response.” International Sunbelt Social Network Conference, Cairns, Australia.
- Thomas, Loring and Butts, Carter T. (7/2022). “Extending Spatial Bernoulli Graphs with Node Covariate Information.” International Sunbelt Social Network Conference, Cairns, Australia.

- Crosby, Marquise G.; Takahashi, Gemma R.; Martin, Rachel W.; Diesner, Elizabeth M.; Norton-Baker, Brenna; and Butts, Carter T. (2/2022). “Dimethyl Sulfoxide (DMSO) Affects Activity of SARS-CoV-2 Main Protease.” Biophysical Society Meeting, San Francisco, CA.
- Diessner, Elizabeth M.; Takahashi, Gemma R.; Cross, Thomas J., Martin, Rachel W., and Butts, Carter T. (2/2022). “A Year in the Life of SARS-CoV-2 Mpro: Molecular Modeling and Analysis of Clinically Observed Mpro Variants from the First Year of the COVID-19 Pandemic.” Biophysical Society Meeting, San Francisco, CA.
- Diessner, Elizabeth M.; Wong, Eric; Prytkova, Vera; Freites, J. Alfredo; Tobias, Douglas J., and Butts, Carter T. (2/2022). “Network Hamiltonian models for Unstructured Protein Aggregates, with Application to  $\gamma$ D-crystallin.” Biophysical Society Meeting, San Francisco, CA.
- Grazioli, Gianmarc; Duong, Vy; Diessner, Elizabeth M.; Martin, Rachel W.; Butts, Carter T. (2/2022). “Reconstructing Atomistic Structures from Residue-level Protein Structure Networks Using Artificial Neural Networks.” Biophysical Society Meeting, San Francisco, CA.
- Takahashi, Gemma R.; Diessner, Elizabeth M.; Akbari, Omar J.; Le, Jonathan; Butts, Carter T.; and Martin, Rachel W. (2/2022). “Molecular Adaptations of Psychrophilic Serine Proteases.” Biophysical Society Meeting, San Francisco, CA.
- Gardner, Richard E. and Butts, Carter T. (8/2021). “WAVECATCHERS: A Network Analysis of Fake News Bot URL Data.” ASA Virtual Meeting.
- Huang, Peng and Butts, Carter T. (8/2021). “Estimation of Exponential-family Random Graph Models for Valued Networks: a Comparative Simulation Study.” ASA Virtual Meeting.
- Mai, Sabrina and Butts, Carter T. (8/2021). “Changing the Subject: Causal Relationships Between COVID-19 Topics.” ASA Virtual Meeting.
- Renshaw, Scott L.; Mai, Sabrina; Dubois, Elisabeth; Sutton, Jeannette; Butts, Carter T. (8/2021). “Inequalities of an Infodemic: Socio-Demographic Influences on Message Retransmission During the COVID-19 Pandemic.” ASA Virtual Meeting.
- Thomas, Loring; Huang, Peng; Yin, Fan; Luo, Xiaoshuang Iris; Almquist, Zack W.; Hipp, John R.; Butts, Carter T. (8/2021). “Rising Floodwaters: Spatial Social Network Effects on COVID-19 Outcomes by Race and Ethnicity.” ASA Virtual Meeting.
- Diessner, Elizabeth M.; Zong, Zixiao; Cross, Thomas J.; Takahashi, Gemma R.; Crosby, Marquise G.; Farahmadl, Vesta; Zhuang, Shannon; Martin, Rachel W.; and Butts, Carter T. (2/2021). “The Effect of Point Mutations on Structure and Dynamics of SARS-CoV-2 Main Protease Mutants.” Biophysical Society Meeting (Virtual).
- Butts, Carter T. (1/2021). “Labeled Subgraph Kernels for Social Network Analysis.” 3rd North American Social Network Conference (Virtual).
- Huang, Peng and Butts, Carter T. (1/2021). “Estimation of Count-data Exponential Family Random Graph Models.” 3rd North American Social Network Conference (Virtual).
- Murray-Watters, Alexander and Butts, Carter T. (1/2021). “Do Stochastic Actor Oriented Models Hide Degeneracy?: A Simulation Study.” 3rd North American Social Network Conference (Virtual).
- Thomas, Loring; Huang, Peng; Yin, Fan; Luo, Xiaoshuang Iris; Almquist, Zack W.; Hipp,

- John R.; and Butts, Carter T. (1/2021). “Examining the Effect of COVID-19 Diffusion on Spatial Networks to Understand Ethnoracial Disparities in Disease Outcomes.” 3rd North American Social Network Conference (Virtual).
- Gardner, Richard E. III and Butts, Carter T. (8/2020). “Attack of the Russian Bots: Fake News Social Influence Bot Network Analysis from Twitter Metadata.” ASA Virtual Meeting.
  - Huang, Peng and Butts, Carter T. (8/2020). “The Networks of Inter-County Migration Flows in the U.S.” ASA Virtual Meeting.
  - Lee, Francis; Butts, Carter T.; and Schneider, John A. (8/2020). “Measuring Structural HIV Stigma.” ASA Virtual Meeting.
  - Renshaw, Scott L.; Sutton, Jeannette; and Butts, Carter T. (8/2020). “Weathering the Inequality: Audience Demographics and Message Passing.” ASA Virtual Meeting.
  - Thomas, Loring J. and Butts, Carter T. (8/2020). “Models of Networks with Vertex and Edge Dynamics Containing Arbitrary Dependence.” ASA Virtual Meeting.
  - Yin, Fan and Butts, Carter T. (8/2020). “Finite Mixtures of ERGMs for Modeling Ensembles of Networks.” JSM Virtual Meeting.
  - Huang, Peng and Butts, Carter T. (7/2020). “Modeling the Network of Inter-County Migration Flows in the U.S. Using Dynamic Valued ERGMs.” Sunbelt Virtual Meeting (INSNA).
  - Gardner, Richard E. III and Butts, Carter T. (7/2020). “Passing While Bot: Fake News Network Role Analysis from Twitter Data.” Sunbelt Virtual Meeting (INSNA).
  - Thomas, Loring J., Huang, Peng; Luo, Iris; Hipp, John; and Butts, Carter T. (7/2020). “Estimating Inhomogeneous Spatial Interaction Functions for Spatial Network Simulation.” Sunbelt Virtual Meeting (INSNA).
  - Grazioli, Gianmarc; Yu, Yue; Unhelkar, Megha H.; Martin, Rachel W.; and Butts, Carter T. (2/2020). “Algorithms for Parameterizing Network Hamiltonians for Simulations of Amyloid Fibril Self-assembly.” Biophysical Society Meeting, San Diego, CA.
  - Renshaw, Scott L.; Butts, Carter T.; and Sutton, Jeannette. (1/2020). “The Social Amplification of National Weather Service Communication: Impact of Audience Population Factors and Message Content Features.” 100th American Meteorological Society Annual Meeting, Boston, MA.
  - Butts, Carter T. (9/2019). “Prediction of Equilibrium Dynamics Using Exponential Family Random Graph Models.” European Social Network Meeting (EUSN), Zürich, Switzerland.
  - Gardner, Richard E. III and Butts, Carter T. (8/2019). “Fake News Social Influence Bot Network Analysis on Twitter Hazard Data.” ASA Meeting, New York, New York.
  - Lee, Francis and Butts, Carter T. (8/2019). “Incorporating Structural Stigma into Network Analysis.” ASA Meeting, New York, New York.
  - Renshaw, Scott L.; Yu, Yue; Olson, Michele K.; Prestley, Robert; Sutton, Jeannette; and Butts, Carter T. (8/2019). “The Social Amplification of Official Messages: An Examination of National Weather Service Communications.” ASA Meeting, New York, New York.
  - Smith, Emily; Butts, Carter T.; Hipp, John; and Nagle, Nicholas N. (8/2019). “The Multiplexity and Locality of Job Lead Ties.” ASA Meeting, New York, New York.
  - Thomas, Loring and Butts, Carter T. (8/2019). “Diurnal Patterns and Social Ecology:

Throughput in Urban Spaces.” ASA Meeting, New York, New York.

