

# Andee Kaplan

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## CONTACT INFORMATION

Department of Statistics  
Colorado State University  
Fort Collins, CO 80523-1877

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## PROFESSIONAL APPOINTMENTS

**Colorado State University, Fort Collins, CO USA**  
Assistant Professor, Department of Statistics, August 2019 - Present

**Duke University, Durham, NC USA**  
Postdoctoral Associate, Department of Statistical Science, August 2017 - July 2019  
Advisor: Rebecca C. Steorts

## EDUCATION

**Iowa State University (ISU), Ames, Iowa USA**  
Ph.D., Statistics, August 2017  
Dissertation title: “On advancing MCMC-based methods for Markovian data structures with applications to deep learning, simulation, and resampling”  
Advisors: Daniel Nordman, Stephen Vardeman  
M.S., Statistics, May 2014  
Research title: “gravicom - a web-based tool for community detection in networks”  
Advisors: Heike Hofmann, Daniel Nordman

**The University of Texas, Austin, Texas USA**  
M.A., Mathematics, December 2010  
Research title: “An Overview of Multilevel Regression”  
Advisors: Martha Smith, John Luecke  
B.S., Mathematics, May 2006  
Elements of Computing Certificate

## RESEARCH INTERESTS

Statistical Machine Learning, Bayesian Statistics, Computational Statistics, Record Linkage and Entity Resolution, Markov chain Monte Carlo and Spatial Resampling, Interactive Statistical Graphics, Reproducible Research, Social Statistics, Human Rights

## HONORS AND AWARDS

*Selected for “The Best of JCGS – Invited Papers” Session at JSM* 2019  
“Designing Modular Software: A Case Study in Introductory Statistics” with E. Hare selected for inclusion in the session.

*ISU Department of Statistics George W. Snedecor Award* 2015  
This award honors the founder and first director of the Statistical Laboratory, George W. Snedecor, and is awarded to the most outstanding PhD candidate in the Department of Statistics.

*American Statistical Association Computing Section Student Paper Award* 2015  
Awarded for paper “Introductory statistics with intRo.”

*ISU Department of Statistics Holly and Beth Fryer Scholarship* 2014  
Criteria for this scholarship include grades received in Statistics and related courses, performance in assistantship duties and other information that indicates a high likelihood that the student will make contributions to the Statistics profession throughout their career.

*Women in Statistics Conference Poster Award* 2014  
 Awarded for poster “Mathematical Self-Efficacy of Incoming Students at a Large Public University.”

*American Statistical Association Data Exposition 1<sup>st</sup> Place* 2013  
 Awarded for poster “Putting Down Roots: A Graphical Exploration of Community Attachment.”

*ISU Department of Statistics Vera David Fellowship* 2013  
 This fellowship, is given to a female student who has just completed her first year of graduate studies. The scholarship is awarded on the basis of academic achievement during the student’s first year.

*NSF Research Experiences for Undergraduates* 2006  
 Participant in Extensible Undergraduate Research in Communications Applications, in the areas of Communications, Networks and Systems.

*University of Texas at Austin Honors and Dean’s List* 2005 & 2006

OTHER AWARDS *ISBA Bayes Comp Conference Travel Award* 2020  
*IMS New Researchers Conference Travel Award* 2018 & 2019  
*IMA Frontiers in Forecasting Travel Award* 2018  
*Conference on Data Analysis Poster Grant* 2016  
*rOpenSci Unconf Travel Funding* 2015  
*Fields Institute Workshop on Visualization for Big Data Travel Award* 2015  
*Women in Statistics Conference Travel Award* 2014  
*ASA Joint Statistical Meetings Special Student Funding Travel Award* 2014

GRANTS & CONTRACTS As PI: *Streaming Record Linkage for Online Data Deduplication* (North Carolina State University Laboratory for Analytic Sciences). PI: Kaplan and Betancourt (\$132,397.90; CSU: \$92,032.90). January 2020 - December 2020.

As PI: *An Extensible Model for Deduplication of the GDELT Events Database* (North Carolina State University Laboratory for Analytic Sciences). PI: Kaplan (\$23,995.51). August 2019 - December 2019.

