

# Aaron D. Schroeder

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## Summary

Dr. Schroeder's overarching research focus is the enablement of Evidence-Based Policy-Making and Program Evaluation through the secure liberation, integration and analysis of administrative and other available data.

Recent work advances this mission through auditable multi-agent LLM pipelines — applying structured-debate agent architectures and explicit provenance chains to produce policy-grade datasets where authoritative ground truth is partial. Active applications include critical-materials supply-chain dependency networks (STDN), open-source defense budget intelligence (IBES), and federal statistical data production; work supported by NSF (NCSES Green Innovation), the Army Research Institute, and the Social Data Commons infrastructure. Methodological contributions include privacy-preserving local model deployment and NLP-driven compression of the data science pipeline.

Prior to AI-based methods, this work applied data integration and linkage approaches to education, health, social service and non-profit administrative data streams to support policy analyses and program evaluations across pre-K services, child care, K-12 and adult education, state workforce training, and U.S. veteran services.

High-profile information integration projects in the Commonwealth of Virginia include the USED-funded Statewide Longitudinal Data System, the USHHS-funded Project Child HANDS, and the USDOT-funded design and evaluation of the U.S.'s first statewide travel information system, Virginia 511.

## Education

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| <b>PhD</b> | <b>Virginia Tech University</b> , Public Policy & Administration<br>• Areas: Organization Theory, Data Management, Privacy Law, Implementation<br>• Dissertation: Building Implementation Networks | Jan 2001 |
| <b>MPA</b> | <b>James Madison University</b> , Public Administration<br>• Areas: Geographic Information Systems, Administrative Law                                                                             | Jan 1993 |
| <b>BA</b>  | <b>University of Delaware</b> , Psychology<br>• Areas: Brain & Behavior (incl. graduate-level Neuropsychology)<br>• Minor: Political Science                                                       | Jan 1991 |

## Experience

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| <b>Associate Research Professor</b><br>Research Associate Professor at Social and Decision Analytics Division, Bioinformatics Institute, University of Virginia                                                                                                                              | 2018-Present |
| <b>Senior Data Scientist &amp; Architect</b><br>Social Decisions & Analytics Lab, Biocomplexity Institute at Virginia Tech (BI)                                                                                                                                                              | 2014-2018    |
| <b>Co-Program Director &amp; Instructor, Data Science for the Public Good</b><br>(2015-2018) Social & Decision Analytics Laboratory (SDAL), Biocomplexity Institute of Virginia Tech (2019-2024) Social & Decision Analytics Division (SDAD), University of Virginia Biocomplexity Institute | 2015-2024    |
| <b>Information Architect &amp; Data Scientist, Leader, Public Policy Data Group</b><br>Virginia Tech Institute for Policy & Governance (VTIPG)                                                                                                                                               | 2010-2014    |
| <b>Research Scientist</b><br>Virginia Tech Institute for Policy & Governance (VTIPG)                                                                                                                                                                                                         | 2008-2010    |

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| <b>Visiting Assistant Professor</b><br>Virginia Tech Center for Public Administration & Policy (CPAP)                     | 2007-2010 |
| <b>Research Scientist, Director, Center for Technology Deployment</b><br>Virginia Tech Transportation Institute (VTTI)    | 2004-2006 |
| <b>Senior Research Associate, Leader, Information Applications Group</b><br>Virginia Tech Transportation Institute (VTTI) | 2002-2004 |
| <b>Visiting Assistant Professor</b><br>Virginia Tech Center for Public Administration & Policy (CPAP)                     | 2002-2010 |
| <b>Senior Research Associate</b><br>Virginia Tech Transportation Institute (VTTI)                                         | 1998-2002 |
| <b>Adjunct Instructor</b><br>Virginia Tech Center for Public Administration & Policy (CPAP)                               | 1994-2001 |
| <b>Research Associate</b><br>National Academy of Public Administration (NAPA)                                             | 1995-1996 |
| <b>Adjunct Instructor</b><br>Elon University Department of Political Science & Public Administration                      | 1995-1996 |

## Research Projects

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| <b>Leveraging Large Language Models to Identify Green Innovation</b><br>National Center for Science and Engineering Statistics (NSF) — \$101,000 (PI)                                                            | 2023-2024 |
| <b>Developing Predictive Models of U.S. Army Career Pathways</b><br>U.S. Army Research Institute for the Behavioral and Social Sciences — \$813,848 (years 4–5) (PI)                                             | 2021-2025 |
| <b>The Social Component of the Human Dimension - Leveraging Existing DoD Data Towards Optimized Individual and Team Performance in the Army</b><br>Army Research Institute — \$3,000,000 (Senior Personnel)      | 2017-2022 |
| <b>Use Statistical and Survey Methodology Research to Improve or Redesign Surveys</b><br>United States Department of Agriculture / National Science Foundation — \$2,500,000 (Senior Personnel / Founding Co-PI) | 2017-2021 |
| <b>Towards an Integrated Data Framework for Understanding the Context of Military Environments</b><br>Army Research Institute — \$1,691,337 (Co-PI)                                                              | 2015-2018 |
| <b>Bringing Evidence-Based Decision Making to Local Communities through Community Learning</b><br>Laura and John Arnold Foundation — \$144,000 (Co-PI)                                                           | Jan 2016  |
| <b>Actionable Intelligence for Social Policy Innovation</b><br>University of Pennsylvania / Laura and John Arnold Foundation — \$22,500 (Co-PI)                                                                  | 2016-2017 |
| <b>ATIS Implementation Center</b><br>U.S. DOT Research and Special Programs Administration (RSPA) — \$543,000 (Co-PI)                                                                                            | 2004-2005 |

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| <b>Virginia Longitudinal Data System Expansion - Linking to Workforce and Postsecondary</b><br>U.S. Department of Education — \$1,760,000 (PI)                                                                                          | 2010-2013 |
| <b>Virginia Early Childhood Professional Registry</b><br>Virginia Department of Social Services — \$110,840 (PI)                                                                                                                        | 2010-2016 |
| <b>Child HANDS: Building Child and Family Policy Research Data Capacity for the Commonwealth of Virginia: An Integrated Model</b><br>Administration for Children & Families (US Department of Health & Human Services) — \$650,000 (PI) | 2008-2011 |
| <b>I-81 Design &amp; Implementation of Database Management System</b><br>VA Department of Transportation (VDOT) — \$180,000 (PI)                                                                                                        | Jan 2002  |
| <b>Intelligent Transportation Systems Implementation: Virginia Traveler Information Clearinghouse</b><br>Research and Special Programs Administration (US Department of Transportation) — \$1,800,000 (PI)                              | 1999-2006 |
| <b>I-81 Interim Data Operation Center</b><br>VA Department of Transportation (VDOT) — \$747,817 (PI)                                                                                                                                    | 2002-2005 |
| <b>Advanced Travel Information Systems</b><br>Virginia Department of Transportation (VDOT) — \$60,733 (PI)                                                                                                                              | Jan 1999  |
| <b>511 Virginia</b><br>Virginia Department of Transportation (VDOT) — \$1,207,000 (PI)                                                                                                                                                  | 2000-2003 |
| <b>Travel Shenandoah – An Advanced Traveler Information System for Virginia’s Shenandoah Valley</b><br>Virginia Department of Transportation (VDOT) and Shenandoah Telecommunications (SHEN-TEL) — \$1,400,000 (PI)                     | 1998-2000 |
| <b>Design and Implementation of a Truck Fleet Alert Service for I-81 and the Virginia Inland Port/Port of Virginia</b><br>Virginia Department of Transportation (VDOT) — \$75,000 (PI)                                                  | 1999-2000 |
| <b>Travel Virginia – A Statewide System of Private-Public Partnerships</b><br>Virginia Department of Transportation (VDOT) — \$200,000 (Co-PI)                                                                                          | 1999-2000 |
| <b>Enhanced Night Visibility</b><br>Federal Highway Administration (FHWA), US Department of Transportation (USDOT) — \$125,000 (Co-PI)                                                                                                  | 1997-2002 |
| <b>Bedford Ride</b><br>Bedford County, VA — \$86,000 (PI)                                                                                                                                                                               | 2000-2001 |
| <b>ACCESS to Rides – A Dynamic System for Volunteer and Transportation Resource Management</b><br>Federal Highway Administration (FHWA), US Department of Transportation (USDOT) — \$56,000 (PI)                                        | 1998-2002 |
| <b>Wireless Linear LAN for Interstate 81 (Salem District)</b><br>Virginia Department of Transportation (VDOT) — \$593,603 (PI)                                                                                                          | 2003-2005 |

