# Susan Vanderplas

# Curriculum Vitae

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	Education
2015	PhD, Statistics, Iowa State University
	Dissertation: The Perception of Statistical Graphics
2011	MS, Statistics, Iowa State University
2009	BS, Psychology & Applied Mathematical Sciences, Texas A&M University
	Professional Experience
2020	Assistant Professor, Statistics Department, University of Nebraska, Lincoln
2018	<b>Research Assistant Professor</b> , Center for Statistics and Applications in Forensic Evidence, Iowa State University
2015	Statistical Analyst/Consultant, Nebraska Public Power District
2015	Postdoc, Iowa State University Office of the Vice President for Research
	Publications
	Student advisees indicated with *. Contribution percentages estimated from git contributions using git fame where possible. Not all projects have github repositories for which this is meaningful.
	Peer Reviewed Publications
18	Robinson, Emily*, Howard, Reka, and <b>VanderPlas</b> , <b>Susan</b> (Jan. 2023). "You Draw It: Implementation of visually fitted trends with r2d3". In: <i>Journal of Data Science</i> . ISSN: 1680-743X. DOI: 10.6339/22-JDS1083.
172022	Contribution: Writing (10%), Advising (80%).  Bradford, Denise* and VanderPlas, Susan (Dec. 2022). "Exploring Rural Shrink Smart Through Guided Discovery Dashboards". In: <i>Journal of Data Science</i> , pp. 1–12. ISSN: 1680-743X. DOI: 10.6339/22-JDS1080.
16	Contribution: Programming and analysis (10%), Writing (10%), Advising (100%).  Wilhelm, Adalbert and VanderPlas, Susan (Nov. 2022). "Visual Narratives of the Covid-19 pandemic". In: Journal of Data Science, Statistics, and Visualisation 2.7, pp. 84–113. DOI: 10.
15	52933/jdssv.v2i7.64. URL: https://jdssv.org/index.php/jdssv/article/view/64. Contribution: Writing (60%).  Zemmels, Joseph*, Vanderplas, Susan, and Hofmann, Heike (Oct. 1, 2022). "A Study in Reproducibility: The Congruent Matching Cells Algorithm and cmcR package". In: <i>R Journal</i> . Accepted October 2022.
2022	Contribution: Programming and analysis (10%), Writing (20%), Advising (40%).

Robinson, Emily A.\*, Howard, Reka, and **Vanderplas**, **Susan** (Nov. 1, 2022). "Eye Fitting Straight Lines in the Modern Era". In: *Journal of Computational and Graphical Statistics* 0.ja, pp. 1–19. DOI:



- 2. 2010
  Towfic, Fadi, **Vanderplas**, **Susan**, Oliver, Casey A, Couture, Oliver, Tuggle, Christopher K, Greenlee, M Heather West, and Honavar, Vasant (2010). "Detection of gene orthology from gene co-expression and protein interaction networks". In: *BMC bioinformatics* 11. Suppl 3, S7. DOI: https://doi.org/10.1186/1471-2105-11-S3-S7.
- Hull, Rachel, Bortfeld, Heather, and **Koons**, **Susan** (2009). "Near-infrared spectroscopy and cortical responses to speech production". In: *The open neuroimaging journal* 3, p. 26. DOI: https://doi.org/10.2174/1874440000903010026.

## Other Publications

- 4. \_\_\_\_\_\_ Submitted as an invited response to Hullman & Gelman's "Designing for Interactive Exploratory Data Analysis Requires Theories of Graphical Inference".
  - **VanderPlas**, **Susan** (July 30, 2021). "Designing Graphics Requires Useful Experimental Testing Frameworks and Graphics Derived From Empirical Results". In: *Harvard Data Science Review* 3.3. DOI: https://doi.org/10.1162/99608f92.7d099fd0.
- 3. \_\_\_\_\_\_ Carriquiry, Alicia, Hofmann, Heike, Tai, Xiao Hui, and **Vanderplas**, **Susan** (Apr. 1, 2019). "Machine learning in forensic applications". In: *Significance* 16.2, pp. 29–35. DOI: https://doi.org/10.1111/j.1740-9713.2019.01252.x.
  - Contribution: Writing (50%).

    Submitted as an invited response to Donoho's "50 years of Data Science".
- 2. \_\_\_\_\_\_\_ Submitted as an invited response to Donoho's "50 years of Data Science".