- Sutton, Jeannette; Renshaw, Scott L.; Gardner, Richard E. III; Olson, Michele K.; Prestley, Robert; Vos, Sarah C.; Gibson, C. Ben; Yu, Yue; and Butts, Carter T. (7/2019). “Social Media Engagement Strategies and Message Retransmission Across Threat Contexts.” Natural Hazards Workshop, Broomfield, CO.
- Butts, Carter T. (6/2019). “Contact-formation Mechanisms for ERGM Reference Measures with Local Dependence.” 39th Sunbelt Network Conference (INSNA), Montreal, Canada.
- Gardner, Richard E. III and Butts, Carter T. (6/2019). “Humans vs. Bots: Fake News Bot Analysis from Twitter Hazard Data.” 39th Sunbelt Network Conference (INSNA), Montreal, Canada.
- Lee, Francis and Butts, Carter T. (6/2019). “Modeling Group Boundary Maintenance in ERGMs.” 39th Sunbelt Network Conference (INSNA), Montreal, Canada.
- Phillips, Nolan; Yin, Fan; and Butts, Carter T. (6/2019). “A New HOPE: Held-Out Predictive Evaluation (HOPE) for Exponential Family Random Graph Models.” 39th Sunbelt Network Conference (INSNA), Montreal, Canada.
- Renshaw, Scott L.; Yu, Yue; Olson, Michele K.; Prestley, Robert; Sutton, Jeannette; and Butts, Carter T. (6/2019). “From Experimental to Supplemental: The Evolution of NWS’ Use of Twitter for Hazard Communication.” 39th Sunbelt Network Conference (INSNA), Montreal, Canada.
- Sutton, Jeannette; Renshaw, Scott L.; Vos, Sarah C.; Olson, Michele K.; Prestley, Robert; and Butts, Carter T. (6/2019). “Longitudinal Engagement and Audience Attention: Message Contents and Features that Get Passed On.” 47th Conference on Broadcast Meteorology, American Meteorological Association, San Diego, CA.
- Grazioli, Gianmarc; Yu, Yue; Unhelkar, Megha H.; Martin, Rachel W.; and Butts, Carter T. (5/2019). “Network Hamiltonians for Modeling Amyloid Fibril Formation.” SoCal Theoretical Chemistry Conference, Los Angeles, CA.
- Grazioli, Gianmarc; Yu, Yue; Unhelkar, Megha H.; Martin, Rachel W.; Butts, Carter T. (3/2019). “Network-based Modeling of Amyloid Fibril Formation.” Biophysical Society Annual Meeting, Baltimore, MD.
- Unhelkar, Megha H.; Duong, Vy T.; Grazioli, Gianmarc; Kelly, John E.; Yu, Yue; Butts, Carter T.; and Martin, Rachel W. (3/2019). “Protein Discovery and Characterization Using Molecular Modeling.” Biophysical Society Annual Meeting, Baltimore, MD.
- Butts, Carter T. (12/2018). “Predicting Potential Pathways of Network Change from Distributional Models.” 2nd North American Social Networks Meeting, Washington, DC.
- Lee, Francis; and Butts, Carter T. (12/2018). “Modeling Stigma in ERGMs.” 2nd North American Social Networks Meeting, Washington, DC.
- Smith, Emily; Butts, Carter T.; Hipp, John; and Nagle, Nicholas N. (12/2018). “The Multiplexity and Locality of Job Lead Ties.” 2nd North American Social Networks Meeting, Washington, DC.
- Yu, Yue; Grazioli, Gianmarc; Phillips, Nolan; and Butts, Carter T. (12/2018). “Local Graph Stability in Exponential Family Random Graph Models.” 2nd North American Social Networks Meeting, Washington, DC.
- Thomas, Loring and Butts, Carter T. (6/2019). “Entry and Exit Dynamics using Generalized Location Systems and TERGM.” 39th Sunbelt Network Conference (INSNA), Mon-

treal, Canada.

- Yin, Fan and Butts, Carter T. (6/2019). “Approximate Bayesian Computation for ERGMs via Copula Model.” 39th Sunbelt Network Conference (INSNA), Montreal, Canada.
- Bierma, Jan; Kelly, John E.; Payne, Brooke; Kim, Suhan H.; Butts, Carter T.; and Martin, Rachel W. (8/2018). “Darwin’s Ferment: Droserasins and Nepenthesins from the *Drosera capensis* Genome.” International Carnivorous Plant Society Meeting, Santa Rosa, CA.
- Butts, Carter T. (8/2018). “A Dynamic Process Interpretation of the Sparse ERGM Reference Model.” ASA Meeting, Philadelphia, PA.
- Lee, Francis; Krivitsky, Pavel; and Butts, Carter T. (8/2018). “Extending the Ranked Exponential Random Graph Modeling Framework to Network Data from Subjective Ratings.” ASA Meeting, Philadelphia, PA.
- Phillips, Nolan and Butts, Carter T. (8/2018). “Held-Out Predictive Evaluation (HOPE) of Exponential Family Random Graph Models.” ASA Meeting, Philadelphia, PA.
- Smith, Emily J; Hipp, John R.; Nagle, Nicholas N.; and Butts, Carter T. (8/2018). “Spatial and Social Embeddedness of Emergency Contact Ties.” ASA Meeting, Philadelphia, PA.
- Unhelkar, Megha H.; Zhang, Xuhong; Kelly, John E.; Duong, Vy; Bierma, Jan; Roskamp, Kyle W.; Tair, Seemal; Enendu, Kaosoluchi N.; Frietes, J. Alfredo; Martin, Rachel W.; and Butts, Carter T. (8/2018). “Enzyme Discovery from the *Drosera capensis* Genome.” International Carnivorous Plant Society Meeting, Santa Rosa, CA.
- Butts, Carter T. (6/2018). “Obtaining the Sparse ERGM Reference Model from Marginalized Latent Dynamics.” 38th Sunbelt Network Conference (INSNA), Utrecht, Netherlands.
- Phillips, Nolan and Butts, Carter T. (6/2018). “Comparing States’ Emergency Operations Plans as Networks Using Exponential Family Random Graph Models.” 38th Sunbelt Network Conference (INSNA), Utrecht, Netherlands.
- Renshaw, Scott; Prestley, Robert; Olson, Michelle; Yu, Yue; Gibson, C. Ben; Sutton, Jeanette; and Butts, Carter T. (6/2018). “Strategic Inter-organizational Message Amplification through Online Networks: Implications from the National Weather Service.” 38th Sunbelt Network Conference (INSNA), Utrecht, Netherlands.
- Smith, Emily J.; Buhler-Kane, Jennifer; Butts, Carter T.; Hipp, John R.; and Farshchi, Ehsan. (6/2018). “Local Social Network Ties and Prenatal Smoking.” 38th Sunbelt Network Conference (INSNA), Utrecht, Netherlands.
- Thomas, Loring and Butts, Carter T. (6/2018). “An Examination of Urban Ecology as a Conductor for Social Behavior in Networks of Areal Units.” 38th Sunbelt Network Conference (INSNA), Utrecht, Netherlands.
- Grazioli, Gianmarc; Andricioaei, Ioan; and Butts, Carter T. (3/2018). “Using Machine Learning to Automate Calculations of Conformational Kinetics in Molecular Simulations.” American Chemical Society Annual Meeting, New Orleans, LA.
- Lee, Francis and Butts, Carter T. (8/2017). “On the Reliability of Friendship.” ASA Meeting, Montreal, Quebec.
- Phillips, Nolan and Butts, Carter T. (8/2017). “Tools for Assessing the Model Adequacy of Exponential Graph Models (ERGMs) Using Labeled Networks.” ASA Meeting, Montreal, Quebec.
- Smith, Emily J.; Butts, Carter T.; Hipp, John R.; and Nagle, Nicholas N. (8/2017). “The



Geography and Multiplexity of Job Lead Ties.” ASA Meeting, Montreal, Quebec.

- Butts, Carter T.; Sutton, Jeannette; Gibson, C. Ben; Li, Kevin; Olson, Michele; Phillips, Nolan E.; Renshaw, Scott; Vos, Sarah C.; and Yu, Yue. (7/2017). “HEROIC Project Update: Predictors of Message Passing, Social Media Adoption, and Social Media Use in Meteorological and Health Hazard Settings.” Natural Hazards Workshop, Broomfield, CO.
- Lee, Francis and Butts, Carter T. (7/2017). “On the Validity of the Bayesian Network Accuracy Model.” 1st North American Social Networks Meeting (NASN), Washington, DC.
- Phillips, Nolan and Butts, Carter T. (7/2017). “Tools for Assessing the Model Adequacy of Exponential Graph Models (ERGMS) and Comparing Sets of Networks Using Labeled Features.” 1st North American Social Networks Meeting (NASN), Washington, DC.
- Smith, Emily J.; Butts, Carter T.; Hipp, John; and Nagle, Nicholas. (7/2017). “Spatial and Social Embeddedness of Emergency Contact Ties.” 1st North American Social Networks Meeting (NASN), Washington, DC.
- Wang, Cheng; Butts, Carter T.; Hipp, John; Jose, Rupa; and Lakon, Cynthia M. (7/2017). “Goodness-of-Fit Testing for Behavior in Joint Dynamic Network/Behavior Models with an Extension to Two-Mode Networks.” 1st North American Social Networks Meeting (NASN), Washington, DC.
- Yin, Fan and Butts, Carter T. (5/2017). “Scalable ERGM Inference for Organizational Interaction and Behavioral Simulation Data.” 37th Sunbelt Network Conference (INSNA), Beijing, China.
- Yu, Yue and Butts, Carter T. (5/2017). “Simulating Sexual Contact Networks with ERGMs: an Investigation of the Parameter Space.” 37th Sunbelt Network Conference (INSNA), Beijing, China.
- Butts, Carter T.; Smith, Emily J.; Hipp, John R.; Nagle, Nicholas N.; Boessen, Adam; Acton, Ryan M. Marcum, Christopher S.; and Almquist, Zack W. (8/2016). “Large-scale Geographical Structure in Interpersonal Networks within the Western United States.” ASA Meeting, Seattle, WA.
- Gibson, C. Ben and Butts, Carter T. (8/2016). “Relational Event Modeling of Emergency Management Organizations’ Communications during the Boston Marathon Bombing.” ASA Meeting, Seattle, WA.
- Lee, Francis and Butts, Carter T. (8/2016). “A Tale of Two LASes: Comparative Performance Between the Union and Intersection Rules in Network Inference.” ASA Meeting, Seattle, WA.
- Smith, Emily J.; Butts, Carter T.; Hipp, John R.; and Nagle, Nicholas N. (8/2016). “Predicting Respondent Precision of Geographic Location.” ASA Meeting, Seattle, WA.
- Phillips, Nolan E.; Vos, Sarah; Sutton, Jeannette; Butts, Carter T.; Fitzhugh, Sean M.; Espinoza, Brian; Spiro, Emma S.; Gibson, C. Ben. (7/2016). “Research Updated on Project HEROIC: Hazards, Emergency Response, and Online Informal Communications.” Natural Hazards Workshop, Broomfield, CO.
- Boessen, Adam; Hipp, John H.; Butts, Carter T.; Nagle, Nicholas N.; and Smith, Emily J. (4/2016). “Social Fabric: Time of Day, and Fear of Crime.” 36th Sunbelt Network Conference (INSNA), Newport Beach, CA.
- Butts, Carter T. (4/2016). “Hamming Trajectory Sampling.” 36th Sunbelt Network Con-

