# Joshua M. Rosenberg

Assistant Professor, STEM Education

#### Curriculum Vita

Research interests: Science education, data science education, quantitative and computational research methods, educational technology

Theory and Practice in Teacher Education

University of Tennessee, Knoxville

- **Imrosenberg@utk.edu Imrosenberg@utk.edu**
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#### 0.1 Education

2011 — 2015	Ph.D., Educational Methodology, Policy and Leadership, University of Oregon <i>Dissertation:</i> Teacher and School Contributions to Student Growth
2000 2000	
2008 — 2009	M.S. Educational Leadership, University of Oregon
	Terminal Project: Educational Accountability: An Examination of Policy and Measurement Practices
2003 - 2007	B.S. Elementary Education, Utah State University

# 0.2 Brief professional history

2018 —	<b>Research Assistant Professor</b> , Behavioral Research and Teaching, University of Oregon
2015 — 2018	<b>Research Associate</b> , Behavioral Research and Teaching, University of Oregon ( <i>on-leave during post-doc</i> )
2016 — 2017	IES Post-Doctoral Research Fellow, Center on Teaching and Learning, University of Oregon
2009 — 2015	<b>Research Assistant</b> , Behavioral Research and Teaching, University of Oregon

# 0.3 Additional training (received)

Applied Machine Learning (2019). Two-day workshop lead by Dr. Max Kuhn

Summer Institute on Computational Social Science (2018). Remote week-long workshop lead by Drs. Matthew Salganik & Chris Bail

Master R Developer Workshop (2017). Two-day workshop lead by Dr. Hadley Wickham

Institute of Education Sciences: Cluster-randomized trials (2016). Two-week long workshop lead by Drs. Larry V. Hedges & Spyros Konstantopoulos

# 1 Teaching

Icons link to additional content

# 1.1 Data science specialization

I have led the design, development, and teaching of a new five-course graduate-level data science specialization offered through the University of Oregon's College of Education. The following lists the sequence of courses in the specialization, as well as the year/quarter the course was most recently taught.

- 1. Introduction to data science with R. (Fall, 2018). CRN: 12074; 3 credit hours.
- 2. Communicating and transforming data. (Winter, 2019). CRN: 27553; 3 credit hours. 🗬 🌐
- 3. Functional programming with R. (Spring, 2019). CRN: 35699; 3 credit hours. 🗬 🌐
- 4. Applied predictive modeling. (Spring, 2020). CRN: [planned]; 3 credit hours.
- 5. Capstone. (Summer, 2020). CRN: [planned]; 4 credit hours. 🜍

## 1.2 Additional courses taught

- 1. Multiple regression in educational research. (Fall, 2018). CRN: 17258; 3 credit hours.
- 2. Survey of educational research methods. (Summer, 2018). CRN: 40797; 3 credit hours.
- 3. Exploring data with R. (Spring/Fall, 2017). CRN: 17214/37117; 4 credit hours.

#### 1.3 Related experience

- 1. Data processing, analysis, and visualization w/R. (Fall/Winter/Spring, 2015/2016). Taught internally to BRT researchers credit hours.
- 2. Evidence-based decision making. (Winter, 2017). CRN: 22130 [co-taught w/Dr. Nancy Heaps]; 4 credit hours.
- 3. Multiple regression in educational research [supervised teaching]. (Fall, 2015). 4 credit hours.
- 4. Public elementary school teacher. (2007-08).

# 2 Scholarship

Icons link to additional content

# 2.1 Peer-Reviewed Publications

- in press 16. Kovensky, R., Anderson, D., and Leve, L (in press). Early adversity and sexual risk in adolescence: externalizing behaviors as a mediator. Journal of Child & Adolescent Trauma. doi: 10.1007/s4065
- 2019 15. Anderson, D (2019). Exploring teacher and school variance in students' within-year reading and mathematics growth. *School Effectiveness and School Improvement.* 30, 510-530. doi: 10.1080/09243453.2019.1618349