  Hofmann, Heike and Vanderplas, Susan (Dec. 19, 2017). "All of This Has Happened Before. All of This Will Happen Again: Data Science". In: Journal of Computational and Graphical Statistics 26.4, pp. 775–778. DOI: https://doi.org/10.1080/10618600.2017.1385474.

  Contribution: Writing (75%).
- 1. 2013 Budrus, Sarah, Plas, Susan Vander, and Cook, Dianne (2013). "In tennis, do smashes win matches?" In: Significance 10.3, pp. 35–38. DOI: https://doi.org/10.1111/j.1740-9713. 2013.00665.x.
  - In Progress Generalized Parallel Coordinate Plots: ggpcp with Heike Hofmann and Antony Unwin. An R package for creation of generalized parallel coordinate plots. Submitted to JCGS, November 2022. Perception of Log Scales Assessment of perception and use of log scales to display exponential growth. 3 manuscripts currently in preparation.
    - **Bullet Signature Resampling** Method for resampling bullet signatures used to calculate match and non-match score distributions.

### Grants

### **Funded**

2022

2023

NIJ: R&D In Forensic Science, Automatic Acquisition and Identification of Footwear Class Characteristics, PI, Total: \$380,650

- **USDA-NIFA: Agriculture and Food Research Initiative**, *Corn Residue Adaptive Grazing Strategies*, Collaborator, Total: \$300,000
- NIST: Center for Statistics and Applications in Forensic Evidence, Footwear Class Characteristics and Human Factors, PI, Total: \$20,000,000, Sub: \$456,930
- USDA-NRCS: Conservation Innovation Grant On-Farm Trials, Improving the Economic and Ecological Sustainability of US Crop Production through On-Farm Precision Experimentation, PI, Total: \$4,000,000, Sub: \$400,000 (Split between 3 UNL co-PIs)
  - NSF: Smart and Connected Communities, Overcoming the Rural Data Deficit to Improve Quality of Life and Community Services in Smart & Connected Small Communities, PI, Total: \$1,500,000, Sub: \$123,445



2016	Clusters Beat Trend!? Testing Feature Hierarchy in Statistical Graphics, JSM, Section on Statistical Graphics, Chicago, IL
2015	Visual Aptitude and Statistical Graphics, InfoVis, IEEE, Chicago, IL
2014	<b>Do You See What I See? Using Shiny for User Testing</b> , <i>JSM</i> , Section on Statistical Graphics, Boston, MA
2014	Animint: Interactive, Web-Ready Graphics with R, Great Plains R User Group, Sioux Center, IA
2013	Signs of the Sine Illusion – why we need to care, $JSM$ , Section on Statistical Graphics, Montreal, ON, CA
	Seminars
2022	<b>Reproducible Science: Statistics, Forensics, and the Law</b> , <i>Statistics</i> , University of Nebraska - Lincoln, Lincoln, NE
2022	How to make good charts, Complex Biosystems, University of Nebraska - Lincoln, Lincoln, NE
2022	<b>Pandemics, Graphics, and Perception of Log Scales</b> , <i>Math</i> , University of Nebraska - Omaha, Omaha, NE
2022	<b>Automatic Acquisition of Footwear Class Characteristics</b> , Center for Statistical Applications in Forensic Evidence, Online
2021	<b>Pandemics, Graphics, and Perception of Log Scales</b> , <i>NUMBATS</i> , Monash University, Melbourne, Vic, AUS
2021	<b>Exploring Rural Quality of Life Using Data Science and Public Data</b> , <i>QQPM</i> , University of Nebraska - Lincoln, Lincoln, NE
2021	<b>Inconclusive Conclusions: Biases and Consequences</b> , <i>Law and Psychology Brown Bag</i> , University of Nebraska - Lincoln, Lincoln, NE
2021	<b>Visual Statistics: Communication and Graphical Testing</b> , <i>Animal Science</i> , University of Nebraska - Lincoln, Lincoln, NE
2021	<b>How to Make Good Charts</b> , <i>Biological and Systems Engineering GSA</i> , University of Nebraska - Lincoln, Lincoln, NE
2020	<b>Statistical Evaluation of Firearms and Toolmark Evidence</b> , <i>Statistics</i> , University of Nebraska - Lincoln, Lincoln, NE
	Software
	Dates show initial involvement; only packages which are no longer maintained have end dates.
2021	ggpcp, Generalized parallel coordinate plots, Repository
2020	vinference, Analysis of visual inference experiments, Repository
2019 2021	groovefinder, Identification of grooves in scans of bullet land engraved areas, Repository
2019	cmcR, Automated matching of 3d cartridge case scans using the congruent matching cells algorithm, Repository
2018	bulletxtrctr, Automated matching of 3d bullet scans, Repository
2018	x3ptools, Reading, manipulating, and visualizing x3p files, Repository