ference (INSNA), Newport Beach, CA.

- Espinoza, Brian; Phillips, Nolan P.; Gibson, C. Ben; League, Cedar; Johnson, Britta; Spiro, Emma S.; Fitzhugh, Sean M.; Sutton, Jeannette; and Butts, Carter T. (4/2016). “Emergency Management Organizations’ Twitter Follower Growths During and After Disasters.” 36th Sunbelt Network Conference (INSNA), Poster Presentation. Newport Beach, CA.
- Gibson, C. Ben and Butts, Carter T. (4/2016). “Relational Dynamics Between Emergency Management Organizations During a Terrorism Event.” 36th Sunbelt Network Conference (INSNA), Newport Beach, CA.
- Harrington, Stephanie; Smith, Emily J.; and Butts, Carter T. (4/2016). “Toward a Reference Network Cartography for the United States.” 36th Sunbelt Network Conference (INSNA), Newport Beach, CA.
- Lakon, Cynthia; Jose, Rupa; Hipp, John H.; Wang, Chang; and Butts, Carter T. (4/2016). “Social Integration in Friendship Networks and Adolescent Smoking: the Role of Ties Outside of School.” 36th Sunbelt Network Conference (INSNA), Newport Beach, CA.
- Phillips, Nolan E.; League, Cedar; Johnson, Britta; Sutton, Jeannette; Butts, Carter T. (4/2016). “Assignment of Emergency Support Functions to Emergency Management Organizations in the United States: ERGM GoF Visualizations From Simulations.” 36th Sunbelt Network Conference (INSNA), Newport Beach, CA.
- Lee, Francis and Butts, Carter T. (4/2016). “Mutual Assent or Unilateral Nomination? A Performance Comparison of Intersection and Union Rules for Integrating Self-reports of Social Relationships.” 36th International Sunbelt Social Network Conference (INSNA), Newport Beach, CA.
- Smith, Emily J.; Butts, Carter T.; Hipp, John R.; and Nagle, Nicholas N. (4/2016). “Predicting Respondent Precision of Geographic Location.” 36th International Sunbelt Network Conference (INSNA), Newport Beach, CA.
- Yu, Yue; Gibson, C. Ben; and Butts, Carter T. (4/2016). “Scalable Dynamic Sexual Contact Network Analysis with DNR Structure Using Retrospective Life History Data.” 36th International Sunbelt Network Conference (INSNA), Newport Beach, CA.
- Wang, Cheng; Hipp, John H.; Butts, Carter T.; Jose, Rupa; and Lakon, Cynthia. (4/2016). “SIENA Models of Interdependent Use of Cigarettes, Alcohol, and Marijuana.” 36th International Sunbelt Network Conference (INSNA), Newport Beach, CA.
- Zhang, Xuhong and Butts, Carter T. (4/2016). “Inferring Urban Activity Distributions from Aggregated Egocentric Communication Data.” 36th International Sunbelt Network Conference (INSNA), Newport Beach, CA.
- Butts, Carter T. (8/2015). “A Perfect Sampling Method for Exponential Family Random Graph Models.” ASA Meeting, Chicago, IL.
- Fitzhugh, Sean M. and Butts, Carter T. (8/2015). “Patterns of Co-membership: Techniques for Identifying Subgraph Composition.” ASA Meeting, Chicago, IL.
- Gibson, C. Ben; Yu, Yue; and Butts, Carter T. (8/2015). “Scalable Estimation of Temporal ERGMs with DNR Structure from Egocentrically Sampled Data.” ASA Meeting, Chicago, IL.
- Lee, Francis and Butts, Carter T. (8/2015). “Testing for Structural and Institutional Correlates of Accuracy in Individual Perceptions of Social Network Structure.” ASA Meeting, Chicago, IL.

- Butts, Carter T. (6/2015). “Collapsed ERGM Estimation for Multiple-network Models with Hierarchical Baseline Effects.” 35th International Sunbelt Social Network Conference (INSNA), Brighton, UK.
- Fitzhugh, Sean M. and Butts, Carter T. (6/2015). “Spatial Excitation: Testing a Network Activation Theory of Disaster-related Rumoring Activity.” 35th International Sunbelt Social Network Conference (INSNA), Brighton, UK.
- Gibson, C. Ben and Butts, Carter T. (6/2015). “Effects of Temporal Resolution Adjustments on Dynamic Sexual Contact Models.” 35th International Sunbelt Social Network Conference (INSNA), Brighton, UK.
- Lee, Francis and Butts, Carter T. (6/2015). “Leveraging Network Inference for Efficient Data Collection.” 35th International Sunbelt Social Network Conference (INSNA), Brighton, UK.
- Phillips, Nolan E.; Sutton, Jeannette; Fitzhugh, Sean M.; League, Cedar; Johnson, Britta; Spiro, Emma S.; Gibson, C. Ben; and Butts, Carter T. (6/2015). “Emergency Management Interorganizational Networks.” 35th International Sunbelt Social Network Conference (INSNA), Brighton, UK.
- Yu, Yue; Gibson, C. Ben; and Butts, Carter T. (6/2015). “How to Know When Your Partner’s Sleeping Around: Imputing Concurrency in Dynamic Sexual Contact Networks.” 35th International Sunbelt Social Network Conference (INSNA), Brighton, UK.
- Cici, Blerim; Markopoulou, Athina; Gjoka, Minas; and Butts, Carter T. (4/2015) “Seasonal Decomposition of Cell Phone Activity Series and Urban Dynamics.” NetMob 2015, Boston, MA.
- Reed, Philip J.; Spiro, Emma S.; and Butts, Carter T. (3/2015). “Using Facebook Data to Examine Culture and Self-Disclosure Behaviors.” iConference 2015, Newport Beach, CA.
- Butts, Carter T. (8/2014). “A Novel Simulation Method for Binary Discrete Exponential Families, with Application to Social Networks.” ASA Meeting, San Francisco, CA.
- Fitzhugh, Sean M.; Spiro, Emma S.; and Butts, Carter T. (8/2014). “Did You Feel It? Spatial Filtering Techniques for Detection of Local Disaster Events.” ASA Meeting, San Francisco, CA.
- Smith, Emma J.; Marcum, Christopher S.; Almquist, Zack W.; Hipp, John R.; Nagle, Nicholas N.; and Butts, Carter T. (8/2014). “The Relationship of Age to Personal Network Size, Relational Multiplexity, and Proximity to Alters in the Western United States.” ASA Meeting, San Francisco, CA.
- Fitzhugh, Sean M.; Sutton, Jeannette; Butts, Carter T.; Spiro, Emma; Gibson, C. Ben; League, Cedar; and Johnson, Britta. (6/2014). “Project HEROIC: Hazards, Emergency Response, and Online Informal Communication.” 39th Annual Natural Hazards Research and Applications Workshop. Broomfield, CO.
- Yaveroglu, Omer; Fitzhugh, Sean M.; Kurant, Maciej; Markopoulou, Athina; Butts, Carter T.; and Przulj, Natasa. (6/2014). “ergm.graphlets: A Package for ERG Modeling Based on Graphlet Statistics.” NetSci 2014. Berkeley, CA.
- Spiro, Emma; Fitzhugh, Sean M.; Gibson, C. Ben; Sutton, Jeannette, and Butts, Carter T. (5/2014). “Online Communication Dynamics During Natural Hazard Events.” 64th Annual Conference of the International Communication Association. Seattle, WA.
- Almquist, Zack W. and Butts, Carter T. (2/2014). “Bayesian Analysis of Dynamic Net-

