

Joel A. Middleton, PhD  
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## SUMMARY

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My academic research has developed a flexible statistics framework for the analysis of virtually any experimental design, even those for which no existing analytical results are available due to setting-specific research constraints, complex assignment dependencies or interference. Complementing this research, I have 18 years' experience implementing field experiments in challenging contexts, such as political campaigns or conflict zones, and in modeling voter behavior for political organizations. I also have extensive professional experience designing and analyzing surveys, with expertise in item construction and testing, probability sampling, experimental survey design, and data analysis.

## ACADEMIC POSITIONS

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- 2014-            Assistant Professor, Department of Political Science  
                  *University of California, Berkeley*
- 2011-2014      Visiting Assistant Professor, Department of Applied Statistics, Social Science and Humanities  
                  Affiliations:  
                  - Center for Data Science and Center  
                  - Center for the Promotion of Research Involving Innovative Statistical Methodology  
                  *New York University*

## PROFESSIONAL EXPERIENCE

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- 2001-2018      Consulting Statistician. *Penn, Schoen and Berland Associates*  
                  Designed and implemented: machine learning models of voter behavior for statewide voter outreach campaigns; survey experiments using optimal, fractional or factorial designs.
- 2008-2009      Senior Analyst. *Analyst Institute*  
                  Designed and implemented: large-scale voter targeting models and models of voter behavior; field experiments evaluating impact of voter outreach and mobilization; research in challenging campaign environments with novel designs that address field-constraints; research dissemination.
- 2001-2005      Consultant II. *The Rendon Group*  
                  Oversaw budgets, designed research and managed analysts for DARPA-funded research. Designed and implemented media coding protocols for quantitative measurement of news content from 40 countries worldwide. Trained eleven foreign language analysts in media coding protocols and oversaw quality control.
- 1999-2001      Statistician. *Penn, Schoen and Berland Associates*  
                  Designed and implemented: survey experiments using optimal, fractional or factorial designs; interactive simulation tools; survey instruments.

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## EDUCATION

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2011	Doctor of Philosophy in Political Science <i>Yale University</i>
2004	Master of Science in Statistics <i>The George Washington University</i>
1999	Master of Science in Psychology <i>Brown University</i>
1997	Bachelor of Science in Psychology <i>Lewis and Clark College</i>

## RESEARCH: CAUSAL INFERENCE/DESIGN-BASED INFERENCE (DBI)

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A Design-based Theory of Optimal Index Construction  
*Working paper* **2022**, with A Demin and C Samii

A Unified Approach to Evaluating Estimators in Complex Experimental Designs  
*Working paper* **2022**, with H Chang

How to Account for Alternatives When Comparing Effects: Revisiting ‘Bringing Education to Afghan Girls’  
[arXiv:2106.15076](#) **2022**, with D Burde, R Rahnema, and C Samii

Optimized Variance Estimation under Interference and Complex Experimental Designs  
[arXiv:2112.01709](#) **2021**, with C Harshaw, and F Sävje

Unifying DBI: A New Variance Estimation Principle  
[arXiv:2109.09236](#) **2021**

Unifying DBI: On Estimating the Variance of Linear Estimators in any Experimental Design  
[arXiv:2109.09220](#) **2021**

Exact Bias Correction for Linear Adjustment of Randomized Controlled Trials  
[arXiv:2110.08425](#) **2021**, with H Chang and P M Aronow

A Unified Theory of Regression Adjustment for Design-based Inference  
[arXiv:1803.06011](#) **2018**

Potential for Bias Inflation with Grouped Data: A Comparison of Estimators and Sensitivity Analysis Strategy  
*Observational Studies* **2018**, with M Scott, R Diakow, and J Hill

Bias Amplification and Bias Unmasking  
*Political Analysis* **2017**, **24(3)**: 307-323, with J Hill and M Scott

A Class of Unbiased Estimators of the Average Treatment Effect in Randomized Experiments  
*Journal of Causal Inference* **2013**, **1(1)**: 135–154, with P M Aronow

Unbiased Estimation of the Average Treatment Effect in Cluster Randomized Experiments  
*Statistics, Politics and Policy* **2015**, **1**: 39-75, with P M Aronow

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Bias of the Regression Estimator for Experiments Using Clustered Random Assignment  
*Statistics and Probability Letters* **2008, 78: 2654–2659**

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## RESEARCH: EXPERIMENTS AND QUASI-EXPERIMENTS

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Can Communities Take Charge? A Randomized Controlled Trial on Sustaining Schools in Afghanistan  
*Working paper* **2022**, with D Burde, C Samii and Y Wang

Can Foreign Aid Boost State Legitimacy During Conflict? Experimental Evidence from Afghanistan  
*Working paper* **2022**, with D Burde, R Deitz, and C Samii

Political Communication: Insights from Field Experiments  
*Oxford Handbook of Political Communication* **2017, 1-15**, with D P Green and A Carnegie

Are Ballot Initiative Outcomes Influenced by Independent Groups? A Precinct-Randomized Experiment  
*Political Behavior* **2015, 37(3): 1-27**, with T Rogers

Priming Under Fire: Reverse Causality and the Classic Media Priming Hypothesis  
*Journal of Politics* **2014, 76(2): 581-592**, with A Hart

Do Community-Based Voter Mobilization Campaigns Work Even in Battleground States? Evaluating the Effectiveness of MoveOn's 2004 Outreach Campaign  
*Quarterly Journal of Political Science* **2008, 3: 63–82**, with D P Green

