ROLAND B. STARK

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CURRICULUM VITAE

RESEARCH and ANALYSIS

Statistician, Research Consultant, and Principal, INTEGRATIVE STATISTICS, Waltham and Maynard, MA (2001-present)
- ♦ Assist attorneys, health and higher-ed. institutions, nonprofits, businesses, and academics with:
  - o Research design, from audience needs and budget constraints to power analysis, psychometrics, and techniques of behavioral economics.
  - o Data collection and management, including effective use of survey and statistical software.
  - o Resourceful data analysis, including multivariate methods such as multiple regression, binary and multinomial logistic modeling, factor and cluster analysis, and Monte Carlo simulation.
  - o Insightful interpretation and sharp, persuasive presentations of findings.
- ♦ Serve as an expert and/or expert witness in legal cases, both criminal and civil.
- ♦ Conducted large-scale projects in health care (healthcare utilization, nurses' working conditions); education (financial aid modeling, teacher salaries and retention); and business (school-bus accident reduction, employee training needs).
- ♦ Institutional clients include Princeton University, Kaiser Permanente, Women's Bar Association, Ropes & Gray LLP, and UMass Lowell.

Senior Research Analyst, DELTAQUEST FOUNDATION, Concord, MA (Jan. 2019 – Jan. 2022)
- ♦ Conducted innovative research on quality of life for patients and their caregivers.
  - o Investigated ways of coping with major conditions and events such as cancer, spinal surgery, hemophilia, rare diseases, and medical treatments.
  - o Developed and improved survey methods for valid, reliable assessment of patient and caregiver experiences.
  - o Created and cross-validated predictive models of recovery.
  - o Developed code in Mplus, SPSS, and R and conducted in-depth multivariate analyses.
  - o Collaborated with physicians, pharmaceutical companies, and other researchers.
  - o Contributed to 16 publications in peer-reviewed journals.

Chief Research Officer, REINFORCED CARE, INC., Ashland & Raynham, MA (2016-18; Senior Research Analyst 2012-16)
- ♦ Analyzed and interpreted extensive patient data for hospital leadership.
  - o Identified predictors and causes of post-discharge outcomes based on complex data feeds from hospitals and telephone outreach.
  - o Created predictive models enabling hospitals to target interventions to patients most in need.
  - o Investigated hospital quality improvements that would also increase revenue.
  - o Designed research with and presented findings to chief executives and directors of quality improvement and case management.
- ♦ Introduced and/or trained colleagues in statistical techniques: data mapping, path diagrams, random forests, Monte Carlo simulation, censored regression, CHAID, MICE, ARIMA, LASSO, and specialized *R* packages.
- ♦ Led marketing initiatives encompassing collateral, white papers, and website redesign. Represented the company through proposals, publications, and presentations.

Senior Research Associate, MAGUIRE ASSOCIATES, INC., Concord, MA (2007-2012)
- ♦ Conducted market research and analysis of institutional data to support marketing, retention, and alumni-outreach efforts in higher education.
  - o Collaborated with administrators to ensure fidelity of research to institutional needs.
  - o Designed surveys, focus groups, and evaluations.
  - o Managed project flow and supervised design, data collection, processing, analysis, and reporting.
  - o Created in-depth reports addressing school image; price sensitivity; and other drivers of student, parent, and alumni decisions. Presented findings to presidents, deans, and faculty.
- ♦ Co-led development of a new multidimensional service line to increase student retention. Co-created a 90-minute retention webinar for publication and sale.
- ♦ Trained colleagues in statistics, data graphics, psychometrics, and behavioral economics.
- ♦ Produced and contributed to company proposals and publications.
- ♦ Clients included Fordham, Carnegie-Mellon, Bates, Georgia Tech, and U. of New Mexico.

Statistician/Researcher, HARVARD GRAD. SCHOOL OF EDUCATION, Cambridge, MA (2006-07; Research Assistant IV 2003-06)
- ♦ Designed and conducted research and evaluations for online courses aimed at improving classroom teaching and supporting school reforms internationally.
  - o Coordinated all aspects of large-scale internet surveys administered in three languages.
    - ✓ Designed surveys using primary and secondary research on cross-cultural and online methods.
    - ✓ Introduced multivariate statistics and used data graphics and thematic analysis to investigate key issues for reports, web pages, and promotional presentations.
  - o Supervised or advised colleagues in processing, coding, and sharing data and use of SPSS and Excel.
  - o Created innovative quality assurance approaches as part of a long-term team project.
    - ✓ Helped direct development, training, and pilot testing for assessment tools used by 45 employees.
    - ✓ Designed and conducted classroom observations and focus groups.
- ♦ Contributed to grant proposals, case studies, and reports for donors, accreditors, and journals.

Research Associate, INTERCULTURAL CENTER FOR RESEARCH IN EDUCATION, Arlington, MA (2002)
- ♦ Developed tools for managing an accountability system encompassing 35 Boston agencies. Customized tools to streamline agencies' reporting and to build in automatic accuracy checks.
- ♦ Evaluated large-scale public school and early childhood programs in Boston and New Haven.
  - o Constructed surveys, achievement tests, and classroom observation guidelines.
  - o Combined quantitative analysis, thematic analysis, and technical secondary research to create reports; presented findings internally and to clients.
  - o Supervised data entry and data management.
- ♦ Trained clients and colleagues in principles of statistical reporting and in SPSS and other applications.