- Shanley, L., Clarke, B., Anderson, D., Turtura, J., Doabler, C., Kurtz-Nelson, E., & Fien, H (2019). Exploring the utility of assessing early mathematics intervention response via embedded assessment. *School Psychology*. doi: 10.1037/spq0000326
- 13. Nese, J. F. T., Farley, D., & Anderson, D (2019). Educator–reported instructional characteristics of grade 1 reading interventions within a CBM assessment system. *Learning Disabilities: Research and Practice*. doi: 10.1111/ldrp.12191
- 12. Tindal, G., and Anderson, D (2019). Changes in status and performance over time for students with specific learning disabilities. *Learning Disabilities Quarterly.* 42, 3-16. doi: 10.1188/0731948718806660
- 2018 11. Rosenberg, J, Beymer, P. N., Anderson, D., van Lissa, C.J., and Schmidt, J. A (2018). tidyLPA: An R package to easily carry out latent profile analysis (LPA) using open-source or commercial software. *Journal of Open Source Software*. *3*(30), 978. 10.21105/joss.00978
  - 10. Fien, H., Anderson, D., Nelson, N. J., Kennedy, P., Baker, S. K., & Stoolmiller, M (2018). Examining the impact and school–level predictors of impact variability of an 8th grade reading intervention on at–risk students' reading achievement. *Learning Disabilities Research & Practice. 33*, 37-50. doi: 10.1111/ldrp.12161
- 9. Anderson, D., Kahn, J, and Tindal, G (2017). Exploring the robustness of a unidimensional item response theory model with empirically multidimensional data. *Applied Measurement in Education*. *30*, 163-177. doi: 10.1080/08957347.2017.1316277
  - 8. Park, B. J., Anderson, D., Tindal, G., & Alonzo, J (2017). A validity argument for a mathematics curriculum-based measure: Implications for response to intervention decision-making. *Journal of Educational Administration and Policy. 2*, 5-18. 10.22553/keas/2017.2.1.5
- 7. Farley, D., Anderson, D., Irvin, P. S., & Tindal, G (2016). Modeling reading growth in Grades 3-5 with an alternate assessment. *Remedial and Special Education*. 38, 195-206. doi: 10.1177/0741932516678661
  - 6. Saven, J. L., Anderson, D., Nese, J. F. T., Farley, D., & Tindal, G (2016). Patterns of statewide test participation for students with significant cognitive disabilities. *The Journal of Special Education.* 49, 209-220. doi: 10.1177/0022466915582213
- 5. Anderson, D., Farley, D., & Tindal, G (2015). Test design considerations for students with significant cognitive disabilities. *The Journal of Special Education*. 49, 3-15. doi: 10.1177/0022466913491834
  - 4. Anderson, D., Irvin, P. S., Alonzo, J., & Tindal, G (2015). Gauging item alignment through online systems while controlling for rater effects. *Educational Measurement: Issues and Practice.* 34, 22-33. doi: 10.1111/emip.12038

- 3. Patarapichayatham, C., Anderson, D., and Kamata, A (2013). Middle school transition: An application of latent transition analysis (LTA) on easyCBM benchmark mathematics data. *The International Journal of Educational Administration and Development. 4*, 745-756.
- 2012 2. Nese, J. F. T., Biancarosa, G., Anderson, D., Lai, C.-F., Alonzo, J., and Tindal, G (2012). Within-year oral reading fluency with CBM: A comparison of models. *Reading and Writing. 25*, 887-915. doi: 10.1007/s11145-011-9304-0
- 2011 1. Anderson, D., Lai, C., Alonzo, J. and Tindal, G (2011). Examining a grade-level math CBM designed for persistently low-performing students. *Educational Assessment*. *16*, 15-34. doi: 10.1080/10627197.2011.551084

# 2.2 Manuscripts under review for publication

1. Anderson, D., Rowley, B., Irvin, P. S., Rosenberg, J. M., & Stegenga, S (*revise & resubmit*). Evaluating content-related validity evidence using a text-based, machine learning procedure. •

# 2.3 Book chapters

- 2. Rosenberg, J. M., Lawson, M. A., Anderson, D., Rutherford, T., & Jones, R. S (*forthcoming*). Making data science "count": Data science and Learning, Design, and Technology research. In E. Romero-Hall (Ed.). *Research Methods in Learning Design & Technology* Routledge: New York, NY
- 1. Tindal, G., and Anderson, D (2011). Validity evidence for making decisions about accommodated and modified large-scale tests. In Elliot, S. N., Kettler, R. J., Beddow, P. A., & Kurz, A. (Eds.). *Accessible tests of student achievement: Issues, innovations, and applications* (pp. 183-200). New York, NY: Springer

# 2.4 National & International Conference Presentations

- 29. Anderson, D., Rowley, B., Stegenga, S., Irvin, P. S., and Rosenberg, J. M (April, 2019). Evaluating content-related validity evidence using text modeling.