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| <b>US460 Wireless Corridor</b><br>Virginia Department of Transportation (VDOT) — \$250,000 (PI)                                                                                                                             | 2001-2004 |
| <b>I-81 Video System Design &amp; Implementation</b><br>USDOT Center for ITS Implementation Research — \$80,000 (PI)                                                                                                        | Jan 2003  |
| <b>Development of cisco-based urban wireless networks for infrastructure surveillance and public fleet communications</b><br>Cisco Systems, Inc. — \$89,000 (PI)                                                            | Jan 2005  |
| <b>Deployment and performance testing of an 8 hop 4.9ghz cisco metro grid on the smart road</b><br>Cisco Systems, Inc. — \$100,000 (PI)                                                                                     | 2005-2006 |
| <b>Virginia's Wounded Warriors: Assessment of the Experiences, Supportive Service Needs and Service Gaps of Veterans within the Commonwealth of Virginia</b><br>Virginia Department of Veteran Services — \$148,780 (Co-PI) | 2009-2010 |
| <b>Saving Dollars While Making Sense: Comparing Operational Costs of Intergenerational Shared Site Facilities</b><br>Generations United (GU) and the MET Life Foundation — \$14,000 (Co-PI)                                 | 2006-2007 |
| <b>I-81 Evaluation Framework</b><br>Virginia Department of Transportation (VDOT) — \$140,200 (PI)                                                                                                                           | 2002-2004 |
| <b>Case Study Evaluation of the Virginia Department of Transportation's I-81 ITS Program</b><br>Virginia Department of Transportation (VDOT) — \$140,200 (PI)                                                               | Jan 2003  |
| <b>Corridor Concept of Operations</b><br>Virginia Department of Transportation (VDOT) — \$50,000 (PI)                                                                                                                       | Jan 2001  |
| <b>Staunton District ITS Concept of Operations</b><br>Virginia Department of Transportation (VDOT) — \$125,000 (PI)                                                                                                         | Jan 2000  |
| <b>I-81 Intelligent Transportation Systems Task Force</b><br>Virginia Department of Transportation (VDOT) — \$275,000 (PI)                                                                                                  | 2000-2001 |
| <b>Building Research Infrastructure and Community to Advance Social Scientific and Educational Use of Administrative Data</b><br>National Science Foundation — \$500,004 (Co-PI)                                            | 2013-2017 |
| <b>Regional Pedestrian Activity Measurement</b><br>USDOT Center for ITS Implementation Research — \$50,000 (PI)                                                                                                             | Jan 2006  |
| <b>Virginia Department of Emergency Management (VDEM) Data Flows – Establishing a Baseline</b><br>VA Department of Emergency Management — \$50,000 (PI)                                                                     | Jan 2016  |
| <b>Baseline Distinct Counts of Select Data Sets to Support Early Childhood Integrated Data System (ECIDS) Establishment</b><br>Virginia Early Childhood Foundation (VECF) — \$75,000 (PI)                                   | Jan 2018  |
| <b>Iowa Early Childhood Integrated Data System (IDS) Development Support</b><br>Iowa State University — \$77,761 (PI)                                                                                                       | 2019-2020 |

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| <b>The American Soldier in World War II - Advanced Data Operations</b>                                                                    | Jan 2021 |
| National Endowment for the Humanities — \$60,971 (part of a larger American Soldier in World War II initiative led by Virginia Tech) (PI) |          |

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| <b>VDH Data Commons</b>                                                                     | 2021-2024 |
| U.S. Centers for Disease Control (via the Virginia Department of Health) — \$1,150,000 (PI) |           |

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| <b>Social Impact Data Commons Implementation – National Capital Region</b> | 2021-2025 |
| Mastercard Center for Inclusive Growth — \$1,100,000 (PI)                  |           |

## **Presentations**

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| <b>Building Data Sharing Infrastructures: Taking Context and Stakeholders Seriously</b>                  | Nov 2012 |
| Presentation at Global Forum on Urban and Regional Resilience (GFURR) Resilience Workshop, Virginia Tech |          |

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| <b>Association between perceived university environment and physical activity in college students</b>  | Nov 2012 |
| Presentation at American Public Health Association 139th Annual Meeting and Exposition, Washington, DC |          |

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| <b>Data - The New Asset Class</b>      | Apr 2012 |
| Presentation at HPC Day, Virginia Tech |          |

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| <b>Stakeholder Analysis</b>                                                                        | Apr 1999 |
| Presentation at 60th Annual Meeting of the American Society for Public Administration, Orlando, FL |          |

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| <b>Smart Metadata in Action: The Social Impact Data Commons</b>                                        | Apr 2024 |
| Presentation at Conference On Smart Metadata for Official Statistics 2024 (COSMOS 2024), Paris, France |          |

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| <b>The Social Impact Data Commons: Supporting local equity-informed decision-making in the National Capital Region</b> | Dec 2023 |
| Lecture at Council of Professional Associations on Federal Statistics (COPAFS)                                         |          |

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| <b>Supporting Local Decision-Making through the Aggregation of ACS Demographic Estimates within Locally-Relevant Geographies</b> | May 2023 |
| Presenter/Panelist at 2023 ACS Data Users Conference                                                                             |          |

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| <b>Data Re-Use in Action: Social Impact Data Commons</b>     | May 2022 |
| Presenter/Panelist at Mid-Atlantic Statistics Network (MASN) |          |

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| <b>Introduction of the 2022-2026 Virginia Rural Health Plan and Data Commons</b> | Nov 2021 |
| Presenter/Panelist at 2021 Governor's Summit on Rural Prosperity                 |          |

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| <b>Building Science for the Public Good (DSPG)</b>                    | Mar 2020 |
| Presenter/Panelist at Implementation Working Group, Open Data Charter |          |

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| <b>Measuring the Scope and Impact of Open Source Software</b>                           | Sept 2019 |
| Presenter/Panelist at Government Advancement of Statistical Programming (GASP) Workshop |           |