- work Regression with Joint Edge/Vertex Dynamics.” 34th Sunbelt Network Conference (INSNA), St. Pete’s Beach, FL.
- Butts, Carter T. (2/2014). “Asymptotic Bayesian Inference for Pooled ERGMs.” 34th Sunbelt Network Conference (INSNA), St. Pete’s Beach, FL.
  - Fitzhugh, Sean and Butts, Carter T. (2/2014). “Network Lithology: Techniques for Identifying Subgraph Composition.” 34th Sunbelt Network Conference (INSNA), St. Pete’s Beach, FL.
  - Gibson, Ben; Yu, Yue; Almquist, Zack; and Butts, Carter T. (2/2014). “Scalable Estimation of Temporal ERGMs with DNR Structure from Egocentrically Sampled Data.” 34th Sunbelt Network Conference (INSNA), St. Pete’s Beach, FL.
  - Gjoka, Minas; Smith, Emma; and Butts, Carter T. (2/2014). “Design-based Estimators for Attribute-labeled, Low-semidiameter Subgraphs.” 34th Sunbelt Network Conference (INSNA), St. Pete’s Beach, FL.
  - Yu, Yue; Smith, Emma; and Butts, Carter T. (2/2014). “Retrospective Network Imputation from Life History Data: the Impact of Designs.” 34th Sunbelt Network Conference (INSNA), St. Pete’s Beach, FL.
  - Almquist, Zack W. and Butts, Carter T. (8/2013). “Dynamic Network Logistic-Regression: A Dynamic Logistic Choice Analysis of DNC and RNC Blog Citation Networks in the 2004 US Presidential Election.” ASA Meeting, New York, NY.
  - Butts, Carter T. (8/2013). “Baseline Mixture Models for Social Networks.” ASA Meeting, New York, NY.
  - Gibson, Charles; Spiro, Emma S.; Fitzhugh, Sean; and Butts, Carter T. (8/2013). “Estimating Active User Population Dynamics in Online Social Networks.” ASA Meeting, New York, NY.
  - Spiro, Emma S. and Butts, Carter T. (8/2013). “When Bad Things Happen to Good People: Online Communication Dynamics During Natural Hazard Events.” ASA Meeting, New York, NY.
  - Sutton, Jeannette; Spiro, Emma S.; Johnson, Britta; Fitzhugh, Sean; Gibson, Charles; and Butts, Carter T. (8/2013). “Warning Tweets: Serial Transmission of Warning Messages during a Disaster Event.” ASA Meeting, New York, NY.
  - Sutton, Jeannette; Butts, Carter T.; Spiro, Emma S.; Johnson, Britta; Fitzhugh, Sean; and Gibson, Ben. (7/2013). “HEROIC Project Update: Hazards, Emergency Response, and Online Informal Communications.” 2013 Natural Hazards Research and Applications Workshop, Broomfield, CO.
  - Spiro, Emma S. and Butts, Carter T. (5/2013). “Degree Dynamics: Spikes and Decay in Attention Relationships.” 33rd Sunbelt Network Conference (INSNA), Hamburg, Germany.
  - Almquist, Zack W.; Spiro, Emma S.; and Butts, Carter T. (5/2013). “Missing Data Methods for Dynamic Network Logistic-Regression.” 33rd Sunbelt Network Conference (INSNA), Hamburg, Germany.
  - Fitzhugh, Sean; Gibson, Ben; and Butts, Carter T. (5/2013). “Extended Brokerage Structures in Organizational Networks: a Model-Driven Approach.” 33rd Sunbelt Network Conference (INSNA), Hamburg, Germany.
  - Gibson, Ben; Spiro, Emma S.; Fitzhugh, Sean; and Butts, Carter T. (5/2013). “Estimating Active User Population Dynamics in Online Social Networks.” 33rd Sunbelt Network

Conference (INSNA), Hamburg, Germany.

- Spiro, Emma and Butts, Carter T. (5/2013). “Degree Dynamics: Spikes and Decay in Attention Relationships.” 33rd Sunbelt Network Conference (INSNA), Hamburg, Germany.
- Smith, Emma; Almquist, Zack W.; Boessen, Adam; Butts, Carter T.; Hipp, John R.; and Nagle, Nicholas N. (5/2013). “Social Cohesion across Demographics and Space.” 33rd Sunbelt Network Conference (INSNA), Hamburg, Germany.
- Boessen, Adam; Hipp, John R.; Butts, Carter T.; Nagle, Nicholas N.; Almquist, Zack W.; Marcum, Christopher S.; and Acton, Ryan M. (11/2012). “Neighborhoods and Space: Situating Residents’ Networks.” American Society of Criminology Annual, Meeting, Chicago, IL.
- Almquist, Zack W. and Butts, Carter T. (8/2012). “Logistic Network Regression for Scalable Analysis of Networks with Joint Edge/Vertex Dynamics.” ASA Meeting, Denver, CO.
- Almquist, Zack W.; Spiro, Emma S.; and Butts, Carter T. (8/2012). “Dynamic Network Logistic Regression with Missing Data, with an Application to a Dynamic US Governmental Emergency Management-related Friend/Follower Network on Twitter.” 2012 Joint Japan/North America Mathematical Sociology Conference, Denver, CO.
- Butts, Carter T. (8/2012). “Spectral Analysis of Feedback Centrality Indices.” 2012 Joint Japan/North America Mathematical Sociology Conference, Denver, CO.
- Fitzhugh, Sean; Butts, Carter T.; Kurant, Maciej; Gjoka, Minas; and Markopoulou, Athina. (8/2012). “The Enumeration Problem: Link-Trace Methods for Enumeration of Vertex Sets.” ASA Meeting, Denver CO.
- Spiro, Emma S.; Sutton, Jeannette; Johnson, Britta; Fitzhugh, Sean; and Butts, Carter T. (8/2012). “Diffusion of Innovation Among Government Organizations: Asymmetric Effects of Organizational Lineage on Social Media Adoption.” 2012 Joint Japan/North America Mathematical Sociology Conference, Denver, CO.
- Sutton, Jeannette; Butts, Carter T.; Spiro, Emma S.; Fitzhugh, Sean; and Johnson, Britta. (7/2012). “HEROIC: Hazards, Emergency Response, and Online Informal Communications.” 2012 Natural Hazards Research and Applications Workshop, Broomfield, CO.
- Beckage, Nicole; Butts, Carter T.; and Smith, Linda. (6/2012). “Network Models of Language Acquisition.” NetSci Conference, Evanston, IL.
- Spiro, Emma S.; Sutton, Jeannette; and Butts, Carter T. (6/2012). “Shifting Attention: The Effect of External Stimuli on Social Ties Among Emergency Management Organizations.” Political Networks Conference, Boulder, CO.
- Fitzhugh, Sean; Butts, Carter T.; Kurant, Maciej; Gjoka, Minas; and Markopoulou, Athina. (6/2012). “The Enumeration Problem: An Illustration with Political Activist Networks.” Political Networks Conference, Boulder, CO.
- Johnson, Britta; Sutton, Jeannette; Spiro, Emma S.; Fitzhugh, Sean; and Butts, Carter T. (6/2012). “Technology Lineage and Adoption: Diffusion of Microblog Technologies Among Government Organizations.” Political Networks Conference, Boulder, CO.
- Almquist, Zack W. and Butts, Carter T. (5/2012). “Point Process Models for Household Distributions within Small Areal Units.” Poster presentation at The 2012 Annual Meeting of the Population Association of America, San Francisco, CA.
- Almquist, Zack W. and Butts, Carter T. (3/2012). “Evolving Context: Evidence from Temporal Change in Organizational Collaboration over the Course of the 2005 Katrina