bulletsamplr, Resampling of bullet signatures, Repository

2018

2018	ShoeScrapeR, Acquisition of shoe images and metadata from online retailers, Repository
2020 2018 2021	ImageAlignR, Image registration algorithms for forensics, Repository
2013	animint, Animated, interactive web graphics for R using ggplot2 and d3.js, Repository
	Teaching
2022	<b>STAT 151</b> , <i>Introduction to Statistical Computing</i> , University of Nebraska - Lincoln, Flipped synchronous. Evals: 4.95 (mean), 5 (median)
2022	<b>STAT 218</b> , <i>Introduction to Statistics</i> , University of Nebraska - Lincoln, Online asynchronous. Evals: 3.72 (mean), 4 (median)
2022	STAT 850, Computing Tools for Statisticians, University of Nebraska - Lincoln, Flipped synchronous
2022	STAT 892, Writing in Statistics/TA Prep, University of Nebraska - Lincoln, In person synchronous
2022	STAT 982, Advanced Inference, University of Nebraska - Lincoln, Co-taught with Bertrand Clarke
2021	<b>STAT 218</b> , <i>Introduction to Statistics</i> , University of Nebraska - Lincoln, Online asynchronous Evals: 4.01 (mean), 4 (median)
2021	<b>STAT 850</b> , <i>Computing Tools for Statisticians</i> , University of Nebraska - Lincoln, Hybrid, flipped, synchronous. Evals: 4.79 (mean), 5 (median)
2020	<b>STAT 218</b> , <i>Introduction to Statistics</i> , University of Nebraska - Lincoln, Initially in person synchronous, then online asynchronous. Evals: 4.20 (mean), 4 (median)
2020	<b>STAT 850</b> , <i>Computing Tools for Statisticians</i> , University of Nebraska - Lincoln, Hybrid, flipped, synchronous. Evals: 4.76 (mean), 5 (median)
2019	<b>STAT 585</b> , <i>Data Technologies for Statistical Analysis</i> , Iowa State, Co-taught with Heike Hofmann. Evals: 4.92 (mean), 5 (median)
	Mentoring and Advising
	Ph.D.
2022	<b>Weihao (Patrick) Li</b> , <i>Monash University</i> , Advances in Artificial Intelligence for Data Visualization: Developing Computer Vision Models to Automate Reading of Data Plots, with Application to Predictive Model Diagnostics, co-advised with Dianne Cook and Emi Tanaka
2021	Rachel Rogers, <i>University of Nebraska - Lincoln</i> , Explainable Machine Learning for Forensics in Courtooms
2021	<b>Denise Bradford</b> , <i>University of Nebraska - Lincoln</i> , Dashboards for Exploratory Multivariate Data Analysis
2020	<b>Alison Kleffner</b> , <i>University of Nebraska - Lincoln</i> , Spatial Statistics and Visualization in Ecology and Agriculture, co-advised with Yawen Guan
2020	<b>Joseph Zemmels</b> , <i>Iowa State University</i> , Analysis and Matching of Cartridge Cases, co-advised with Heike Hofmann
2020	<b>Emily Robinson</b> , <i>University of Nebraska - Lincoln</i> , Perception of Log Scales, co-advised with Reka Howard
	MS
2023	
2022	Tyler Wiederich, University of Nebraska - Lincoln, Perception of Three Dimensional Graphics