As Co-PI: *Posterior Prototyping: Bridging the Gap between Record Linkage and Regression* (North Carolina State University Laboratory for Analytic Sciences). PI: Kaplan, Betancourt, and Steorts (\$96,897). January 2019 - December 2019.

REFEREED JOURNAL PUBLICATIONS [1] **Kaplan, A.**, Nordman, D., and Vardeman, S. “On the S-instability and degeneracy of discrete deep learning models”. *Information and Inference: A Journal of the IMA* (2019). DOI: 10.1093/imaiai/iaz022.  
 [2] **Kaplan, A.** and Hare, E. “Putting Down Roots: A Graphical Exploration of Community Attachment”. *Computational Statistics* 34.4 (2019), pp. 1449–1464.  
 [3] **Kaplan, A.**, Kaiser, M. S., Lahiri, S. N., and Nordman, D. J. “Simulating Markov Random Fields With a Conclique-Based Gibbs Sampler”. *Journal of Computational and Graphical Statistics* 0.0 (2019), pp. 1–11.  
 [4] **Kaplan, A.**, Nordman, D., and Vardeman, S. “Properties and Bayesian fitting of restricted Boltzmann machines”. *Statistical Analysis and Data Mining: The ASA Data Science Journal* 12.1 (2019), pp. 23–38.  
 [5] Hare, E. and **Kaplan, A.** “Designing Modular Software: A Case Study in Introductory Statistics”. *Journal of Computational and Graphical Statistics* 26.3 (2017), pp. 493–500. DOI: 10.1080/10618600.2016.1276839.

- [6] **Kaplan, A.**, Hofmann, H., and Nordman, D. “An interactive graphical method for community detection in network data”. *Computational Statistics* 32.2 (2017), pp. 535–557. ISSN: 1613-9658. DOI: 10.1007/s00180-016-0663-5.
- [7] **Kaplan, A.**, Hare, E., Hofmann, H., and Cook, D. “Can you buy a president? Politics after the Tillman Act”. *Chance* 27.1 (2014), pp. 20–30.

#### PREPRINTS

- [8] Marchant, N. G., Steorts, R. C., **Kaplan, A.**, Rubinstein, B. I., and Elazar, D. N. “d-blink: Distributed End-to-End Bayesian Entity Resolution”. *arXiv preprint arXiv:1909.06039* (2020+).
- [9] **Kaplan, A.**, Betancourt, B., and Steorts, R. C. “Posterior Prototyping: Bridging the Gap between Record Linkage and Regression”. *arXiv preprint arXiv:1810.01538* (2020+). URL: <https://arxiv.org/abs/1810.01538>.

#### REFEREED CONFERENCE PRECEEDINGS

- [10] Mouzon, I., Genschel, U., Nguyen, X. H., **Kaplan, A.**, Carriquiry, A., and Mann, C. “A Cluster Analysis of STEM Gender Differences”. *Proceedings of the 18th Annual Conference on Research in Undergraduate Mathematics Education*. The SIGMAA on Research in Undergraduate Mathematics Education. 2015, pp. 793–800.

#### UNREFEREED CONFERENCE PRECEEDINGS

- [11] Hofmann, H., Cook, D., **Kaplan, A.**, Hare, E., Leos-Barajas, V., Sievert, C., and Tyner, S. “On the move at DinoFun world”. *Visual Analytics Science and Technology (VAST), 2015 IEEE Conference on*. IEEE. 2015, pp. 159–160.
- [12] Hofmann, H., Cook, D., **Kaplan, A.**, Hare, E., Leos-Barajas, V., Sievert, C., and Tyner, S. “Visualizing communication patterns at DinoFun World”. *Visual Analytics Science and Technology (VAST), 2015 IEEE Conference on*. IEEE. 2015, pp. 161–162.
- [13] Genschel, U., **Kaplan, A.**, Carriquiry, A., Johnston, E., Kliemann, W., Koehler, K., Mouzon, I., and Nguyen, H. “Statistical and Mathematical Self-Efficacy of Incoming Students at a Large Public University”. *Sustainability in Statistics Education, Proceedings of the Ninth International Conference on Teaching Statistics (ICOTS9), Flagstaff, Arizona, USA*. 2014.