- Disaster.” 2012 Pacific Sociological Association Meeting, San Diego, CA.
- Almquist, Zack W. and Butts, Carter T. (3/2012). “Network Diffusion and the Effects of Geographic Heterogeneity within Human Populations.” 32nd Sunbelt Network Conference (INSNA), Redondo Beach, CA.
  - Butts, Carter T. (3/2012). “Approximate Sampling for Binary Discrete Exponential Families, with Fixed Execution Time and Quality Guarantees.” 32nd Sunbelt Network Conference (INSNA), Redondo Beach, CA.
  - Fitzhugh, Sean; Butts, Carter T.; Kurant, Maciej; Gjoka, Minas; and Markopoulou, Athina. (3/2012). “Link-Trace Methods for Enumeration of Vertex Sets.” 32nd Sunbelt Conference (INSNA), Redondo Beach, CA.
  - Johnson, Britta; Sutton, Jeannette; Spiro, Emma S.; Fitzhugh, Sean; and Butts, Carter T. (3/2012). “Disruptive Diffusion: Adoption of Microblog Technologies Among Urban Organizations.” 32nd Sunbelt Network Conference (INSNA), Redondo Beach, CA.
  - Hipp, John R.; Butts, Carter T.; Acton, Ryan M.; Nagle, Nicholas N.; Boessen, Adam; Marcum, Christopher S.; and Almquist, Zack W. (3/2012). “Spatial Networks and the Perception of Neighborhood.” 32nd Sunbelt Network Conference (INSNA), Redondo Beach, CA.
  - Beckage, Nicole; Styvers, Mark; and Butts, Carter T. (3/2012). “Navigation in Semantic Memory.” 32nd Sunbelt Conference (INSNA), Redondo Beach CA.
  - Boessen, Adam; Hipp, John R.; Butts, Carter T.; Acton, Ryan M.; Nagle, Nicholas N.; Marcum, Christopher S.; and Almquist, Zack W. (3/2012). “If There’s a Crime in Your Neighborhood, Who you Gonna Call?” 32nd Sunbelt Network Conference (INSNA), Redondo Beach, CA.
  - Spiro, Emma S.; Sutton, Jeannette; Fitzhugh, Sean; and Butts, Carter T. (3/2012). “A Microstructure Topology for Hyperedge Communication Events.” 32nd Sunbelt Network Conference (INSNA), Redondo Beach, CA.
  - Sutton, Jeannette; Spiro, Emma S.; Johnson, Britta; Greczek, Matt; Fitzhugh, Sean; and Butts, Carter T. (3/2012). “Connected Communications: Network Structures of Official Communications in Disaster.” 32nd Sunbelt Network Conference (INSNA), Redondo Beach, CA.
  - Valluvan, Ragupathyraj; Almquist, Zack W.; Butts, Carter T.; and Anandkumar, Anima. (3/2012). “Vertex Set Prediction of Dynamic Networks Using Semi-parametric Latent Tree Models.” 32nd Sunbelt Network Conference(INSNA), Redondo Beach, CA.
  - Butts, Carter T. and Pixley, Joy E. (8/2011). “The Ties That Bound: Within-Couple Heterogeneity as an Upper Bound On Between-Group Inequality.” ASA Meeting, Las Vegas, NV.
  - Fitzhugh, Sean M.; Butts, Carter T.; Pixley, Joy E. (8/2011). “Shared Spells: How Co-participation Limits Differences. Between Life Histories.” ASA Meeting, Las Vegas, NV.
  - Spiro, Emma S.; Almquist, Zack W.; and Butts, Carter T. (8/2011). “Maintaining Ties from Coast to Coast: Selective Mixing Between Universities on Facebook.” ASA Meeting, Las Vegas, NV.
  - Spiro, Emma S.; Butts, Carter T.; Sutton, Jeannette; Greczek, Matt; Fitzhugh, Sean M.; and Pierski, Nicole M. (7/2011). “Informal Online Communication in the Deepwater Horizon Disaster.” Poster presentation, 2011 Natural Hazards Research and Applications

Workshop, Broomfield, CO.

- Butts, Carter T. and Almquist, Zack W. (6/2011). “Modeling the Dynamics of Emergent Networks: Collaboration and Mass Convergence in the Hurricane Katrina Disaster.” 4th Annual Political Networks Conference, Ann Arbor, MI.
- Almquist, Zack W. and Butts, Carter T. (6/2011). “Contending Parties: a Logistic Choice Analysis of Inter and Intra-group Blog Citation Dynamics in the 2004 US Presidential Election.” Poster presentation, 4th Annual Political Networks Conference, Ann Arbor, MI.
- Fitzhugh, Sean M.; Butts, Carter T.; and Pixley, Joy E. (6/2011). “A Cross-National Comparison of the Effects of Military and Political Participation on Life Histories.” Poster presentation, 4th Annual Political Networks Conference, Ann Arbor, MI.
- Pierski, Nicole M. and Butts, Carter T. (6/2011). “Semantic Networks in the Political Blogosphere.” 4th Annual Political Networks Conference, Ann Arbor, MI.
- Spiro, Emma S.; Sutton, Jeannette; Greczek, Matt; and Butts, Carter T. (6/2011). “Rumoring During Extreme Events: Deepwater Horizon 2010.” Poster presentation, 4th Annual Political Networks Conference, Ann Arbor, MI.
- Almquist, Zack W. and Butts, Carter T. (2/2011). “Contending Parties: a Logistic Choice Analysis of Inter- and Intra-group Blog Citation Dynamics in the 2004 US Presidential Election.” 31st Sunbelt Network Conference (INSNA), St. Pete’s Beach, FL.
- Butts, Carter T. (2/2011). “A Technique for Analyzing ERGM Behavior Using Bernoulli Graphs.” 31st Sunbelt Network Conference (INSNA), St. Pete’s Beach, FL.
- Fitzhugh, Sean M.; Butts, Carter T.; and Pixley, Joy E. (2/2011). “A Network Approach to Pattern Discovery in Spell Data.” 31st Sunbelt Network Conference (INSNA), St. Pete’s Beach, FL.
- Hipp, John R.; Butts, Carter T.; Nagle, Nicholas N.; Acton, Ryan M.; Boessen, Adam; and Marcum, Christopher. (2/2011). “Homophily and Propinquity in Social Ties, and the Consequences for Neighborhood Cohesion.” 31st Sunbelt Network Conference (INSNA), St. Pete’s Beach, FL.
- Kurant, Maciej; Gjoka, Minas; Butts, Carter T.; and Markopoulou, Athina. (2/2011). “Link-Trace Sampling for Social Networks: Advances and Applications.” 31st Sunbelt Network Conference (INSNA), St. Pete’s Beach, FL.
- Pierski, Nicole M.; DuBois, Christopher; Butts, Carter T.; and McFarland, Dan. (2/2011). “Comparative Analysis of Classroom Interactions Using Relational Event Models.” 31st Sunbelt Network Conference (INSNA), St. Pete’s Beach, FL.
- Spiro, Emma S.; Acton Ryan M.; Sutton, Jeannette; Greczek, Matt; and Butts, Carter T. (2/2011). “Rumoring in Informal Online Communication Networks.” 31st Sunbelt Network Conference (INSNA), St. Pete’s Beach, FL.
- Butts, Carter T. (8/2010). “Bayesian Meta-Analysis of Social Network Data via Conditional Uniform Graph Quantiles.” ASA Meeting, Atlanta, GA.
- Fitzhugh, Sean and Butts, Carter T. (8/2010). “Effects of Individual and Group-level Properties on the Robustness of Emergency-phase Communication Networks.” ASA Meeting, Atlanta, GA.
- Spiro, Emma S.; Acton, Ryan M.; and Butts, Carter T. (8/2010). “Extended Structures of Mediation: Re-examining Brokerage in Dynamic Networks.” ASA Meeting, Atlanta GA.

- Butts, Carter T.; Mendonça, David; Webb, Gary; Jasny, Lorien; Marcum, Christopher S.; Fitzhugh, Sean; Cirik, Ali A.; and Elsasser, Shaun. (7/2010). “Key Findings from the Improvisation in Emergency Response Project: Linking Cognition, Behavior, and Social Interaction.” 2010 Annual Hazards Research and Application Workshop, Broomfield, CO.
- Acton, Ryan M.; Spiro, Emma S.; and Butts, Carter T. (7/2010). “Change and External Events in Online Networks.” 30th Sunbelt Network Conference (INSNA), Riva del Garda, Italy.
- Almquist, Zack W. and Butts, Carter T. (7/2010). “Predicting Regional Self-Identification from Spatial Network Models.” 30th Sunbelt Network Conference (INSNA), Riva del Garda, Italy.
- Butts, Carter T. (7/2010). “A Perfect Sampling Method for Random Graph Models.” 30th Sunbelt Network Conference (INSNA), Riva del Garda, Italy.
- Fitzhugh, Sean and Butts, Carter T. (7/2010). “Effects of Individual and Group-level Properties on the Robustness of Emergency-phase Communication Networks.” 30th Sunbelt Network Conference (INSNA), Riva del Garda, Italy.
- Spiro, Emma S.; Acton, Ryan M.; and Butts, Carter T. (7/2010). “Extended Structures of Mediation: Re-examining Brokerage in Dynamic Networks.” 30th Sunbelt Network Conference (INSNA), Riva del Garda, Italy.
- Butts, Carter T. (8/2009). “A Behavioral Micro-foundation for Cross-sectional Network Models.” ASA Meeting, San Francisco, CA.
- Marcum, Christopher S.; Bevc, Christine A.; and Butts, Carter T. (8/2009). “Mechanisms of Control in Emergent Interorganizational Networks.” ASA Meeting, San Francisco, CA.
- Jasny, Lorien; Marcum, Christopher S.; and Butts, Carter T. (3/2009). “Relating Events to Structure: Evidence from the World Trade Center Police Reports.” 29th Sunbelt Network Conference (INSNA), San Diego, CA.
- Butts, Carter T. and Acton, Ryan M. (8/2008). “Spatial Analysis of Social Networks.” ASA Meeting, Boston, MA.
- Butts, Carter T. (6/2008). “On Having Something In Common: Latent Two-Mode Models for Social Networks.” Networks in Political Science Conference, Cambridge, MA.
- Butts, Carter T. (5/2008). “Latent Focus Models for Network Structure.” Fourth Joint Japan-North America Mathematical Sociology Conference, Redondo Beach, CA.
- Butts, Carter T. (1/2008). “Graph Theoretic Convexity.” 28th Sunbelt Network Conference (INSNA), St. Petersburg, FL.
- Pixley, Joy E. and Butts, Carter T. (11/2007). “Comparing Patterns of Life Course Events.” Annual Meeting of the Gerontological Society of America, San Francisco, CA.
- Butts, Carter T. “A Relational Event Model for Social Action.” (8/2007). ASA Meeting, New York, NY.
- Acton, Ryan M. and Butts, Carter T. (8/2007). “Patterns of Possession and Change: Material Culture in the American Home, 1972–2003.” ASA Meeting, New York, NY.
- Lind, Ben E.; Tirado, Miguel; Butts, Carter T.; and Petrescu-Prahova, Miruna G. (8/2007). “Brokerage Roles in Disaster Response: Organizational Mediation in the Wake of Hurricane Katrina.” ASA Meeting, New York, NY.
- Butts, Carter T. (7/2007). “Likelihood-based Inference for Cycle Structure Bias in Cogni-



tive Models of Social Interaction.” 40th Annual Meeting of the Society for Mathematical Psychology, Irvine, CA.