  Paper presented at the annual meeting of the National Council on Measurement in Education, Toronto, ON.
- 2018 28. Anderson, D., and Tindal, G (October, 2018). Changes in status and performance for students with learning disabilities. Poster presented at the annual meeting of the Council for Learning Disabilities, Portland, OR.
  - 27. Anderson, D., and Stevens, J. J (April, 2018). *Exploring and visualizing school achievement and school effects*. Paper presented at the annual meeting of the National Council on Measurement in Education, New York, NY.

- 26. Stegenga, S., Anderson, D., Munger, K., and Wennerstrom, E. K (March, 2018). *Big Data... and Babies!? A Mixed Methods Systematic Scoping Review of Strenghts, Challenges, and Implications of Big Data Use in Early Intervention and Eartly Childhood.* Poster presented at the Conference on Research Innovations in Early Intervention, San Diego, CA.
- 25. Anderson, D., Stevens, J. J., and Nese, J. F. T (April, 2017). *Visualizing Achievement Gaps Across the Full Distribution*. Paper presented at the annual meeting of the National Council on Measurement in Education, San Antonio, TX.
  - 24. Stevens, J. J., Anderson, D., Nese, J. F. T., and Tindal, G (April, 2017). *Using Effect Size Measures to Estimate and Report Achievement Gaps*. Paper presented at the annual meeting of the National Council on Measurement in Education, San Antonio, TX.
  - 23. Pilger, M., Fien, H., Nelson, N. J., Anderson, D. and Otterstedt, J (February, 2017). Self-Regulation and Math Achievement: Potential Mitigating Benefits of Instructional Gaming. Paper presented at the annual meeting of the National Association of School Psychologists, Washington, DC.
  - 22. Nese, J. F. T., Anderson, D., and Farley, D (February, 2017). *What Does Reading Intervention Look Like?*. Poster presented at the Pacific Coast Research Conference, Coronado, CA.
- 2016 21. Anderson, D., and Stevens, J. J (December, 2016). *Visualizing Achievement Gaps Across the Full Scale*. Poster presented at the Principal Investigators Meeting, Institute of Education Sciences, Washington, DC.
  - 20. Anderson, D (May, 2016). Exploring the Latino-White Achievement Gap Across Disability Classifications Over Time. Poster presented at the Education and Inequality in 21st Century America conference at Stanford University, Palo Alto, CA.
  - 19. Anderson, D., and Stevens, J. J (April, 2016). *Cohort and content variability in value-added model school effects*. Paper presented at the annual meeting of the National Council on Measurement in Education, Washington, DC.
- 2015 18. Anderson, D., and Stevens, J. J (April, 2015). *Exploring the impact of cohort variability on teacher effects*. Paper presented at the annual meeting of the National Council on Measurement in Education, Chicago, IL.
  - 17. Anderson, D (April, 2015). Within-year variance in mathematics growth between students, teachers, and schools. Poster presented at the annual meeting of the American Educational Research Association, Chicago, IL.
  - 16. Anderson, D., Irvin, P. S., Nese, J. F. T, Alonzo, J., Tindal, G (April, 2015). *National middle school mathematics within-year growth norms*. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.
  - 15. Anderson, D., Kahn, J. D., Alonzo, J, and Tindal, G (April, 2015). *Exploring the item factor structure of a CCSS-aligned middle school mathematics CBM.* Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.