#### SOFTWARE

- [1] **representr**, Create Representative Records Post-Record Linkage, with Brenda Betancourt and Rebecca C. Steorts [9]. (<https://github.com/cleanzr/representr>)
- [2] **dblink**, Scalable Empirical Bayes Entity Resolution, with Neil Marchant, Ben Rubenstein, and Rebecca C. Steorts [8]. (<https://github.com/cleanzr/dblink>)
- [3] **conclique**, Gibbs Sampling for Spatial Data and Concliques, with Daniel Nordman, Mark Kaiser, and Soumendra Lahiri [3]. (<https://github.com/andeek/conclique>)
- [4] **intro**, Download and Run the intRo Statistical Software, with Eric Hare [5]. (<https://github.com/gammarama/intro>)
- [5] **forestr**, Random Forests with a User Created Splitting Criterion. (<https://github.com/andeek/forestr>)

#### INVITED TALKS

\*Denotes presenter.

- [1] **Kaplan, A.\***, Betancourt, B., and Steorts, R. C. “Bayesian Canonicalization of Voter Registration Files”. *Symposium on Data Science and Statistics*. Invited Session. ASA. Pittsburgh, PA, USA, June 2020.
- [2] **Kaplan, A.\***, Betancourt, B., and Steorts, R. C. “Life after record linkage: Tackling the downstream task with error propagation”. *Bayes Comp*. Invited Session. ISBA. Gainesville, FL, USA, Jan. 2020.

- [3] **Kaplan, A.\***, Betancourt, B., and Steorts, R. C. “Posterior Prototyping for Bayesian Entity Resolution”. *12th International Conference of the ERCIM WG on Computational and Methodological Statistics*. Organized Invited Session. European Research Consortium for Informatics and Mathematics. London, UK, Dec. 2019.
- [4] **Kaplan, A.\*** and Hare, E. “Designing Modular Software: a Case Study in Introductory Statistics”. *Joint Statistical Meetings*. Invited Session. ASA. Denver, CO, USA, July 2019.
- [5] **Kaplan, A.\***, Kaiser, M., Lahiri, S., and Nordman, D. “A Fast Sampler for Data Simulation from Markov Random Fields”. *Invited Session*. The 28th Annual Conference of the International Envirometrics Society. Guanajuato, Gto., Mexico, July 2018.
- [6] **Kaplan, A.\***, Nordman, D., and Vardeman, S. “Model matters with restricted Boltzmann Machines”. *Keynote*. The 1st Midwest Statistical Machine Learning Colloquium. Ames, IA, USA, May 2018.
- [7] **Kaplan, A.\*** and Nordman, D. “Goodness-of-Fit Tests for Spatial Markov Random Fields”. *8th International Conference of the ERCIM WG on Computational and Methodological Statistics*. Organized Invited Session. European Research Consortium for Informatics and Mathematics. London, UK, Dec. 2015.
- [8] **Kaplan, A.\*** and Hare, E.\*. “Putting Down Roots: A Graphical Exploration of Community Attachment”. *Census Data Visualization Seminar*. U.S. Census Bureau. Washington, D.C., USA, Sept. 2013.