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| <b>How to 'do' Data Science for the Public Good</b>                              | May 2019 |
| Presenter/Panelist at 2019 Midwest Big Data Summer School, Iowa State University |          |

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| <b>Data Platforms &amp; Processes for Policy Analysis</b><br>Presenter/Panelist at Data Science for the Public Good, Iowa State University                                                                                | Mar 2019  |
| <b>Data Profiling, Cleaning, Linking &amp; Exploration</b><br>Presenter/Panelist at Data Science for the Public Good, Iowa State University                                                                               | Mar 2019  |
| <b>Multi-Family Address List Creation Using Open Data &amp; Delivery-Point Validation</b><br>Presenter/Panelist at 2018 ADRF Network Research Conference                                                                  | Nov 2018  |
| <b>Repurposing Administrative Data for Statistical Purposes</b><br>Presenter/Panelist at National Academy of Sciences                                                                                                     | June 2017 |
| <b>Pre-Summit Workshop on Technology to Support Data Sharing</b><br>Committee Member at Governor's Data Analytics Summit                                                                                                  | Apr 2017  |
| <b>Building Data Sharing Infrastructures at the State Level: Context, Stakeholders and Technology</b><br>Panelist at Office of Planning, Research and Evaluation (OPRE), US DHHS Administration for Children and Families | Oct 2015  |
| <b>Data - The New Asset Class</b><br>Presenter at Second Annual High Performance Computing Day, Virginia Tech                                                                                                             | Apr 2015  |
| <b>Building Data Sharing Infrastructures: Taking Stakeholders and Context Seriously</b><br>Panelist at Normative Dimension of Resilience Conference                                                                       | Oct 2014  |
| <b>Data: Security and Technology</b><br>Panelist at 2013 VLDS Insights Conference                                                                                                                                         | June 2013 |
| <b>Project Child HANDS: Child Care, Subsidy, and Early Education</b><br>Panelist at 2013 VLDS Insights Conference                                                                                                         | June 2013 |
| <b>Federated and Centralized Models</b><br>Panelist at 26th Annual Management Information Systems (MIS) Conference, NCES, IES                                                                                             | Feb 2013  |
| <b>Virginia Longitudinal Data System—Accessing Multiple Datasets and Merging Records</b><br>Panelist at 26th Annual Management Information Systems (MIS) Conference, NCES, IES                                            | Feb 2013  |
| <b>Project Child HANDS Update for Virginia's ECAC</b><br>Presenter at Virginia's Early Childhood Advisory Council (ECAC)                                                                                                  | May 2012  |
| <b>BUILD Initiative: Early Learning Challenge State Plans</b><br>Expert at BUILD Initiative / Early Learning Challenge Collaborative                                                                                      | Oct 2011  |
| <b>Early Learning Challenge Collaborative Data Systems Webinar</b><br>Expert at Early Learning Challenge Collaborative                                                                                                    | Aug 2011  |
| <b>US Department of Education Race-To-The-Top Early Learning Challenge</b><br>Expert at US Department of Education Race-To-The-Top Early Learning Challenge Grant Program                                                 | Aug 2011  |
| <b>Developing Unified Early Childhood Data Systems</b><br>Panelist at 2011 ACF Early Childhood State Advisory Council Grantees Meeting                                                                                    | Apr 2011  |
| <b>Project Child HANDS Status Update</b><br>Presentation at Governor's Early Childhood Advisory Council (ECAC)                                                                                                            | Dec 2010  |

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| <b>Child Care Data Collaboration, Integration and Linkages</b><br>Presentation at 2010 USHHS Child Care Policy Research Consortium (CCPRC)                                                                                                                                                              | Nov 2010 |
| <b>Federal Workshop on Education Statistics Data</b><br>Workshop at National Institute of Statistical Sciences (NISS), the National Center for Education Statistics (NCES), and the Institute of Education Sciences (IES)                                                                               | Feb 2010 |
| <b>Child Care Policy Research Panel</b><br>Presentation at National Child Care Policy Research Consortium                                                                                                                                                                                               | Oct 2009 |
| <b>Intelligent Transportation Systems of Virginia</b><br>Workshop at Intelligent Transportation Systems of Virginia Annual Conference                                                                                                                                                                   | Nov 2003 |
| <b>Rural Advanced Traveler Information Systems</b><br>Presentation at Rural Advanced Traveler Information Systems Conference                                                                                                                                                                            | Oct 2003 |
| <b>Technology in Public Administration</b><br>Presentation at Technology in Public Administration Conference, University of LaVerne                                                                                                                                                                     | Nov 2000 |
| <b>Data - The New Asset Class</b><br>Presenter at April 6. HPC Day, Virginia Tech                                                                                                                                                                                                                       | Apr 2012 |
| <b>Building Data Sharing Infrastructures: Taking Context and Stakeholders Seriously</b><br>Presenter at November 17. Global Forum on Urban and Regional Resilience (GFURR) Resilience Workshop, Virginia Tech                                                                                           | Apr 2012 |
| <b>Association between perceived university environment and physical activity in college students. 1-Nov. American Public Health Association 139th Annual Meeting and Exposition</b><br>Presenter at November 1. American Public Health Association 139th Annual Meeting and Exposition. Washington, DC | Apr 2012 |
| <b>The Social Impact Data Commons: Regional Data-Driven Decision-Making</b><br>Presenter at BigSurv23 Conference, Quito, Ecuador                                                                                                                                                                        | Oct 2023 |
| <b>Virginia's New Rural Health Data Commons: Informing Health Policy through Featuring Health Related Metrics for Visualizing Health Services Access</b><br>Presenter at International Conference on Health Policy Statistics, Scottsdale, AZ                                                           | Jan 2023 |
| <b>Best Practices in Coordinating Large-Scale Data Science Initiatives</b><br>Presenter at Joint Statistical Meetings 2022, Washington, DC                                                                                                                                                              | Aug 2022 |
| <b>Evaluating the Impact of USDA Broadband Subsidy Programs Using Differentiable Gaussian Random Fields</b><br>Presenter at Joint Statistical Meetings 2022                                                                                                                                             | Aug 2022 |
| <b>Building the Social Impact Data Commons - Data Discovery and Acquisition Lessons Learned</b><br>Presenter at Federal Committee on Statistical Methodology Research and Policy Conference, Washington, DC                                                                                             | Aug 2022 |
| <b>Social Impact Data Commons: an innovative approach to inform equitable growth</b><br>Presenter at APDU Data Symposium and CIC Symposium, virtual                                                                                                                                                     | May 2022 |