- 14. Farley, D., Anderson, D., Irvin, P. S., Saven, J. L., and Tindal G (April, 2015). Modeling reading growth for alternate assessments based on alternate achievement standards (AA-AAS). Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL.
- 2013 13. Anderson, D., Irvin, P. S., Alonzo, J., & Tindal, G (April, 2013). *Modeling rater* effects in a formative mathematics alignment study. Paper presented at the annual meeting of the National Council on Measurement in Education, San Francisco, CA.
  - 12. Irvin, P. S., Anderson, D., Saven, J., Alonzo, J. and Tindal, G (April, 2013). *Within-year growth in math: Implications for progress-monitoring using RTI.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
  - 11. Saven, J., Anderson, D., Nese, J. F. T., Alonzo, J., and Tindal, G (April, 2013). *Teacher decision making and within-year growth in math.* Paper presented at the annual meeting of the American Educational Research Association, San Francisco, CA.
  - 10. Patarapichayatham, C., Nese, J. F. T., & Anderson, D (April, 2013). Within-year grade 2 math growth: Using a 2PL second-order item response theory growth model. Paper presented at the annual meeting of the National Council on Measurement in Education, San Francisco, CA.
  - 9. Anderson, D., Alonzo, J., and Tindal, G (February, 2013). *Best practices in oral reading fluency administration*. Paper presented at the annual meeting of the National Association of School Psychologists, Seattle, WA.
  - 8. Patarapichayatham, C., Anderson, D., & Kamata, A (February, 2013). *Middle School Transition: An Application of Latent Transition Analysis (LTA) on easyCBM® Benchmark Mathematics Data*. Paper presented at the Conference on Educational Reform, SiemReap, Cambodia.
- 7. Anderson, D (June, 2012). *An analysis of growth in alternate assessments*.

  Paper presented at the annual meeting of the Council of Chief State School Officers (CCSSO), National Conference on Student Assessment, Minneapolis, MN.
  - 6. Alonzo, J., Park, B.J., Lai, C.F., Anderson, D., and Irvin, P. S (February, 2012). *The appropriateness of different types of CBM measures for first- and second-grade students receiving literacy instruction in Spanish*. Poster presented at the Pacific Coast Research Conference, Coronado, CA.
- 5. Park, B. J., Anderson, D., Alonzo, J., and Tindal, G (April, 2011). *Use of Student Growth to Predict State Assessment Performance*. Paper presented at the annual meeting of the American Educational Research Association, New Orleans. LA.

- 4. Park, B. J., Anderson, D., Nese, J. F. T., Alonzo, J., and Tindal, G (April, 2011). *The Classification Accuracy of Mathematics Screening Measures*. Poster presented at the annual meeting of the American Educational Research Association, New Orleans, LA.
- 3. Nese, J. F. T., Anderson, D., and Tindal, G (May, 2010). *The invariance of the easyCBM® mathematics measures across educational setting, language, and ethnic groups.* Paper presented at the annual meeting of the National Council of Measurement in Education, Denver, CO.
  - 2. Anderson, D., Park, B. J., and Tindal, G (May, 2010). *An examination of the easyCBM® benchmark tests and the Oregon statewide tests in grades 6-8 mathematics*. Paper presented at the annual meeting of the American Educational Research Association, Denver, CO.
  - 1. Anderson, D (May, 2010). Accountability plans and the growth model pilot program: An examination of state policy effects on the percentage of schools making adequate yearly progress. Poster presented at the annual meeting of the American Educational Research Association, Denver, CO.

## 2.5 Regional conferences

- 4. Anderson, D (September, 2018). *My research and the COE*. Presentation at the Joint Meeting of the University of Oregon's Data Science Initiative and Oregon Health and Science University.
- 3. Anderson, D (June, 2018). Contribute to open source with pretty slides. Presentation at the annual Cascadia R Conference.
- 2. Anderson, D (April, 2018). *Developing your first R package: A case study with esvis*. Presentation at the Eugene R Users Group Meetup.
- 1. Anderson, D (June, 2017). esvis: An R package for effect size visualizations. Presentation at the annual Cascadia R Conference.

### 2.6 Technical reports (selected)

I am a co-author on over sixty technical reports. Below is a sample of 10 that are among the most cited.

- 10. Anderson, D., Alonzo, J., Tindal, G., Farley, D., Irvin, P. S., Lai, C. F., Saven, J. L., Wray, K. A (2014). *Technical Manual: easyCBM* (Technical Report No. 1408). Eugene, OR: Behavioral Research and Teaching, University of Oregon.
- 9. Anderson, D (2013). Hierarchical Linear Modeling (HLM): An Introduction to Key Concepts Within Cross-Sectional and Growth Modeling Frameworks (Technical Report No. 1308). Eugene, OR: Behavioral Research and Teaching, University of Oregon.