DEPARTMENTAL  
SEMINARS

- [1] The University of Wisconsin, Systems, Information, Learning and Optimization (SILO) Research Group. Madison, WI, USA, Nov. 2019.
- [2] Duke University, Department of Computer Science. Durham, NC, USA, Apr. 2019.
- [3] The University of California Irvine, Department of Statistics. Irvine, CA, USA, Feb. 2019.
- [4] The University of Kentucky, Department of Statistics. Lexington, KY, USA, Feb. 2019.
- [5] The Pennsylvania State University, Department of Statistics. State College, PA, USA, Feb. 2019.
- [6] Virginia Tech University, Department of Statistics. Blacksburg, VA, USA, Feb. 2019.
- [7] The University of Wisconsin, Department of Statistics. Madison, WI, USA, Feb. 2019.
- [8] Colorado State University, Department of Statistics. Fort Collins, CO, USA, Jan. 2019.
- [9] The University of Texas at Austin, Department of Statistics and Data Science. Austin, TX, USA, Jan. 2019.
- [10] Stanford University, Department of Statistics. Stanford, CA, USA, Jan. 2019.
- [11] Monash University, Department of Econometrics and Business Statistics. Melbourne, VIC, Australia, Jan. 2019.
- [12] Texas A&M University, Department of Statistics. College Station, TX, USA, Nov. 2018.
- [13] North Carolina State University, Department of Statistics. Raleigh, NC, USA, Oct. 2018.
- [14] Iowa State University, Department of Statistics. Ames, IA, USA, Jan. 2018.
- [15] North Carolina State University, Department of Statistics. Raleigh, NC, USA, Nov. 2017.
- [16] Centro de Investigación en Matemáticas. Guanajuato, Gto., Mexico, Oct. 2017.
- [17] Duke University, Department of Statistical Science. Durham, NC, USA, Apr. 2017.
- [18] Michigan State University, Department of Statistics and Probability. East Lansing, MI, USA, Feb. 2017.
- [19] University of Illinois, Urbana-Champaign, Department of Statistics. Champaign, IL, USA, Feb. 2017.
- [20] University of Florida, Department of Statistics. Gainesville, FL, USA, Feb. 2017.

- [21] Rice University, Department of Statistics. Houston, TX, USA, Jan. 2017.
- [22] University of Virginia, Department of Statistics. Charlottesville, VA, USA, Jan. 2017.
- [23] Arizona State University, School of Mathematical and Statistical Sciences. Tempe, AZ, USA, Jan. 2017.
- [24] University of Massachusetts, Amherst, Department of Mathematics & Statistics. Amherst, MA, USA, Dec. 2016.
- [25] Iowa State University, Department of Statistics. Ames, IA, USA, Jan. 2015.

#### INVITED SHORT COURSES

**Some of Record Linkage**, US Census Bureau & Centro de Investigación de Matemáticas, A. C.

*Co-instructor*

Designed and facilitated a workshop that provides a broad introduction to multiple methods for performing record linkage and deduplication, including blocking and evaluation topics (<https://resteorts.github.io/record-linkage-tutorial/>).

**Machine Learning Day**, Duke University

*Co-organizer*

Helped organize Duke's first Machine Learning Day for undergraduates and participated as a panel speaker.

**D3 Workshop**, NORC at the University of Chicago

*Co-instructor*

Designed and presented a workshop for NORC employees on the JavaScript plotting library D3 (<http://andee kaplan.com/d3workshop/>).

**Week of R**, Iowa State University

*Co-instructor*

Student run R workshop within the Department of Statistics covering the basics of R, plotting, data manipulation, scraping web data, and Shiny (<http://heike.github.io/rwrks/>).

#### CONTRIBUTED TALKS

- [1] **Kaplan, A.\*** and Steorts, R. C. "Counting Casualties in the Syrian Civil War with Bayesian Record Linkage". *Joint Statistical Meetings*. Topic Contributed Paper. ASA. Vancouver, BC, Canada, July 2018.
- [2] **Kaplan, A.\*** and Steorts, R. C. "Population Sized Graphical Record Linkage". *ISBA World Meeting*. Contributed Member Paper. ISBA. Edinburgh, UK, June 2018.
- [3] **Kaplan, A.\***, Kaiser, M., Lahiri, S., and Nordman, D. "A Simple, Fast Sampler for Simulating Spatial Data and Other Markovian Data Structures". *Joint Statistical Meetings*. Contributed Paper. ASA. Baltimore, MD, USA, Aug. 2017.
- [4] **Kaplan, A.\***, Nordman, D., and Vardeman, S. "An exposition on the propriety of restricted Boltzmann machines". *Joint Statistical Meetings*. Contributed Paper. ASA. Chicago, IL, USA, July 2016.
- [5] **Kaplan, A.\*** and Hare, E. "Introducing Statistics with intRo". *The R User Conference*. Contributed Paper. Stanford, CA, USA, June 2016.
- [6] **Kaplan, A.\*** and Hare, E. "Introducing Statistics with intRo". *Joint Statistical Meetings*. Topic Contributed Paper. ASA. Seattle, WA, USA, Aug. 2015.
- [7] Hare, E.\* and **Kaplan, A.** "IntRo: Software for Introductory Statistics". *Joint Statistical Meetings*. Contributed Paper. ASA. Seattle, WA, USA, Aug. 2015.
- [8] **Kaplan, A.\***, Hofmann, H., and Nordman, D. "gravicom - A web-based tool for community detection in networks". *Joint Statistical Meetings*. Contributed Paper. ASA. Boston, MA, USA, Aug. 2014.