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| <b>Data Science for the Public Good (DSPG) Young Scholars Program - Overview 2014-2021</b><br>Presenter at Data Science Approaches to Health Disparities Research Symposium, Biocomplexity Institute, UVA | Jan 2022  |
| <b>Virginia's New Rural Health Data Commons - Supporting the 2022-2026 Virginia Rural Health Plan</b><br>Presenter at National Association of County and City Health Officials (NACCHO 2022)              | July 2022 |
| <b>Example Metrics of The Social Impact Data Commons</b><br>Presenter at Biocomplexity Institute Spring 2022 Research Symposium, Arlington, VA                                                            | Apr 2022  |
| <b>Building a Data Commons</b><br>Presenter at Biocomplexity Institute Spring 2022 Research Symposium, Arlington, VA                                                                                      | Apr 2022  |
| <b>Challenges in conceptualizing and modeling performance in the U.S. Army</b><br>Presenter at Military Operations Research Society (MORS) 90th Symposium                                                 | Jan 2022  |
| <b>Measuring the Cost and Impact of Open-Source Software Innovation on GitHub</b><br>Presenter at Federal Committee on Statistical Methodology (FCSM) CSPOS Webinar on Blended Data, Washington, DC       | May 2020  |
| <b>Ethical Principles and Data Science - Repurposing Administrative and Opportunity Data</b><br>Presenter at Federal Committee on Statistical Methodology, virtual                                        | Sept 2020 |
| <b>Impacts of the Broadband Initiatives Program on Rural Prosperity</b><br>Presenter at Agricultural and Applied Economics Association Community and Regional Economics Network annual meeting, online    | Aug 2020  |
| <b>Impacts of Broadband Access and the Broadband Initiatives Program on Telework</b><br>Presentation (venue not specified)                                                                                | Nov 2020  |
| <b>Economic and Social Impact of Arlington Restaurant Initiative</b><br>Presenter at Data Science for the Public Good Program Symposium, Arlington, VA                                                    | Aug 2019  |
| <b>Measuring the Universe of Open-Source Software</b><br>Presenter at Data Science for the Public Good Program Symposium, Arlington, VA                                                                   | Aug 2019  |
| <b>Measuring the Eligibility, Incidence, and Impact of Rural Utilities Service (RUS) Broadband Programs</b><br>Presenter at USDA Rural Utilities Service, Service Seminar                                 | May 2021  |
| <b>Evaluation of Broadband Subsidy Programs - Combining Spatial Regression Discontinuity Designs and Bayesian Wombling</b><br>Presenter at 2021 Joint Statistical Meetings                                | Aug 2021  |
| <b>Measuring the Impact of the Broadband Initiatives Program on Property Values</b><br>Presenter at 68th North America Meetings of the Regional Science Association International, Denver, CO             | Nov 2021  |
| <b>Learning to Live with Chaos - A Case for the Dissipative Structure Metaphor in Policy Subsystem Analysis</b><br>Presenter at Intergovernmental Analysis Conference, Copenhagen, Denmark                | Jan 1997  |

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| <b>Policy Subsystems and the New Physics - Policy Development and Implementation at the Edge of Chaos</b><br>Presenter at Network Analysis and Innovations in Public Programs Conference, University of Wisconsin - Madison | Jan 1994 |
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## Teaching

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| <b>Administrative Data Systems &amp; Technologies</b>                                | May 2013 |
| <b>Policy &amp; Program Evaluation</b>                                               | May 2013 |
| <b>Public Administration &amp; Policy Inquiry (Research Design &amp; Statistics)</b> | May 2013 |
| <b>Dissertations &amp; Theses</b>                                                    | May 2013 |

## Refereed Journal Articles

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| <b>Physician accessibility measures for Virginia and the National Capital Region at the census block group level</b><br><b>Schroeder, Aaron</b><br>(Data & Policy (submitted, under review))                                                                                                                                                                                                                                                                                           | Jan 2026 |
| <b>Licensed childcare accessibility measures for Virginia at the census block group level</b><br><b>Schroeder, Aaron</b><br>(Data & Policy (submitted, under review))                                                                                                                                                                                                                                                                                                                  | Jan 2026 |
| <b>Compressing the Data Science Pipeline: How Large Language Models Can Accelerate the Production of Policy-Relevant Datasets</b><br><b>Schroeder, Aaron</b><br>(Harvard Data Science Review (invited submission, in preparation))                                                                                                                                                                                                                                                     | Jan 2026 |
| <b>Network-based Active Learning for Identifying Illicit Actors in Financial Transaction Networks</b><br>Alabsi Aljundi, A., Adiga, A., Barrett, C., Foster, M.J., Klahn, B.D., Machi, D., Marathe, A., Potter, P.B.K., <b>Schroeder, A.D.</b> , Swarup, S., Vullikanti, A., Wilson, M.L., Marathe, M.<br><a href="https://doi.org/10.65109/GOCK1684">10.65109/GOCK1684</a> (Proceedings of the 25th International Conference on Autonomous Agents and Multiagent Systems (AAMAS '26)) | May 2026 |
| <b>Estimating the cascading global impacts of gas disruptions in Qatar</b><br>Mishra, R., Gupta, D., Marathe, A., Yu, K.D., <b>Schroeder, A.D.</b> , Swarup, S., Klahn, B., Potter, P., Marathe, M., Vullikanti, A.<br><a href="https://arxiv.org/abs/10.48550/arXiv.2604.24960">10.48550/arXiv.2604.24960</a> (arXiv preprint arXiv:2604.24960)                                                                                                                                       | Apr 2026 |
| <b>Smart Metadata in Action: The Social Impact Data Commons</b><br>Joanna Schroeder, Alan Wang, Kathryn Linehan, Joel Thurston, <b>Aaron Schroeder</b><br><a href="https://arxiv.org/abs/10.48550/arXiv.2511.17694">10.48550/arXiv.2511.17694</a>                                                                                                                                                                                                                                      | Nov 2025 |
| <b>Open Source: The Future of Software Innovation</b><br>Cong, C., Isch, C., Tobin, E., Korkmaz, G., Calderón, J.B.S., <b>Schroeder, A.</b> , Kramer, B.L.<br><a href="https://researchmethodscommunity.sagepub.com/blog/open-source-the-future-of-software-innovation">researchmethodscommunity.sagepub.com/blog/open-source-the-future-of-software-innovation</a> (MethodSpace, SAGE Publishing)                                                                                     | Jan 2020 |
| <b>Doing Data Science: A Framework and Case Study</b><br>Keller, S. A., Shipp, S. S., <b>Schroeder, A. D.</b> , Korkmaz, G.<br><a href="https://doi.org/10.1162/99608f92.2d83f7f5">10.1162/99608f92.2d83f7f5</a> (Harvard Data Science Review. 2(1).)                                                                                                                                                                                                                                  | Mar 2020 |