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## POLICY PAPERS

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Assessment of Learning Outcomes and Social Effects of Community-Based Education: A Randomized Field Experiment in Afghanistan. *New York University*, with D Burde, and C. Samii

### Reports:

- Phase Two Endline Report. **2019**, also with M Lisiecki and O Okhidoi
- Phase Two Baseline Report. **2018**
- Phase One Outcomes Report. **2016**
- Phase One Baseline Report. **2015**

### Briefs:

- Can Communities Take Charge? Sustainability and CBE. **2019, 3(3)**
- Capacity Building for Village Level Community Institutions. **2018, 3(2)**
- Enhancing Female Representation in the Education Sector. **2018, 3(1)**
- Teacher Motivations and Implications for Models of Community-based Education. **2017, 2(4)**
- Institutional Management Practices of Village Shuras in Rural Afghanistan. **2017, 2(3)**
- Community Capacity to Co-manage Primary Education. **2017, 2(2)**
- Community Participation and the Sustainability of Rural Schools in Afghanistan. **2017, 2(1)**
- Prioritizing Community-based Education Resources by Age Groups. **2016, 1(4)**
- Evaluating the Trade-Offs in Teacher Recruitment. **2016, 1(3)**
- Cost-Effectiveness Analysis. **2016, 1(2)**
- Community-Based Education in Afghanistan: A Primer. **2016, 1(1)**

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## GRANTS

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- 2014-2017      Awarded: \$7.2 million. Co-PI with Cyrus Samii, and Dana Burde, PI. Title: Social Effects and Learning Outcomes from Community-based Education: A Randomized Field Experiment in Afghanistan. *United States Agency for International Development (USAID)*
- 2013            Awarded: \$250,000. Co-PI with Dana Burde, PI. Title: Social Effects and Learning Outcomes from Community-based Education: A Randomized Field Experiment in Afghanistan. *Danish International Development Agency*
- 2013            Awarded: \$17,833. Co-PI with Dana Burde, PI. Title: Community-based Schools and Trust in Government: A Randomized Field Experiment in Afghanistan. *Institute for Human Development and Social Change*

## CONFERENCES AND INVITED TALKS

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- 2020            *UC Berkeley Economics Seminar*. Invited talk. Unifying Design-based Inference: Variance Estimation
- 2019            *UC Berkeley Research Workshop in American Politics*. Invited talk. Index Construction
- 2018            *American Political Science Association*. Talk. Exactly Unbiased Regression Adjustment
- 2018            *Society for Political Methodology*. Talk. A Unified Theory of Regression Adjustment for Design-based Inference
- 2018            *UC Berkeley Causal Inference Seminar*. Invited talk. A Unified Theory of Regression Adjustment for Design-based Inference
- 2017            *Association for Analytical Learning about Islam and Muslim Societies*. Talk. Bringing Education to Afghan Girls Revisited: Understanding When and Why Effects Vary
- 2016            *Yale International Methods Workshop*. Invited talk. Estimation Approaches for Rerandomized Designs
- 2016            *Harris School Political Economy Workshop*. Invited talk. Bias Amplification and Bias Unmasking
- 2016            *Midwest Political Science Association*. Talk. Bias Amplification and Bias Unmasking
- 2016            *Society for Political Methodology*. Poster. Design-based Inference for Complex Experimental Designs
- 2015            *Joint Statistical Meetings*. Talk. Bias Amplification in Context: The Case of Fixed Effects
- 2015            *Joint Statistical Meetings*. Talk. Bias Amplification Bounds
- 2015            *Stanford Political Methods Workshop*. Invited talk. Bias Amplification and Bias Unmasking

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- 2013      *Joint Statistical Meetings*. Talk. Inclusion/Exclusion Criteria for Bias Amplifying Covariates: A Sensitivity Analysis Framework
- 2013      *Joint Statistical Meetings*. Talk. Shrinkage for Improved Inference in High Dimensional Factorial Experiment on Voter Mobilization
- 2011      *Midwest Political Science Association*. Talk. Direct-Mail Campaigns Can Persuade Voters: Evidence from a Randomized Field Experiment Studying Ballot Guides in Oregon
- 2011      *Analyst Group Meeting*. Invited talk. Priming, Projection or Both: Reevaluating the Classic Media Priming Hypothesis
- 2009      *Society for Political Methodology*. Poster. What Characteristics Must an Omitted Variable Have to Bias an Estimator by a Given Amount?
- 2008      *Society for Political Methodology*. Poster. Is Matching Really “Essential” for Cluster Randomized Experiments?

## TEACHING

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Department of Political Science, *University of California, Berkeley*

- Quantitative Analysis in Political Research (PS 231A)
- Design-based Causal Inference (PS 239)
- Research Workshop in Quantitative Modeling (PS 291F)
- Public Opinion and Voting (PS 161)

Department of Applied Statistics, Social Science and Humanities, *New York University*

- Survey Research Methods (RESCH-GE 2139)
- Large Databases in Education Research (E10.2110)
- Introductory Statistics (RESCH-GE 1085)

## PROFESSIONAL SERVICE

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- 2016-present    Member, *Experiments in Governance and Politics* (EGAP)
- 2019            Graduate Admissions Committee, *UC Berkeley*
- 2017            Coordinator for Research Workshop in American Politics, *UC Berkeley*
- 2014-2015      Editor, *Statistics, Politics and Policy*
- 2011-2013      Committee on Statistics Education, *PRIISM Center, New York University*
- 2011            Survey Methods Consultant, *CARE International*