- Butts, Carter T. “Network Inference from Unstructured Sources.” (5/2007). 27th Sunbelt Network Conference (INSNA), Corfu, Greece.
- Butts, Carter T.; Contractor, Noshir; Acton, Ryan; Harper, Steven; Auvil, Loretta; Petrescu-Prahova, Miruna; Lind, Ben; and Don, Andy. “Mapping and Analyzing Emergent Multi-Organizational Networks in the Hurricane Katrina Response.” (9/2006). Human Social Dynamics Principal Investigator Meeting (NSF), Washington, DC.
- Butts, Carter T. “Cycle Census Statistics for Exponential Random Graph Models.” (8/2006). ASA Meeting, Montreal, Quebec.
- Petrescu-Prahova, Miruna and Butts, Carter T. “Emergent Coordinators in the World Trade Center Disaster.” (8/2006). ASA Meeting, Montreal, Quebec.
- Butts, Carter T.; Acton, Ryan M.; Cross, B. Remy; Jasny, Lorien; Lind, Ben; Petrescu-Prahova, Miruna; Bevc, Christine; Liu, Sophia; and Tierney, Kathleen. (7/2006). “Inter- and Intra-organizational Networks in the World Trade Center and Hurricane Katrina Disasters.” 31st Annual Hazards Research and Applications Workshop, Boulder, CO.
- Acton, Ryan M. and Butts, Carter T. “Implication Structures and Household Artifacts: Analyzing the Changing Patterns of Ownership and Possession in the American Home, 1980–2003.” (4/2006). 26th Sunbelt Network Conference (INSNA), Vancouver, BC.
- Bevc, Christine; Butts, Carter T.; Liu, Sophia; and Tierney, Kathleen. “Predictors of Dyadic Interaction in Emergent Multiorganizational Networks Following the World Trade Center Attacks.” (4/2006). 26th Sunbelt Network Conference (INSNA), Vancouver, BC.
- Butts, Carter T. “Curved Exponential Family Parameterizations for Spatial Network Models.” (4/2006). 26th Sunbelt Network Conference (INSNA), Vancouver, BC.
- Petrescu-Prahova, Miruna and Butts, Carter T. “Network Inference with Missing Data: A Performance Comparison of Existing Models.” (4/2006). 26th Sunbelt Network Conference (INSNA), Vancouver, BC.
- Reich, Leah and Butts, Carter T. “Structural Properties of Power-Relevant Relations.” (4/2006). 26th Sunbelt Network Conference (INSNA), Vancouver, BC.
- Butts, Carter T. and Petrescu-Prahova, Miruna. “Radio Communication Networks in the World Trade Center Disaster.” (8/2005). ASA Meeting, Philadelphia, PA.
- Butts, Carter T.; Petrescu-Prahova, Miruna; and Cross, Remy. “Emergency Phase Networks During the World Trade Center Disaster.” (6/2005). Third Joint US-Japan Conference on Mathematical Sociology, Sapporo, Japan.
- Butts, Carter T.; Petrescu-Prahova, Miruna; and Cross, Remy. “Responder Communication Networks During the World Trade Center Disaster.” (2/2005). 25th Sunbelt Network Conference (INSNA), Redondo Beach, CA.
- Cross, Remy, and Butts, Carter T. “Blogging For Votes: An Examination of the Interaction Between Weblogs and the Electoral Process” (2/2005). 25th Sunbelt Network Conference (INSNA), Redondo Beach, CA.
- Butts, Carter T. and Leite, Fabio. “Bayesian Inference from Continuously Arriving Informant Reports, with Application to Crisis Response.” (8/2004). ASA Meeting, San Francisco, CA.

- Butts, Carter T. “An Exponential Family of Permutation Models for Network Comparison.” (7/2004). IMBS Symposium, “Current Research on Network Comparison,” Irvine, CA.
- Butts, Carter T. “Latent Structure in Multiplex Relations.” (6/2004). NAACSOS Conference, Pittsburgh PA.
- Lawson, Gabriel C. and Butts, Carter T. “Information Transmission Through Human Informants: Simulation.” (6/2004). NAACSOS Conference, Pittsburgh PA.
- Mehrotra, Sharad; Butts, Carter T.; Kalashnikov, Dmitri V.; Venkatasubramanian, Nalini; Altintas, K.; Hariharan, R.; Lee, Haimin; Ma, Yiming; Myers, Amnon; Wickramasuriya, Jehan; Eguchi, Ron; Huyck, Charles. 2004. “CAMAS: A Citizen Awareness System for Crisis Mitigation.” (6/2004). SIGMOD 2004, June 13–18, Paris, France.
- Butts, Carter T. “An Exponential Family of Permutation Models for the Comparison of Adjacency Structures.” (5/2004). 24th Sunbelt Network Conference (INSNA), Portoroz, Slovenia.
- Butts, Carter T. and Hilgeman, Christin. “Latent Algebraic Structure in American Religious Belief, 1988-1998.” (8/2003). ASA Meeting, Atlanta, GA.
- Butts, Carter T. “Network Inference and Error Estimation with Structurally Dependent Error Rates, Missing Data, and Covariates.” (6/2003). NAACSOS Conference (formerly CASOS), Pittsburgh, PA.
- Butts, Carter T. “Network Inference and Accuracy Estimation with Covariates, Configurally Dependent Errors, and Non-ignorably Missing Data.” (2/2003). 23rd Sunbelt Network Conference (INSNA), Cancun, Mexico.
- Pixley, Joy E. and Butts, Carter T. “Analyzing Life Course Patterns with the Interval Graph Approach.” (2/2003). 21st Sunbelt Network Conference (INSNA), Cancun, Mexico.
- Butts, Carter T. (8/2002). “Network Inference, Error, and Informant Accuracy” Mathematical and Statistical Issues in Network Analysis Miniconference, Institute for Mathematical Behavioral Sciences, UC Irvine, Irvine, CA.
- Butts, Carter T. (8/2002). “Some Properties of Spatially Embedded Interpersonal Networks” Group Processes Miniconference, Chicago, IL.
- Butts, Carter T. and Carley, Kathleen M. (8/2002). “Structural Change and Homeostasis in Organizations: A Decision-Theoretic Approach” ASA Meeting, Chicago, IL.
- Butts, Carter T. and Pixley, Joy E. (6/2002). “A Structural Approach to the Representation of Life History Data” CASOS Conference (formerly CMOT), Pittsburgh, PA.
- Butts, Carter T. (2/2002). “Predicting the Spatial Structure of Large-Scale Interpersonal Networks by Means of Extrapolative Simulation” 22nd Sunbelt Network Conference (INSNA), New Orleans, LA.
- Butts, Carter T. (8/2001). “How Much Does distance Tell Us?: Residual Information in Spatially-Embedded Interpersonal Networks.” ASA Meeting, Anaheim, CA.
- Butts, Carter T., and Rode, David C. (8/2001). “Empirical Play in the Hot Potato Game.” ASA Meeting, Anaheim, CA.
- Butts, Carter T. (7/2001). “Interregional Relations from Spatially-Embedded Interpersonal Networks.” CASOS Conference (formerly CMOT), Pittsburgh, PA.
- Butts, Carter T. (8/2000). “Network Inference, Error, and Informant (In)Accuracy: A Bayesian Approach.” ASA Meeting, Washington, D.C.