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| <b>The Scope and Impact of Open Source Software as Intangible Capital: A Framework for Measurement with an Application Based on the Use of R Packages</b><br>Robbins, C., Korkmaz, G., Calderon, J. B. S., Chen, D., <b>Schroeder, A.</b> , Kelling, C., ..., Keller, S.<br>(Big Data for 21st Century Economic Statistics. University of Chicago Press.)                          | Apr 2019 |
| <b>Predicting postsecondary trajectories in Virginia high schools using publicly available data</b><br>Pires, B., Crandell, I., Arnsbarger, M., Lancaster, V., <b>Schroeder, A.</b> , Shipp, S., Kang, W., Robinson, P., Keller, S.<br><a href="https://doi.org/10.3233/SJI-180455">10.3233/SJI-180455</a> (Statistical Journal of the IAOS, 34(4))                                | Dec 2018 |
| <b>Record Linkage Reconciliation of Arlington Department of Human Services Administrative Data Using Potts Models</b><br>Crandell, I., <b>Schroeder, A.</b> , Higdon, D., Irwin, M. D.<br><a href="https://doi.org/10.23889/ijpds.v3i5.1061">10.23889/ijpds.v3i5.1061</a> (International Journal of Population Data Science, 3(5))                                                 | Oct 2018 |
| <b>Harnessing the power of data to support community-based research</b><br>Keller, S., Shipp, S., Korkmaz, G., Molfino, E., Goldstein, J., Lancaster, V., ..., <b>Schroeder, A.</b><br><a href="https://www.ijpds.org/article/view/1061">ijpds.org/article/view/1061</a> (Wiley Interdisciplinary Reviews: Computational Statistics, 10(3), e1426)                                 | May 2018 |
| <b>Estimating individualized exposure impacts from ambient ozone levels: A synthetic information approach</b><br>Pires, B., Korkmaz, G., Ensor, K., Higdon, D., Keller, S., Lewis, B., <b>Schroeder, A.</b><br><a href="https://doi.org/10.1016/j.envsoft.2018.02.007">10.1016/j.envsoft.2018.02.007</a> (Environmental Modelling & Software. Volume 103, May 2018, Pages 146–157) | Mar 2018 |
| <b>Can Administrative Housing Data Replace Survey Data?</b><br>Molfino, E., Korkmaz, G., Keller, S. A., <b>Schroeder, A.</b> , Shipp, S.<br><a href="https://www.jstor.org/stable/26328312?seq=1">www.jstor.org/stable/26328312?seq=1</a> (Cityscape, 18(4))                                                                                                                       | Apr 2017 |
| <b>The Evolution of Data Quality: Understanding the Transdisciplinary Origins of Data Quality Concepts and Approaches</b><br>Keller, S.A., Korkmaz, G., Orr, M., <b>Schroeder, A.</b> , Shipp, S.<br><a href="https://doi.org/10.1146/annurev-statistics-060116-054114">10.1146/annurev-statistics-060116-054114</a> (Annual Review of Statistics and Its Application, 4(1))       | Mar 2017 |
| <b>Does Big Data Change the Privacy Landscape? A Review of the Issues</b><br>Keller, S. A., Shipp, S., <b>Schroeder, A.</b><br>(Annual Review of Statistics and Its Application, 3(1))                                                                                                                                                                                             | Nov 2016 |
| <b>Towards an in silico Experimental Platform for Air Quality - Houston, TX as a Case Study.</b><br>Pires, B., Korkmaz, G., Ensor, K., Higdon, D., Keller, S. A., <b>Schroeder</b><br>(Computational Social Science Society of America Conference. Santa Fe, New Mexico.)                                                                                                          | Nov 2015 |
| <b>Pad and Chaff: Secure Approximate String Matching in Private Record Linkage</b><br><b>Schroeder, A.D.</b><br><a href="https://doi.org/10.1145/2428736.2428757">10.1145/2428736.2428757</a> (Proceedings of the 14th International Conference on Information Integration and Web-based Applications and Services (iiWAS '12))                                                    | May 2012 |
| <b>New Data on Child Care Subsidy Programs</b><br>Spears, John V., Bradburn, Isabel., <b>Schroeder, Aaron D.</b> , Tester, Diana., Forry, Nicole<br><a href="https://www.researchgate.net/publication/232095799_New_Data_on_Child_Care_Subsidy_Programs">www.researchgate.net/publication/232095799_New_Data_on_Child_Care_Subsidy_Programs</a> (Policy & Practice)                | May 2012 |

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| <b>IP Wireless Networks for Digital Video and Data along Highway Right Of Way</b><br>Amanna A., Schroeder, A.<br>(Proceedings International Symposium on Advanced Radio Technologies)                                                                                                                                                                                                                                                                                              | May 2004 |
| <b>Serial Wireless IP Networks for DOT Applications</b><br>Amanna A., Schroeder, A.<br>(Proceedings IEEE Conference on Intelligent Transportation Systems. October. IEEE.)                                                                                                                                                                                                                                                                                                         | May 2004 |
| <b>Serial Wireless LANs along DOT Right of Way</b><br>Amanna A., Schroeder, A.<br>(Proceedings ITS America. June.)                                                                                                                                                                                                                                                                                                                                                                 | May 2004 |
| <b>Network Organizational Development in the Public Sector. Journal of the American Society for Information Science</b><br>Ward, R., Wamsley, G.L., <b>Schroeder, A.D.</b> , Robins, D.B.<br><a href="https://onlinelibrary.wiley.com/doi/10.1002/1097-4571(2000)9999:9999%3C::AID-ASI1004%3E3.0.CO;2-5/abstract">onlinelibrary.wiley.com/doi/10.1002/1097-4571(2000)9999:9999%3C::AID-ASI1004%3E3.0.CO;2-5/abstract</a> (Journal of the American Society for Information Science) | May 2000 |
| <b>Escalating in a Quagmire: The Changing Dynamics of the Emergency Management Policy Subsystem</b><br>Wamsley, G.L., <b>Schroeder, A.D.</b><br><a href="https://www.researchgate.net/publication/272574256_Escalating_in_a_Quagmire_The_Changing_Dynamics_of_the_Emergency_Management_Policy_Subsystem">www.researchgate.net/publication/272574256_Escalating_in_a_Quagmire_The_Changing_Dynamics_of_the_Emergency_Management_Policy_Subsystem</a> (Public Administration Review) | May 1996 |
| <b>To Politicize is Not to Control</b><br>Wamsley, G.L., <b>Schroeder, A.D.</b> , Lane, L.M.<br><a href="https://www.researchgate.net/publication/238430496_To_Politicize_is_Not_to_Control_The_Pathologies_of_Control_in_Federal_Emergency_Management">www.researchgate.net/publication/238430496_To_Politicize_is_Not_to_Control_The_Pathologies_of_Control_in_Federal_Emergency_Management</a> (The American Review of Public Administration)                                   | Apr 1996 |

## Book Chapters

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| <b>The Evolution of Emergency Management in America: From a Painful Past to a Promising but Uncertain Future</b><br><b>Schroeder, A.D.</b> , Wamsley, G.L., Ward, R.<br>(Handbook of Emergency Management) | July 2012 |
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## Research / Technical Reports

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| <b>Auditable by Construction: A Workflow-Level Approach to Trust in LLM Data Pipelines</b><br><b>Schroeder, Aaron</b><br><a href="https://10.2139/ssrn.6833238">10.2139/ssrn.6833238</a> (SSRN Working Paper No. 6833238)                                                                                                                                                                         | May 2026  |
| <b>Creating Local-Level Geographic Datasets: A Practical, Illustrated Guide for Sub-County Policy Analysis</b><br><b>Schroeder, Aaron</b><br><a href="https://dads2busy.github.io/local-level-data-guide">dads2busy.github.io/local-level-data-guide</a> (Mastercard Center for Inclusive Growth)                                                                                                 | June 2026 |
| <b>An Agentic AI Approach for Estimating the U.S. Classified Intelligence Budget</b><br><b>Schroeder, Aaron</b><br><a href="https://proceedings.biocomplexity.virginia.edu/system/files/publications/2026-04/main_0.pdf">proceedings.biocomplexity.virginia.edu/system/files/publications/2026-04/main_0.pdf</a><br>(Biocomplexity Institute, University of Virginia, Technical Report BI-2026-3) | Apr 2026  |