- [9] Mouzon, I.\*, Genschel, U., Carriquiry, A., Nguyen, X. H., **Kaplan, A.**, Johnston, E., Kliemann, W., and Koehler, K. “Early College Performance, Gender, and Other Factors Influencing Continuation in STEM Fields”. *Joint Statistical Meetings*. Contributed Paper. ASA. Boston, MA, USA, Aug. 2014.
- [10] Genschel, U.\*, **Kaplan, A.**, Carriquiry, A., Johnston, E., Kliemann, W., Koehler, K., and Mouzon, I. “Statistical and Mathematical Self-Efficacy of Incoming Students at a Large Public University”. *Joint Statistical Meetings*. Contributed Paper. ASA. Boston, MA, USA, Aug. 2014.
- [11] Genschel, U.\*, **Kaplan, A.**, Carriquiry, A., Johnston, E., Kliemann, W., Koehler, K., and Mouzon, I. “Statistical and Mathematical Self-Efficacy of Incoming Students at a Large Public University”. *The Ninth International Conference on Teaching Statistics*. Contributed Paper. Flagstaff, AZ, USA, July 2014.

CONTRIBUTED  
POSTERS

- [1] **Kaplan, A.\***, Betancourt, B., and Steorts, R. C. “Life After Record Linkage: Tackling the Downstream Task with Error Propagation”. *New Researchers Conference*. Contributed Poster. Institute of Mathematical Statistics. Fort Collins, CO, USA, July 2019.
- [2] **Kaplan, A.\*** and Steorts, R. C. “Population Sized Record Linkage”. *New Researchers Conference*. Contributed Poster. Institute of Mathematical Statistics. Vancouver, BC, Canada, July 2018.
- [3] **Kaplan, A.\***, Nordman, D., and Vardeman, S. “Properties and Bayesian fitting of restricted Boltzmann machines”. *Frontiers in Forecasting*. Contributed Poster. Institute for Mathematics and its Application, University of Minnesota. Minneapolis, MN, USA, Feb. 2018.
- [4] **Kaplan, A.\***, Nordman, D., and Vardeman, S. “An Exposition on the Propriety of Restricted Boltzmann Machines”. *Conference on Data Analysis*. Contributed Poster. Los Alamos National Laboratory. Santa Fe, NM, USA, Mar. 2016.
- [5] **Kaplan, A.**, Lin, Y., and Mulrow, E.\*. “Visualizing Linked Data Sources for the National Children’s Study”. *Conference on Statistical Practice*. Contributed Poster. ASA. San Diego, CA, USA, Feb. 2016.
- [6] **Kaplan, A.\***, Genschel, U., Carriquiry, A., Johnston, E., Kliemann, W., Koehler, K., Mouzon, I., and Nguyen, X. H. “Mathematical Self-Efficacy of Incoming Students at a Large Public University”. *Women in Statistics Conference*. Student Poster. ASA. Cary, NC, USA, May 2014.
- [7] **Kaplan, A.\*** and Hare, E. “Putting Down Roots: A Graphical Exploration of Community Attachment”. *Joint Statistical Meetings*. Data Exposition Poster. ASA. Montreal, QC, Canada, Aug. 2013.
- [8] Hare, E.\* and **Kaplan, A.** “Can you buy a president? Politics after the Tillman Act”. *Joint Statistical Meetings*. Contributed Poster. ASA. Montreal, QC, Canada, Aug. 2013.