- 8. Anderson, D., Irvin, P. S., Patarapichayatham, C., Alonzo, J., & Tindal, G (2012). *The development and scaling of the easyCBM CCSS middle school mathematics measures* (Technical Report No. 1207). Eugene, OR: Behavioral Research and Teaching, University of Oregon.
- 7. Anderson, D., Park, B. J., Lai, C. F., Alonzo, J., & Tindal, G (2012). *An examination of test-retest, alternate form reliability, and generalizability theory study of the easyCBM reading assessments: Grade 1* (Technical Report No. 1216). Eugene, OR: Behavioral Research and Teaching, University of Oregon.
- 6. Lai, C.F., Nese, J.F.T., Jamgochian, E.M., Kamata, A., Anderson, D., Park, B.J., Alonzo, J., & Tindal, G (2010). *Technical adequacy of the easyCBM primary-level reading measures (Grades K-1), 2009-2010 version* (Technical Report No. 1003). Eugene, OR: Behavioral Research and Teaching, University of Oregon.
- 5. Sáez, L., Park, B. J., Nese, J. F. T., Jamgochian, E. M., Lai, C. F., Anderson, D., Kamata, A., Alonzo, J., & Tindal, G. (2010) (2010). *Technical Adequacy of the easyCBM Reading Measures (Grades 3-7), 2009-2010 Version* (Technical Report No. 1005). Eugene, OR: Behavioral Research and Teaching, University of Oregon.
- 4. Nese, J. F. T., Lai, C. F., Anderson, D., Park, B. J., Tindal, G., & Alonzo, J (2010). *The alignment of easyCBM math measures to curriculum standards* (Technical Report No. 1002). Eugene, OR: Behavioral Research and Teaching, University of Oregon.
- 3. Nese, J. F. T., Lai, C. F., Anderson, D., Jamgochian, E. M., Kamata, A., Sáez. L., Park, B. J., Alonzo, J., & Tindal, G (2010). *Technical adequacy of the easyCBM mathematics measures: Grades 3-8, 2009-2010 version* (Technical Report No. 1007). Eugene, OR: Behavioral Research and Teaching, University of Oregon.
- 2. Anderson, D., Lai, C. F., Nese, J. F. T., Park, B. J., Sáez. L., Jamgochian, E. M., Alonzo, J., & Tindal, G (2010). *Technical adequacy of the easyCBM primary-level mathematics measures (grades K-2), 2009-2010 version* (Technical Report No. 1006). Eugene, OR: Behavioral Research and Teaching, University of Oregon.
- 1. Jamgochian, E. M., Park, B. J., Nese, J. F. T., Lai, C. F., Sáez. L., Anderson, D., Alonzo, J., & Tindal, G (2010). *Technical adequacy of the easyCBM grade 2 reading measures* (Technical Report No. 1004). Eugene, OR: Behavioral Research and Teaching, University of Oregon.

# 3 External Funding Activity

Icons link to additional content

#### 3.1 Under review

- 1. Community, opportunity, and disparity in educational systems: Project CODES. July 2020 to June 2024. Proposed budged: \$1,399,808. **Role:** Principal Investigator. FTE: 0.30.
- 2. Digital assessments of writing using multiple metrics to reflect improvement for students with disabilities. September 2020 to August 2024. Proposed budged: \$1,399,163. **Role:** Principal Investigator. FTE: 0.35.
- 3. Community health and school readiness: Closing the gap. January 2020 to December 2020. Proposed budged: \$48,903.17. **Role:** Principal Investigator. FTE: 0.00.

# 3.2 Current projects

- 1. Evaluation of return to school programs for traumatic brain injury. September 2019 to August 2023. Total budged: \$2,189,469. **Role:** Statistical analyst/advisor. PI: Ann Glang. FTE: 0.10.
- 2. Oregon Extended Assessment. September 2019 to August 2020. Total budged: \$628,012. **Role:** Statistical analyst/psychometrician. Pl: Gerald Tindal. FTE: 0.24.