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| <b>An Agentic AI Approach for Material Evolution Knowledge Hypergraph Discovery</b><br><b>Schroeder, Aaron</b> , Machi, Dustin, Klahn, Brian, Harrison, Galen S., Vullikanti, Anil, Marathe, Achla, Wilson, Mandy L., Foster, Margaret, Potter, Philip, Swarup, Samarth, Marathe, Madhav V.<br>(Biocomplexity Institute, University of Virginia, Technical Report BI-2025-18)                                                                         | Dec 2025 |
| <b>A Novel Framework for Synthesizing Shallow Technology Dependency Networks (STDNs) for Disruption Analysis of Global Manufacturing and Trade Networks</b><br><b>Schroeder, Aaron</b> , Wilson, Mandy L., Harrison, Galen S., Machi, Dustin, Klahn, Brian, Swarup, Samarth, Vullikanti, Anil, Marathe, Achla, Foster, Margaret, Potter, Philip, Marathe, Madhav V.<br>(Biocomplexity Institute, University of Virginia, Technical Report BI-2025-17) | Dec 2025 |
| <b>Census Curated Data Enterprise Use Case Demonstration: Climate Resiliency of Skilled Nursing Facilities</b><br>Lancaster V, Shipp S, Keller S, <b>Schroeder A</b> , Mortveit H, Swarup S, Xie D<br><a href="#">10.18130/ce97-sp05</a> (Proceedings of the Biocomplexity Institute, Technical Report. TR# 2023-53. University of Virginia.)                                                                                                         | Jan 2023 |
| <b>Translating the Curated Data Model into Practice-Climate resiliency of skilled nursing facilities</b><br>Lancaster, Vicki, Shipp, Stephanie, Keller, Sallie, Mortveit, Henning, Swarup, Samarth, <b>Schroeder, Aaron</b> , Xie, Dawen<br>(Royal Statistical Society, in partnership with the American Statistical...)                                                                                                                              | Jan 2024 |
| <b>USDA ERS Broadband: Comparison of boundary analysis methods for spatial models</b><br>Goldstein, Joshua; Halder, Aritra; Schroeder, Aaron; Shipp, Stephanie; Kattampallil, Neil<br>(Economic Research Service - USDA)                                                                                                                                                                                                                              | May 2018 |
| <b>Analysis of the Capabilities of the Virginia Longitudinal Data System (VLDS) to support Baseline Distinct Counts of Select Data Sets to support the Establishment of a Virginia Early Childhood Integrated Data System (ECIDS)</b><br><b>Schroeder, A.D.</b><br><a href="#">dads2busy.github.io/downloads/Distinct%20Counts%20from%20VLDS%20to%20Support%20ECIDS.pdf</a> (Virginia Early Childhood Foundation)                                     | May 2018 |
| <b>Towards State-of-the-Art IDS Technology and Data Security Solutions</b><br>Patterson, David, Ken Steif, Niall Brennan, Andreas Haeberlen, Aaron Schroeder, Adam Smith<br><a href="#">www.aisp.upenn.edu/wp-content/uploads/2016/07/Technology-Data-Security.pdf</a> (Actionable Intelligence for Social Policy, University of Pennsylvania)                                                                                                        | Apr 2017 |
| <b>Leveraging External Data Sources to Enhance Official Statistics and Products</b><br>Keller S., Shipp S., Orr M., Higdon D., Korkmaz G., Schroeder A.D., Molfino E., Pires B., Ziemer K., Weinberg D.<br>(U.S. Census Bureau)                                                                                                                                                                                                                       | Aug 2016 |
| <b>Virginia Department of Emergency Management's Changing Information Requirements and Recommendations</b><br>Schroeder A.D., Molfino, E.<br>(Virginia Department of Emergency Management. Richmond, VA.)                                                                                                                                                                                                                                             | Aug 2016 |
| <b>VT-VLDS Identity Resolution and Query Execution Process Overview</b><br><b>Schroeder, A.D.</b><br><a href="https://doi.org/10.5281/zenodo.20044352">https://doi.org/10.5281/zenodo.20044352</a> (Virginia Information Technologies Agency)                                                                                                                                                                                                         | May 2012 |

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| <b>VT-VLDS Shaker Specifications</b><br><b>Schroeder, A.D.</b><br><a href="https://doi.org/10.5281/zenodo.20044352">https://doi.org/10.5281/zenodo.20044352</a> (Virginia Information Technologies Agency)                            | May 2012 |
| <b>VT-VLDS Data Adapter User Guide</b><br><b>Schroeder, A.D.</b><br><a href="https://doi.org/10.5281/zenodo.20044352">https://doi.org/10.5281/zenodo.20044352</a> (Virginia Information Technologies Agency)                          | May 2012 |
| <b>VT-VLDS Lexicon Metadata Tool Design</b><br><b>Schroeder, A.D.</b><br><a href="https://doi.org/10.5281/zenodo.20044352">https://doi.org/10.5281/zenodo.20044352</a> (Virginia Information Technologies Agency)                     | May 2012 |
| <b>VT-VLDS Lexicon Specifications</b><br><b>Schroeder, A.D.</b><br><a href="https://doi.org/10.5281/zenodo.20044352">https://doi.org/10.5281/zenodo.20044352</a> (Virginia Information Technologies Agency)                           | May 2012 |
| <b>Multi-Agency Integration of Child-Relevant Data Sets in the Commonwealth of Virginia: Application of a Privacy Protecting Federated Model</b><br><b>Schroeder, A.D.</b><br>(Data Quality Campaign: Washington, DC)                 | May 2012 |
| <b>Local School Division Student Assessments at Kindergarten Enrollment and During Kindergarten: Current Practices Across Virginia</b><br><b>Schroeder, A.D.</b> , Bradburb, I.<br>(Project Child HANDS, VA)                          | May 2012 |
| <b>Virginia's Local Social Service Agencies: Child Care Quality, Improvement, Subsidy Data, and What Would be Most Useful in an Early Childhood Data System</b><br><b>Schroeder, A.D.</b> , Bradburb, I.<br>(Project Child HANDS, VA) | May 2012 |
| <b>Development of a Classification System for Quality Initiative (QI) Activities Reported by Local Social Service Agencies in Virginia</b><br><b>Schroeder, A.D.</b> , Bradburb, I.<br>(Project Child HANDS, VA)                      | May 2012 |
| <b>Saving Dollars While Making Sense: An Analysis Comparing Operational Costs of Inter-generational Shared Site Facilities</b><br>Jarrott, S.E., <b>Schroeder, A.D.</b><br>(Generations United: Washington, DC)                       | May 2012 |
| <b>511 Virginia Email Alert System</b><br><b>Schroeder, A.D.</b><br>(USDOT Center for ITS Implementation Research)                                                                                                                    | May 2012 |
| <b>Wireless Testing Protocols</b><br><b>Schroeder, A.D.</b><br>(USDOT Center for ITS Implementation Research)                                                                                                                         | May 2012 |
| <b>Route 460 Wireless Network</b><br><b>Schroeder, A.D.</b><br>(USDOT Center for ITS Implementation Research)                                                                                                                         | May 2012 |