TEACHING  
EXPERIENCE

CSU	STAT 730	Advanced Theory of Statistics I	S20
CSU	STAT 400	Statistical Computing	F19
ISU	STAT 305	Engineering Statistics	S17, SU17
ISU	AGRON 590DS	Data Stewardship for Earth Systems Scientists	F16
ISU	STAT 226	Introduction to Business Statistics	S13

RESEARCH  
STUDENTS

*Graduate Research Assistants*  
**Ian Taylor, GRA**  
**Casey Schafer, GRA**

**Spring 2020 - Fall 2020**  
**Fall 2019**

	<i>Undergraduate Students</i>	
	Ritika Bharati (Duke University), Undergraduate research Srini Sunil (Duke University), Undergraduate research	Spring 2018 - Spring 2019 Fall 2017 - Spring 2019
INDUSTRY EXPERIENCE	<b>NORC at the University of Chicago</b> , Chicago, Illinois USA	
	<i>Graduate Research Assistant</i>	May, 2015 - August, 2015
	Summer internship with Statistics and Methodology Department. Primarily developed web-based interactive graphics using JavaScript library D3 to explore data linkage for extant sources. Additionally, performed data munging and low level data analysis as well as report generation for third-party clients in R and R Markdown.	
	<b>Banks Information Group</b> , Austin, Texas USA	
	<i>Independent Contractor</i>	July, 2011 - July, 2012
	Developed web-based environmental GIS reporting tool for Phase I reporting. Additionally, developed and implemented a web-based tool to convert images to PDF files programatically. Utilized ESRI ArcSDE and .NET/C#, as well as Microsoft SQL Server for development.	
	<b>Sense Corp</b> , Austin, Texas USA	
	<i>Consultant</i>	July, 2009 - July, 2011
	Designed monthly subscriber activity forecasts across key markets at a top-five broadband telecommunications company using ARIMA time series modeling in R. Developed an automated process and custom web application designed for Business Intelligence (BI) Group use to run forecasts and analyze long-term trends in activity. Analyzed the effects of explanatory factors on elevated truck rolls and presented findings to corporate leadership.	
	<b>Gelb Consulting Group</b> , Houston, Texas USA	
	<i>Intern Analyst</i>	June, 2008 - August, 2008
	Internal consultant focusing on revising several standard operating procedures, including regression and factor analysis.	
SERVICE AND LEADERSHIP	<b>Colorado State University</b>	
	<i>Seminar Co-organizer</i>	Fall 2019 - Spring 2020
	<i>Data Science Committee</i>	Fall 2019 - Spring 2020
	<b>Statistics in the Community (StatCom)</b>	
	<i>Network Outreach Coordinator</i>	2015 - 2017
	<i>Executive Committee, ISU Chapter</i>	2013 - 2017
	<b>Iowa State University</b>	
	<i>Student representative to departmental faculty meetings</i>	2015 - 2017
	<i>STATers, social organization for graduate students, Vice President</i>	2013 - 2014
	<i>Graduate and Professional Student Senate, Senator</i>	2012 - 2013
	<b>Reviewer</b>	
	<i>AIStats, American Political Science Review, Annals of Applied Statistics, Environmental and Ecological Statistics, Journal of the American Statistical Association, PLOS One, Statistics and Probability Letters</i>	
	<b>Conferences</b>	
	<i>Contributed Session Organizer, Joint Statistical Meetings, Philadelphia, PA, USA</i>	August 2020
	<i>Co-organizer, Symposium for Data Science &amp; Statistics, Pittsburgh, PA, USA</i>	June 2020



*Invited Session Chair, Joint Statistical Meetings, Denver, CO, USA*

August 2019

*Contributed Session Organizer, Joint Statistical Meetings, Vancouver, BC, Canada*

August 2018

PROFESSIONAL  
AFFILIATIONS

American Statistical Association (ASA), International Society for Bayesian Analysis (ISBA)

COMPUTING

- Mathematical and Statistical Computing: R, Rcpp, Shiny, Julia, JAGS, BUGS, SAS, Matlab; some experience with Python and SPSS.
- Other Languages: C++, JavaScript (and D3), Java, SQL, C#, .NET, HTML5, CSS3, Markdown.
- Content Management: Git