- Butts, Carter T., and Carley, Kathleen M. (7/2000). “Multivariate Analysis of Unlabeled Structures.” CASOS Conference (formerly CMOT), Pittsburgh, PA.
- Butts, Carter T. (6/2000). “Stochastic Models of Spatially Embedded Interpersonal Networks: Simulations from Tie Frequency Data.” First Joint US-Japan Conference on Mathematical Sociology, Honolulu, HI.
- Butts, Carter T., and Carley, Kathleen M. (4/2000). “Cluster Analysis of Labeled and Unlabeled Structures.” 20th Sunbelt Network Conference (INSNA), Vancouver, BC.
- Butts, Carter T., and Carley, Kathleen M. (7/1999). “Spatial Models of Network Formation.” ASA Meeting, Chicago, IL.
- Butts, Carter T. (2/1999). “The Complexity of Social Networks: Theoretical and Empirical Findings.” 19th Sunbelt Network Conference (INSNA), Charleston, SC.
- Butts, Carter T. (8/1998). “Generating Panic in Populations.” ASA Meeting, San Francisco, CA.
- Butts, Carter T., and Carley, Kathleen M. (5/1998). “Visualization of Unlabeled Structures Using Existing Technologies.” 18th Sunbelt Network Conference (INSNA), Sitges, Spain.
- Muhlberger, Peter, and Butts, Carter T. (4/1998). “An Experiment in Deliberative Democracy: Politics Shaping Citizens.” Midwest Political Science Association Meeting, Chicago IL. (Presented by Peter Muhlberger)
- Carley, Kathleen M., and Butts, Carter T. (8/1997). “An Algorithmic Approach to the Comparison of Partially Labeled Graphs.” ASA Meeting, Toronto, Canada. (Presented by Kathleen Carley)
- Butts, Carter T. (5/1997). “A Bayesian Model of Panic in Belief.” CMOT Workshop, San Diego, CA.
- Carley, Kathleen M., and Butts, Carter T. (3/1997). “Measuring C2 Structure.” A2C2 Workshop, Williamsburg, VA. (Presented by Kathleen Carley)
- Butts, Carter T.; Reilly, Colman; Speh, Marcus; and Wang, Joseph. (5/1994). “WWW and the Globewide Network Academy.” First International WWW Conference, CERN, Geneva, Switzerland. (Presented by Marcus Speh)

#### TEACHING EXPERIENCE:

- POSITIONS:
  - Member, Networked Systems Program (NetSys), University of California – Irvine, 2016–Present
  - Member, Program in Chemistry and Materials Physics (ChaMP), University of California – Irvine, 2013–Present
  - Professor, Department of Sociology, University of California – Irvine, 2012–Present
  - Professor (Courtesy), Department of Computer Science, University of California – Irvine, 2017–Present
  - Professor (Courtesy), Department of Electrical Engineering and Computer Science, University of California – Irvine, 2013–Present
  - Professor (Courtesy), Department of Statistics, University of California – Irvine, 2012–Present
  - Professor, Department of Sociology, University of California – Irvine, 2012–Present
  - Associate Professor, Department of Sociology, University of California – Irvine, 2007–

2012

- Associate Professor (Courtesy), Department of Statistics, University of California – Irvine, 2011–Present
  - Assistant Professor, Department of Sociology, University of California – Irvine, 2002–2007
  - Teaching Assistant, CASOS Summer Workshop, Carnegie Mellon University, 2001
  - Teaching Assistant, CASOS Summer Workshop, Carnegie Mellon University, 2000
  - Teaching Assistant, IS201, “Structured Analysis and Design,” Department of Social and Decision Sciences, Carnegie Mellon University, 1997
  - Teaching Assistant, IS200, “Data Structures,” Department of Social and Decision Sciences, Carnegie Mellon University, 1996
- COURSES TAUGHT:
    - Analysis of Social Network Data
    - Business Decisions
    - Computational Methods
    - Informant Accuracy – Methods and Findings
    - Introduction to Kernel Methods
    - Issues in Crisis Response
    - Network Theory
    - Networks and Information Transmission
    - Networks and Organizations
    - Social Networks
    - Professional Development
  - DOCTORAL COMMITTEE CHAIR:
    - Richard Gardner
    - Elizabeth Diessner
    - Peng Huang
    - Selena Livas (Ph.D. Summer 2023) (Co-advised w/David Frank)
    - Loring Thomas (Ph.D. Spring 2023)
    - Scott Renshaw (Ph.D. Summer 2022)
    - Fan Yin (Ph.D. Summer 2020)
    - Francis Lee (Ph.D. Winter 2020)
    - Yue Yu (Ph.D. Fall 2019)
    - Kyle Roskamp (Ph.D. Fall 2019) (Co-advised w/Rachel Martin)
    - Emma Smith (Ph.D. Summer 2018)
    - Ben Gibson (Ph.D. Summer 2018)
    - Nolan Phillips (Ph.D. Fall 2017)
    - Xuhong Zhang (Ph.D. Summer 2017)
    - Sean Fitzhugh (Ph.D. Summer 2015)
    - Emma Spiro (Ph.D. Fall 2013)
    - Zack Almquist (Ph.D. Spring 2013)
    - Lorien Jasny (Ph.D. Spring 2012)

- Ryan Acton (Ph.D. Summer 2010)
- Miruna Petrescu-Prahova (Ph.D. Spring 2009)
- Liana Christin Landivar (Christin Hilgeman) (Ph.D. Spring 2007) (Co-advised w/Judy Treas)
- POSTDOCTORAL ADVISOR:
  - Gianmarc Grazioli

RESEARCH EXPERIENCE:

- Professor, Department of Sociology, University of California – Irvine, 2012–Present
- Professor (Courtesy), Department of Computer Science, University of California – Irvine, 2017–Present
- Professor (Courtesy), Department of Electrical Engineering and Computer Science, University of California – Irvine, 2013–Present
- Professor (Courtesy), Department of Statistics, University of California – Irvine, 2012–Present
- Associate Professor (Courtesy), Department of Statistics, University of California – Irvine, 2011–2012
- Associate Professor, Department of Sociology, University of California – Irvine, 2007–2012
- Associate Professor (Courtesy), Department of Statistics, University of California – Irvine, 2011–2012
- Assistant Professor, Department of Sociology, University of California – Irvine, 2002–2007
- Research Assistant for Kathleen M. Carley, Department of Social and Decision Sciences, Carnegie Mellon University, 2000–2002
- Research Assistant for Kathleen M. Carley, Department of Social and Decision Sciences, Carnegie Mellon University, Summer 1997

SERVICE:

- DISCIPLINE
  - Scientific Committee and Advisory Board, 2024 International Sunbelt Social Networks Conference
  - External promotion reviewer (Non-UC Campus), 2023 (x3)
  - Organizer and Lecturer, *statnet* Workshop at the International Sunbelt Social Networks Conference, 7/2023, Portland, OR
  - Section Council Member, ASA Section on Rationality and Society, 2020–2022
  - External promotion reviewer (UC Campus), 2022 (x2)
  - External promotion reviewer (Non-UC Campus), 2022 (x2)
  - Organizer and Lecturer, *statnet* Workshop at the International Sunbelt Social Networks Conference, 7/2022, Cairns, Australia.
  - Clifford Clogg Award Committee Chair, ASA Section on Methodology, 2021
  - Organizer, ASA Section Session on Rationality and Society, 2021
  - Harrison White Book Award Committee Member, ASA Section on Mathematical Sociology, 2021
  - Faculty Mentor, ASA Section on Methodology, 2021
  - External promotion reviewer (Non-UC Campus), 2020

- Organizer, ASA Section Sessions on Methodology (Open Topics and Computational Sociology), 2020
- Past Chair, ASA Section on Mathematical Sociology, 2019-2020
- Chair, Committee on Nominations, ASA Section on Mathematical Sociology, 2019-2020
- Invited Participant, NAS Expert Meeting on Human Networks and Data Science, 2020
- Section Council Member, ASA Section on Methodology, 2017-2020
- Chair, ASA Section on Mathematical Sociology, 2018-2019
- Organizer, Regular Session on Mathematical Sociology, 2019
- External promotion reviewer for two cases (Non-UC Campuses), 2019
- Organizer and Lecturer, *statnet* Workshop at the International Sunbelt Social Network Conference, 6/2019, Montreal, CA.
- Chair-elect, ASA Section on Mathematical Sociology, 2017-2018
- Section Council Member, ASA Section on Mathematical Sociology, 2015-2018
- Career Award Committee Chair, ASA Section on Mathematical Sociology, 2018
- Organizer, ASA Section and Regular Sessions on Mathematical Sociology, 2018
- External promotion reviewer (UC Campus), 2018
- External promotion reviewer (Non-UC Campus), 2018
- Organizer and Lecturer, *statnet* Workshop at the International Sunbelt Social Network Conference, 6/2018, Utrecht, Netherlands.
- Book/Career Award Committee Chair, ASA Section on Mathematical Sociology, 2017
- Board of Directors, International Network for Social Network Analysis (INSNA), 2011-2016
- Publication Committee Chair, INSNA, 2014-2016
- NIH Special Emphasis Panel Member (“Harnessing Big Data to Halt HIV”), 2016
- Session Presider, Sixth Japan-US Conference on Mathematical Sociology and Rational Choice, 2016
- Paper Award Committee Member, ASA Section on Mathematical Sociology, 2016
- External promotion reviewer (Non-UC Campus), 2016
- Organizer and Lecturer, *statnet* Workshop at the International Sunbelt Social Network Conference, 3/2016, Newport Beach, CA.
- Leo Goodman Award Committee Member, ASA Section on Methodology, 2015
- Organizer and Lecturer, *statnet* Workshop at the International Sunbelt Social Network Conference, 6/2015, Brighton, UK.
- Linton C. Freeman Award Committee Chair, INSNA, 2014
- External promotion reviewer (Non-UC Campus), 2014
- Organizer and Lecturer, *statnet* Workshop at the International Sunbelt Social Networks Networks Conference, 2/2014, St. Pete’s Beach, FL.
- Organizer and Lecturer, *statnet* Workshop at the Political Networks Conference, 6/2013, Bloomington, IN.
- Organizer and Lecturer, *statnet* Workshop at the International Sunbelt Social Networks Networks Conference, 5/2013, Hamburg, Germany.
- Leo Goodman Award Committee Chair, ASA Section on Methodology, 2012
- Organizer, ASA Section and Regular Sessions on Mathematical Sociology, 2012