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| <b>Regional pedestrian activity measurement</b><br><b>Schroeder, A.D.</b><br>(USDOT Center for ITS Implementation Research)                                                                                                                                                                                                                                            | May 2012 |
| <b>Enhanced Night Visibility Series, Volume II: Overview of Phase I and Development of Phase II - Experimental Plan</b><br>Dingus, T.A. Allen, G.R. Stephen C. Brich, S.C. Neale, V.L. Schroeder, A.D. Blanco, M. Schnell, T. Gillespie, J.S. Schroeder, T.T. Simmons, C., Hankey, J.M.<br>(Office of Safety Research and Development, Federal Highway Administration) | May 2012 |
| <b>I-81 ITS Program Evaluation Framework</b><br>Baker, S. Schroeder, A.D., Rakha, H. Hintz, R.<br>(Virginia Department of Transportation)                                                                                                                                                                                                                              | May 2012 |
| <b>Evaluation of the Truck Fleet Support Program</b><br>Bergoffen, G., <b>Schroeder, A.D.</b> , Swan, N.<br>(Virginia Department of Transportation)                                                                                                                                                                                                                    | May 2012 |
| <b>Travel Virginia</b><br><b>Schroeder, A.D.</b><br>(USDOT Center for ITS Implementation Research)                                                                                                                                                                                                                                                                     | May 2012 |
| <b>I-81 Video System Design and Implementation</b><br>Schroeder, A.D. Amanna, A.<br>(USDOT Center for ITS Implementation Research)                                                                                                                                                                                                                                     | May 2012 |
| <b>Transportation Data Clearinghouse</b><br>Schroeder, A.D. Laskowski, K.<br>(USDOT Center for ITS Implementation Research)                                                                                                                                                                                                                                            | May 2012 |
| <b>Case Study Evaluation of the Virginia Department of Transportation's I-81 ITS Program</b><br>Baker, S., <b>Schroeder, A.D.</b><br>(Virginia Department of Transportation)                                                                                                                                                                                           | May 2012 |
| <b>Extension of 'Travel Shenandoah' North to Harrisburg, Pennsylvania: Historical Development and Lessons Learned</b><br><b>Schroeder, A.D.</b> , Hales, R.<br>(I-95 Corridor Coalition)                                                                                                                                                                               | May 2012 |
| <b>Bedford Ride Strategic Plan and Operations Guide. Strategic Plan</b><br><b>Schroeder, A.D.</b> , Stebner, M.<br>(County of Bedford, VA)                                                                                                                                                                                                                             | May 2012 |
| <b>TravelShenandoah.Com Market Definitions: A Plan to Increase Users</b><br>Hintz, R., <b>Schroeder, A.D.</b><br>(Virginia Department of Transportation)                                                                                                                                                                                                               | May 2012 |
| <b>Travel Virginia: A Statewide System of Public-Private Partnerships for ATIS Deployment</b><br>Worrall, R.D., <b>Schroeder, A.D.</b><br>(Virginia Department of Transportation)                                                                                                                                                                                      | Apr 2012 |

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| <b>Advanced Traveler Information Systems and Commercial Vehicle Operations Components of the Intelligent Transportation Systems: Investigation of User Stereotype and Preferences</b><br>Neale, V.L., Dingus, T.A., Schroeder, A.D.<br>(Federal Highway Administration Contract No. DTFH61-92-C-00102, Item No. 0021)            | Apr 2012 |
| <b>Development of Human Factors Guidelines for Advanced Traveler Information Systems and Commercial Vehicle Operations: Advanced Traveler Information System Feature Standardization</b><br>Neale, V. L., Dingus, T. A., <b>Schroeder, A. D.</b> , Zellers, S., Reinach, S.<br>(Federal Highway Administration (FHWA-RD-96-149)) | Apr 2012 |
| <b>I-81 Intelligent Transportation Systems (ITS) Program Evaluation Plan</b><br>Baker, S., <b>Schroeder, A. D.</b> , Rakha, H. A., Hintz, R.<br>(Joint Program Office for Intelligent Transportation Systems (DOT-HS-811328))                                                                                                    | May 2003 |
| <b>Annual Report: Leveraging Existing DoD (Department of Defense) Data Towards Optimized Individual and Team Performance in the Army</b><br>Shipp, S., Goldstein, J., Lancaster, V., Linehan, K., <b>Schroeder, A.</b> , Schroeder, J., Thurston, J.<br>(For Sponsor Only (U.S. Army Research Institute))                        | May 2023 |
| <b>CoreLogic: Housing Data, Challenges and Applications to Program Evaluation</b><br>Kattappallil, T., <b>Schroeder, A.</b> , Goldstein, J., Zhu, Z.<br>(USDA Economic Research Service)                                                                                                                                         | May 2023 |
| <b>Social Impact Data Commons Technical Review</b><br>Thurston, J., <b>Schroeder, A.</b> , Linehan, K., Iserman, M.<br>(Biocomplexity Institute, University of Virginia)                                                                                                                                                         | Aug 2022 |
| <b>A 20-year review of accession characteristics in the U.S. Army</b><br>Ratcliff, N., Thurston, J., Linehan, K., Mikytuck, A., Oh, E., Halder, A., Goldstein, J., Lancaster, V., <b>Schroeder, A.</b> , Shipp, S., Keller, S.<br>(Personnel Psychology (in preparation))                                                        | Jan 2021 |

## Editorials

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| <b>The Political Roots of Hating Government</b><br><b>Schroeder, A.D.</b><br>(April 30. Roanoke Times and World News) | Apr 2012 |
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## Dissertation

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| <b>Building Implementation Networks: Building Multi-organizational, Multi-sector Structures for Policy Implementation</b><br><b>Schroeder, A.D.</b><br><a href="https://scholar.lib.vt.edu/theses/available/etd-05082001-162010/unrestricted/ImplementationNetworks.pdf">scholar.lib.vt.edu/theses/available/etd-05082001-162010/unrestricted/ImplementationNetworks.pdf</a> (Virginia Polytechnic Institute and State University) | July 2012 |
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## Software

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| <b>sdc-census10to20</b><br>Python package to redistribute 2010–2019 census data onto 2020 census boundaries                     | June 2026 |
| <b>sdc-redistribute</b><br>Python package to redistribute values between geographies (direct area-weighted and parcel-weighted) | June 2026 |

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| <b>sdc-catchment</b><br>Python package for floating catchment area spatial accessibility (2SFCA, E2SFCA, and variants)                                                                    | June 2026 |
| <b>STDN Agentic Framework</b><br>Multi-agent AI system for generating Shallow Technology Dependency Networks (STDNs)                                                                      | Apr 2026  |
| <b>Intelligence Budget Estimation System</b><br>Multi-agent LangGraph workflow for estimating the classified portion of U.S. intelligence spending                                        | Apr 2026  |
| <b>STDN Explorer</b><br>Interactive dashboard for Shallow Technology Dependency Networks — supply chain risk analysis                                                                     | Mar 2026  |
| <b>Social Data Commons (SDC)</b><br>Unified monorepo for Social Data Commons data pipelines                                                                                               | Feb 2026  |
| <b>Virginia Public Health Data Commons</b><br>Interactive data commons web platform for Virginia public health indicators                                                                 | Feb 2026  |
| <b>National Capital Region Data Commons</b><br>Interactive Next.js dashboard for demographic, economic, health, housing, and infrastructure indicators across the National Capital Region | Feb 2026  |
| <b>Travel Information Data Clearinghouse and Management System</b><br>Copyright held by Virginia Polytechnic Institute and State University                                               | Jan 1999  |
| <b>Web-Based Dynamic Ride Request, Assignment, and Tracking System</b><br>Copyright held by Virginia Polytechnic Institute and State University                                           | Jan 1999  |