2022	Muxin Ha, University of Nebraska - Lincoln, Automatic Recognition of Shoe Class Characteristics
2021	Jayden Stack, University of Nebraska - Lincoln, Automatic Recognition of Shoe Class Characteristics
2020	Ved Piyush, University of Nebraska - Lincoln, Machine Learning and Computer Vision
2019	<b>Joseph Zemmels</b> , <i>Iowa State University</i> , Analysis and Matching of Cartridge Cases, co-advised with Heike Hofmann
2019	<b>Eryn Blagg</b> , <i>Iowa State University</i> , Analysis of Wear Development in Three-Dimensional Shoe Scans, co-advised with Heike Hofmann
2018 2019	Miranda Tilton, Iowa State University, Footwear Class Characteristics and Computer Vision
	Undergraduate
2021	<b>Xinyu Liu</b> , <i>University of Nebraska - Lincoln</i> , Machine Learning for Shoe Sole Images, UNL FYRE Program
2019	<b>Jason Seo</b> , <i>Iowa State University</i> , R package for visualization of neural networks using the python library keras-vis
2018	Talen Fisher, Iowa State University, Database engineering and tools for working with x3p files
	Summer
2019	<b>Molly McDermott and Andrew Maloney</b> , <i>Iowa State University</i> , Bullet Scan Quality and Machine Learning
2019	<b>Syema Ailia, Emmanuelle Hernandez Morales, Tiger Ji</b> , <i>Iowa State University</i> , Rapid quality control tools for confocal microscopy scans
2018	<b>Ben Wonderlin, Jenny Kim</b> , <i>Iowa State University</i> , Footwear Class Characteristics and Computer Vision, Young Engineers and Scientists Program
	Outreach
	Legal Briefs and Testimony
2022	Amicus Curiae Brief, Supreme Court of New Jersey, A-56-18 State v. Michael Olenowski (082253)
2022	Amicus Curiae Brief, Supreme Court of Maryland, In Support of Appellant Kobina Ebo Abruquah
2022	<b>Written Testimony</b> , <i>Cook County Circuit Court</i> , Reply to Response by FBI Laboratory filed in Illinois v. Winfield and Affidavit by Biederman et al. (2022) filed in US v. Kaevon Sutton (2018 CF1 009709)
2021	<b>Written Testimony</b> , <i>Cook County Circuit Court</i> , Assessment of the Reliability of Studies of Firearms Examination in Forensics
	Forensic Practitioners
2021	<b>Blog Post</b> , $\mathit{CSAFE}$ , Q&A - Treatment of Inconclusive Results in Error Rates of Firearm Studies (Link)
2021	Webinar, CSAFE, Treatment of Inconclusive Results in Error Rates of Firearm Studies
2020	CSAFE Firearms Workshop, Invited Talk: Open Source Software in Forensics

	Service
	Service to the Discipline
2023 2025	Advisory Committee on Forensic Science, ASA
2023	Graphics Section Chair, ASA
2024 2022 2023	Graphics Section Chair-Elect, ASA
2021	Associate Editor, Journal of Computational and Graphical Statistics
2020	Associate Editor, R Journal
2020	<b>Graphics Section Program Chair (2021)</b> , <i>ASA</i> , Official duties include planning JSM sessions in 2020 and running the Data Expo in 2022
2020	<b>Program Committee (Graphics)</b> , Symposium on Data Science and Statistics 2020, Visualization Track co-chair
2019	<b>Gertrude Cox Scholarship Committee Member</b> , <i>ASA</i> Assisted with selection of the Gertrude Cox Scholarship recipients and honorable mentions
2019 2017 2019	<b>Uncoast Unconference Organizing Committee</b> , Des Moines, IA Organized the first R Uncoast Unconference to bring R developers in flyover country together for a 3-day event. Over 50% of the participants at the conference were women or minorities, and participants included students, academics, and industry R programmers with a variety of experience levels in R programming. <b>Graphics Section Representative to the Council of Sections</b> , <i>ASA</i>
Reviewing	I have reviewed papers for JCGS, the R Journal, JASA, The American Statistician, Forensic Science International, Law Probability and Risk, Forensic Sciences Research, and Symmetry.
	Department and Institutional Service
2021	R Workshop Coordinator
	Develop and coordinate a week of R workshops taught in January, and May each year
2021	Faculty Senate, Statistics Department Representative
2021	Faculty Advisory Council, Vice-Chair
2021	MS Comp Exam Committee  Committee to evaluate the current MS Stat Day presentation component and consider other options for the MS program
2021	Digital Ag Minor Committee  Committee to develop a digital ag minor
2021	Data Science Joint Committee  Committee of Math, Computer Science, and Statistics departments to develop a comprehensive undergraduate data science program
2020	Seminar Organizer
2020	Arrange speakers for the department seminar
•	SCIL 101 Poster Judge, Fall Semester
2019	Undergraduate Program Committee  Design an undergraduate statistics major and submit the proposal to the university

Design an undergraduate statistics major and submit the proposal to the university