- Organizer and Lecturer, *statnet* Workshop at the Political Networks Conference, 6/2012, Boulder, CO.
- Organizer and Lecturer, *statnet* Workshop at the International Sunbelt Social Networks Networks Conference, 3/2012, Redondo Beach, CA.
- Chair, Section Naming Committee, ASA Section on Rationality and Society, 2011–2012
- Organizer, Session on Network Methodology at the Third International ARS Workshop on Social Network Analysis - Collaboration Networks and Knowledge Diffusion: Theory, Data, and Methods, 6/2011, Naples, Italy.
- Organizer and Lecturer, *statnet* Workshop at the Third International ARS Workshop on Social Network Analysis - Collaboration Networks and Knowledge Diffusion: Theory, Data, and Methods, 6/2011, Naples, Italy.
- Organizer and Lecturer, *statnet* Workshop at the Political Networks Conference, 6/2011, Ann Arbor, MA.
- Organizer and Lecturer, *statnet* Workshop at the International Sunbelt Social Networks Networks Conference, 2/2011, St. Pete’s Beach, FL.
- Graduate Student Paper Award Committee, ASA Section on Rationality and Society, 2010.
- Organizer, ASA Section on Rationality and Society session on “Theories of Choice: New Perspectives and Applications,” ASA Annual Meeting, 2010.
- Organizer and Lecturer, *statnet* Workshop at the Political Networks Conference, 6/2010, Durham, NC.
- Co-Organizer and Lecturer, *statnet* and *sna* Workshops at the Networks in Political Science Conference, 6/2009, Cambridge, MA.
- Organizing Committee, National Academy of Sciences US-France Frontiers of Science Conference, 2008
- Co-Organizer, Fourth Japan-North America Mathematical Sociology Conference, 2008
- Organizer and Lecturer, *statnet* and *sna* Workshops at the Networks in Political Science Conference, 6/2008, Cambridge, MA.
- Section Awards Committee, ASA Section on Mathematical Sociology, 2006
- Discussant, NSF Workshop on Modeling Social Dynamics, Washington, DC, 2006
- Council Member, ASA Section on Mathematical Sociology, 2005–2006
- Co-Organizer and Lecturer, *statnet* Workshop (held in conjunction with the International Sunbelt Social Network Conference), 2006–2014.
- Guest Speaker, UCSB Workshop on GIS and Population Science, 2005, 2006
- NSF Proposal Reviewer
- Co-Organizer, 25th International Sunbelt Social Network Conference, 2005
- Session Presider, “Communication” and “Statistical Models,” 25th Sunbelt Network Conference (INSNA), Redondo Beach, CA, 2005
- Session Chair, “Social Networks,” Japanese/American Beckman Frontiers of Science Conference (National Academy of Sciences/Japanese Society for Promotion of Science), Irvine, CA, 2004
- Session Chair, “Social Networks,” Japanese/American Beckman Frontiers of Science Conference (National Academy of Sciences/Japanese Society for Promotion of Science), Irvine, CA, 2004
- Session Presider, Workshop on Networks and the Population Dynamics of Disease

Transmission, Institute for Mathematics and Its Applications, University of Minnesota, Minneapolis, MN, 2003

- Discussant and Presider, “Mathematical Sociology,” Regular Session on Mathematical Sociology, ASA Meeting, Chicago, IL, 2002
  - Student Council Member, ASA Section on Mathematical Sociology, 2000–2001
  - Session Presider, “Interfirm Relations,” Regular Session on Economic Sociology, ASA Meeting, Anaheim, CA, 2001
  - Session Organizer, “Roundtables on Mathematical Sociology,” ASA Meeting, Washington, D.C., 2000
  - Session Presider, “New Analytical Approaches,” 20th Sunbelt Network Conference (INSNA), Vancouver, B.C., 2000
- UNIVERSITY
    - Founding director, UCI Center for Networks and Relational Analysis, 2012–Present
    - Executive Council Member, California Institute for Telecommunications and Information Technology, 2021–Present
    - Organizer, UCI Social Network Research Group, 2003–Present
    - Participating Faculty, UCI Networked Systems Program 2016–Present
    - Participating Faculty, UCI Chemistry and Materials Physics Program 2013–Present
    - Faculty Advisory Board Member, UCI Infectious Disease Science Initiative, 2019–Present
    - UCI Seed Funding Research Proposal Reviewer (Campus), 2023
    - Seed Proposal Reviewer, UCI Infectious Disease Science Initiative, 2021
    - Executive Committee Member, Institute for Mathematical Behavioral Sciences, 2009–2020
    - Division Council Member, California Institute for Telecommunications and Information Technology, 2005–2020
    - University of California Cancer Research Coordinating Committee, 2013–2017
    - Dean’s Search Committee, UCI School of Information and Computer Science, 2016
    - High-impact Hiring Proposal Committee Member (in conjunction with the UCI Data Science Initiative), 2015.
    - Co-organizer, IMBS Conference on “Behavior In and On Networks,” Irvine, CA, 2011.
    - External promotion reviewer (UC Campus), 2010
    - Calit2/Emulex Graduate Fellows Committee, 2006
    - Calit2 Nicholas Prize Committee, 2005
    - Organizer, IMBS Symposium, “Current Research on Network Comparison,” Irvine, CA, 2004
  - DEPARTMENT
    - Social Network Cluster Coordinator, 2019–Present
    - Undergraduate Education Committee, 2021–2023
    - Merit/Promotion Review Committee, 2002, 2004, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023
    - Social Network Cluster Qualifying Exam Coordinator/Proctor, 2005, 2007, 2012, 2013, 2015, 2016, 2018, 2019, 2021, 2022, 2023



- Faculty Search Committee Member, 2021
- Strategic Planning Committee, Department of Sociology 2021
- Graduate Education Committee, Department of Sociology, 2004–2005, 2007–2012, 2016–2018
- Culture Cluster Exam Reader, 2018
- Awards Committee, Department of Sociology, 2014–2015
- Strategic Planning Committee Chair, Department of Sociology 2012–2013
- Departmental Space Committee, 2010–2011
- Co-Organizer, Introduction to Social Network Analysis Workshop, 2003–2008
- Faculty Recruitment Committee, 2006
- Undergraduate Education Committee, Department of Sociology, 2003–2004
- Faculty Computing Committee, Department of Sociology, 2003
- Graduate Education Committee Student Representative, Department of Social and Decision Sciences, 1997–2000
- Graduate Curriculum Restructuring Committee, Department of Social and Decision Sciences, 1998–1999

#### EDITORIAL ACTIVITIES:

- EDITORIAL POSITIONS
  - Board of Reviewing Editors, *Science*, 2015–Present.
  - Associate Editor, *Journal of the American Statistical Association (Applications and Case Studies)*, 2022–Present.
  - Area Editor for Computation and Social Networks, *Computational and Mathematical Organization Theory*, 2003–Present.
  - Editorial Board, *Journal of Mathematical Sociology*, 2007–Present.
  - Editorial Board, *Sociological Methodology*, 2023–2025, 2009–2012.
  - Editorial Board, *Structure and Dynamics*, 2005–2019.
- SPECIAL ISSUES AND COLLECTIONS
  - Special issue on relational event models, *Network Science*, 2023.

#### REFeree ACTIVITIES:

- *American Journal of Sociology*
- *Applied Statistics*
- *Artificial Life*
- *BMC Bioinformatics*
- *Computational and Mathematical Organization Theory*
- *Economics of Governance*
- *Frontiers Molecular Biosciences, Biological Modeling and Simulation*
- *Games and Economic Behavior*
- *Journal of Economic Behavior and Organization*
- *Journal of Mathematical Sociology*
- *Journal of the Royal Economic Society*

- *Journal of Social Structure*
- *Management Science*
- *Nature Scientific Data*
- *Organization Science*
- *Proceedings of the National Academy of Sciences*
- *PLoS One*
- *Rationality and Society*
- *Science*
- *Social Forces*
- *Sociological Methodology*
- *Sociological Methods and Research*
- *Social Networks*
- *Social Problems*
- *Social Psychology Quarterly*
- *Sociological Forum*

OTHER REVIEWER ACTIVITIES:

- National Institutes of Health proposal reviewer
- National Science Foundation proposal reviewer
- Reviewer for Brandes, U. and Erlebach, T. (Eds.) 2005. *Network Analysis: Methodological Foundations* Berlin: Springer.

PROFESSIONAL MEMBERSHIPS:

- American Association for the Advancement of Science
- American Chemical Society
- American Sociological Association
- American Statistical Association
- Association for Computing Machinery (ACM)
- Biophysical Society
- Institute of Electrical and Electronics Engineers (IEEE)
- International Carnivorous Plant Society (ICPS)
- International Network for Social Network Analysis (INSNA)
- Sigma Xi
- Society for Anthropological Sciences
- Society for Mathematical Psychology
- Three Rivers Network

ADDITIONAL ACTIVITIES:

- Apis Beowulf Project; Designed and implemented a Beowulf parallel processing system for scientific computing (w/ John Miller), 1999-2000