## Datasets

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| <b>Social Data Commons: Master Metadata</b><br><b>Schroeder, A.D.</b> , Schroeder, J., Iserman, M., Linehan, K.<br>(UVA Dataverse, University of Virginia)                                                                                                                              | Jan 2022 |
| <b>Social Data Commons: Segregation Index (HOI) (v1.0.1)</b><br>Residential segregation indicator (Theil's Entropy Index, H) from ACS race/ethnicity data<br>Schroeder, Aaron<br><a href="https://doi.org/10.5281/zenodo.19025089">10.5281/zenodo.19025089</a>                          | Jan 2026 |
| <b>Social Data Commons: Ookla Speed (v2.0.0)</b><br>Fixed and mobile broadband speed measures from Ookla Speedtest Open Data, joined to Census 2020 block groups<br>Schroeder, Aaron<br><a href="https://doi.org/10.5281/zenodo.19192908">10.5281/zenodo.19192908</a>                   | Jan 2026 |
| <b>Social Data Commons: Daycare Accessibility (v1.2.0)</b><br>Daycare accessibility for Virginia: drive time to nearest provider, total capacity, and FCA seats per 1,000 children<br>Schroeder, Aaron<br><a href="https://doi.org/10.5281/zenodo.19139080">10.5281/zenodo.19139080</a> | Jan 2026 |

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| <b>Social Data Commons: Primary Care Service Accessibility (FCA) (v4.0.1)</b><br>Floating catchment area (2SFCA, E2SFCA, 3SFCA) measures of primary care physician accessibility at block group level<br>Schroeder, Aaron<br><a href="https://doi.org/10.5281/zenodo.19152538">10.5281/zenodo.19152538</a> | Jan 2026 |
| <b>Social Data Commons: Employment Access Index (v2.0.0)</b><br>Employment Intensity (gravity model) from LEHD-LODES job counts and TIGER/Line block centroids<br>Schroeder, Aaron<br><a href="https://doi.org/10.5281/zenodo.19025096">10.5281/zenodo.19025096</a>                                        | Jan 2026 |
| <b>Social Data Commons: Walkability (v5.0.0)</b><br>Multi-year Walkability Index from LEHD-LODES employment entropy, GTFS transit proximity, and EPA SLD street connectivity<br>Schroeder, Aaron<br><a href="https://doi.org/10.5281/zenodo.19025432">10.5281/zenodo.19025432</a>                          | Jan 2026 |
| <b>Social Data Commons: OB-GYN Service Accessibility (FCA) (v2.0.0)</b><br>Floating catchment area measures of OB-GYN service accessibility (female pop 15+ as demand)<br>Schroeder, Aaron<br><a href="https://doi.org/10.5281/zenodo.19152569">10.5281/zenodo.19152569</a>                                | Jan 2026 |
| <b>Social Data Commons: Access to Care Index (HOI) (v3.0.0)</b><br>Composite z-score of physician availability (CMS PUF + OSRM) and insurance coverage (ACS uninsured rate)<br>Schroeder, Aaron<br><a href="https://doi.org/10.5281/zenodo.19025101">10.5281/zenodo.19025101</a>                           | Jan 2026 |
| <b>Social Data Commons: Prenatal Care Adequacy (Kotelchuck Index) (v4.0.3)</b><br>Adequacy of Prenatal Care Utilization (Kotelchuck Index) classifying births by trimester of entry and visit ratio<br>Schroeder, Aaron<br><a href="https://doi.org/10.5281/zenodo.19039389">10.5281/zenodo.19039389</a>   | Jan 2026 |
| <b>Social Data Commons: Housing + Transportation Affordability (v3.1.2)</b><br>H+T Affordability Index reproduced via CNT methodology (housing + modeled transportation costs as % income)<br>Schroeder, Aaron<br><a href="https://doi.org/10.5281/zenodo.19025106">10.5281/zenodo.19025106</a>            | Jan 2026 |
| <b>Social Data Commons: Social Vulnerability Index (v3.0.0)</b><br>CDC/ATSDR SVI 2022 methodology computed from ACS 5-year estimates<br>Schroeder, Aaron<br><a href="https://doi.org/10.5281/zenodo.19025102">10.5281/zenodo.19025102</a>                                                                  | Jan 2026 |
| <b>Social Data Commons: Pediatric Service Accessibility (FCA) (v2.0.0)</b><br>Floating catchment area measures of pediatric service accessibility (population ages 0–17 as demand)<br>Schroeder, Aaron<br><a href="https://doi.org/10.5281/zenodo.19152601">10.5281/zenodo.19152601</a>                    | Jan 2026 |

## **Social Data Commons: Material Deprivation (v2.0.0)**

Jan 2026

Townsend Material Deprivation Index from four ACS-derived indicators (unemployment, overcrowding, no car, no home)

Schroeder, Aaron

[10.5281/zenodo.19025098](https://doi.org/10.5281/zenodo.19025098)

## **Awards & Honors**

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**Member, Arlington County Open Data Advisory Group:** 2018-2019

**COVITS Winner — Cross-Boundary Collaboration on IT (VLDS):** 2013

**COVITS Finalist — Virginia Longitudinal Data System:** 2012

**Invited, Virginia Governor’s Early Childhood Advisory Council:** 2010

**Invited, National Institute of Statistical Sciences Workshop:** 2009

**Invited, National Press Club — intergenerational day care findings:** 2008

**Invited speaker, Florida DOT ITS Conference:** 2003

**Invited workshop lead, Univ. of LaVerne — IT implementation:** 2000

**Invited, Virginia Transportation Conference:** 1999-2000

**Nominee, ASG Award for Innovation in State Government (Travel Shenandoah):** 1999

**Appointed Member, Congressional Commission on I-81 Truck Safety:** 1999

**Eno Transportation Fellow:** 1997

**Member, iTHRIV (integrated Translational Health Research Institute of Virginia) Scientific Advisory Board:** 2021-2025

**Brookings Institute, Consulting Scholar, Roundtable for Equitable Data Pathways Data Governance Project:** 2024

## **Professional Service**

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**Paper Reviewer, AAMAS 2027 (International Conference on Autonomous Agents and Multiagent Systems):** 2026

**Reviewer, Data Science Journal, Vol. 24, Issue 3 — Special Issue: 2025 GASP Conference:** 2026

**Proposal Reviewer, NSF Methodology, Measurement, and Statistics (MMS) Program:** 2022

**Invited Guest Editor, Administration & Society:** 1997

## **Specializations**

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**Policy & Evaluation:** Methods of data collection · research design · quantitative & qualitative analysis · information policy · privacy law · policy/implementation network analysis

**Information Management:** Information integration · data management · big data · web-enabled public services

**Agentic AI for Statistical Data Production:** Multi-agent LLM systems · structured agent debate · ontology-backed extraction & normalization · hallucination mitigation via agreement-feedback consensus · provenance tracking & authoritative data fusion · knowledge graphs & dependency networks · agentic pipelines for federal statistical workflows

## **Skills**

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Multi-agent AI

LLM pipelines (Claude API)

Python

R

LaTeX

PostgreSQL

Linux Admin

Docker

Knowledge graphs

Ontology design