## 3.3 Completed projects

- 1. Developing middle school mathematics progress monitoring measures. June 2010 to June 2014. Total budged: \$1,631,403. **Role:** Project Manager. Pl: Gerald Tindal. FTE: 0.51 to 0.61 across project years.
- 2. National research and development center on assessment and accountability. July 2011 to June 2018. Total budged: \$11,677,134. **Role:** Research Associate. PI: Gerald Tindal. FTE: 0.10 to 0.47 across project years.
- 3. Reliability and validity evidence for progress meaures in reading. June 2010 to May 2014. Total budged: \$1,596,638. **Role:** Research Assistant. PI: Gerald Tindal. FTE: 0.28 to 0.45 across project years.

# 4 Software development

Icons link to additional content

I am active in the R community and have developed a number of packages. My GitHub repositories for R rank in the top 30 (of 8,590) nationally and top 100 (of 72,387) worldwide. Below is a summary of packages I have authored and contributed to, as well as a few interactive data applications.

#### 4.1 Author

- 6. Barrett, T. S., & Anderson, D (2019). biosketchr: Rmarkdown for biosketches. R package version 0.1.4.
- 5. Anderson, D., Heiss, A., & Rosenberg, J. M (2019). equatiomatic: Convert R models to LaTeX equations. R package version 0.0.0.9000.
- 4. Anderson, D (2018). slidex: Convert microsoft PowerPoint slides to markdown/HTML slides. R package version 0.0.0.9000.
- 3. Anderson, D (2018). esvis: Visualization and estimation of effect sizes. R package version 0.2.0. •
- 2. Anderson, D (2016). sundry: A sundry of convenience functions. R package version 0.0.0.9000.
- 1. Anderson, D (2015). r2Winsteps: A package for interfacing between R and the Rasch modeling software Winsteps. R package version 0.0.0.9000.

#### 4.2 Contributor

- 2. Xie, Y (2018). xaringan: Presentation ninja. R package version 0.6.3. 🔾 🏶
- 1. Rosenberg, J. M (2018). tidyLPA: Easily carry out latent profile analysis. R package version 0.1.3. ••

# 4.3 Web applications

- 2. Anderson, D (2019). Geographical variance in achievement gaps. 🖓 🏶
- 1. Anderson, D (2019). Early learning alliance.

#### 5 Professional Service

# 5.1 Working Committees

- 3. Core Member (two-year appointment): Social Systems Data Science Network. (2019-current). University of Oregon.
- 2. Faculty Advisory Committee: Research Advanced Computing Services. (2018-current). University of Oregon.
- 1. Panel Member, Next Generation Assessment Review for Accessibility for Students with Disabilities. (August, 2015). Sponsored by HumRRO and the Thomas B. Fordham Institute.

#### 5.2 Doctoral committees

I have served on the following doctoral committee.

1. Sondra Stegenga. (2018-2019). Dissertation title: *Maximizing pilot phase measures to inform quality improvement: Using a sequential mixed methods design with interrupted time series to examine feasibility, uptake, and drivers of an evidence based practice in part c/early intervention systems.* University of Oregon.

# 5.3 Workshops delivered

- 2. Developing transparent and reproducible research with R. (April, 2019). Training provided at the Annual meeting of the American Educational Research Association, Toronto, ON.
- 1. A taste of R: Mini-course on R (4 sessions, two hours each). (Winter, 2017). Training provided for University of Oregon faculty in the College of Education.

# 5.4 Ad hoc reviewer

I have served as a peer reviewer for the following journals:

Educational Researcher	Reading Research Quarterly		
American Educational Research Journal	Journal of Special Education		
Educational Measurement: Issues and Practice	Remedial and Special Education		
Applied Psychological Measurement	Open Education Studies		
Educational Assessment	Studies in Educational Evaluation		
	Language Testing		

#### 6 Awards

- 2. Outstanding reviewer: Educational Researcher. (2017).
- 1. Terminal project of distinction. (2009). Awarded for outstanding Master's degree Terminal Project.

# 7 Professional Affiliations

- 3. American Educational Research Association
- 2. National Council of Measurement in Education
- 1. Data Visualization Society