Research Assistant, BOSTON COLLEGE GRADUATE SCHOOL OF SOCIAL WORK (2001-2003)
- ♦ Developed continuing education materials for social work professionals and students. Wrote study guides, technical instructions, and reviews of textbooks, websites, and software.
- ♦ Conducted literature reviews and drafted grant proposals.

Teaching Assistant, BOSTON COLLEGE SCHOOL OF NURSING (2001)
- ♦ Lectured on quantitative research methods for a graduate course on nursing research theory.

EDUCATION

BOSTON COLLEGE, LYNCH SCHOOL OF EDUCATION, M.Ed. in Research, Measurement and Evaluation.

♦ GPA 4.0. Dean's Award for Academic Accomplishment. Passed comprehensive exam with distinction.

♦ Projects included polygraph reliability; statistical detection of cheating on exams; time-series modeling; multidimensional scaling; nonlinear dynamics; and the placebo effect.

HARVARD UNIVERSITY, B.A., Medieval European History.

PUBLICATIONS AND PRESENTATIONS

Articles

Stark, R. B. (submitted for publication). Evaluating police impartiality: Improving driving population estimates (DPE) using Monte Carlo simulation. *Journal of Crime and Justice.*

Stark, R. B. (2023). *Long*, *Daubert*, & Acceptance of Methods. https://www.integrativestatistics.com/expert-witness-services.html.

Schwartz, C. E., Stucky, B. D., Borowiec, K., and Stark, R. B. (2021). Expanding the purview of wellness indicators: Validating a new measure that includes attitudes, behaviors, and perspectives. *Health Psychology and Behavioral Medicine*. DOI: https://doi.org/10.1080/21642850.2021.2008940.

Schwartz, C. E., Stark, R. B., Cella, D., Borowiec, K., Gooch, K. L., and Audhya, I. F. (2021). Measuring Duchenne muscular dystrophy impact: Development of a proxy-reported measure derived from PROMIS item banks. *Orphanet Journal of Rare Diseases 16*:487 (November, DOI: https://doi.org/10.1186/s13023-021-02114-7).

Schwartz, C. E., Stark, R. B., Audhya, I. F., and Gooch, K. L. (2021). Characterizing the quality-of-life impact of Duchenne Muscular Dystrophy on caregivers: A case-control investigation. *Journal of Patient-Reported Outcomes* (November, DOI: https://doi.org/10.1186/s41687-021-00386-y).

Schwartz, C. E., Rohde, G., Biletch, E., Stuart, R. B., Huang, I., Lipscomb, J., Stark, R. B., and Skolasky, R. L. (2021). If it's information, it's not "bias": A scoping review and proposed nomenclature for future response-shift research. *Quality of Life Research* (October, DOI: https://doi.org/10.1007/s11136-021-03023-9).

Schwartz, C. E., Stark, R. B., Borowiec, K., Nolte, S., and Myren, K.-J. (2021). Norm-based comparison of the quality-of-life impact of ravulizumab and eculizumab in paroxysmal nocturnal hemoglobinuria. *Orphanet Journal of Rare Diseases* (September, DOI: 10.1186/s13023-021-02016-8).

Schwartz, C. E., Stark, R. B., and Rapkin, B. D. (2021). Creating idiometric short-form measures of cognitive appraisal: Balancing theory and pragmatics. *Journal of Patient-Reported Outcomes* 5:57 (July, DOI: https://doi.org/10.1186/s41687-021-00317-x).

Schwartz, C. E., Stark, R. B., Michael, W., Rapkin, B. D., and Finkelstein, J. A. (2021). "Looking under the hood" of anchor-based assessment of clinically important change: A machine-learning approach. *Value in Health* (May, DOI: https://doi.org/10.1016/j.jval.2021.03.003).

Finkelstein, J. A., Stark, R. B., Lee, J., and Schwartz, C. E. (2021). Patient factors that matter in predicting spine-surgery outcomes: A machine-learning approach. *Journal of Neurosurgery: Spine* (May, DOI: https://doi.org/10.3171/2020.10.SPINE201354).

Sniderman, J., Stark, R. B., Schwartz, C. E., Iman, H., Finkelstein, J. A., and Mousiainen, M. (2021). Patient factors that matter in predicting hip arthroplasty outcomes: A machine-learning approach. *Journal of Arthroplasty* (January, DOI: https://doi.org/10.1016/j.arth.2020.12.038).

Schwartz, C. E., Stark, R. B., Stucky, B. D., Li, Y., and Rapkin, B. D. (2021). Response-shift effects in neuromyelitis optica spectrum disorder: Estimating response-shift-adjusted scores using equating. *Quality of Life Research* (January, DOI: https://doi.org/10.1007/s11136-020-02727-8).

Schwartz, C. E., Stark, R. B., and Stucky, B. D. (2020). Response-shift effects in neuromyelitis optica spectrum disorder: A secondary analysis of clinical trial data. *Quality of Life Research* (December, DOI: https://doi.org/10.1007/s11136-020-02707-y).

Schwartz, C. E., Stark, R. B., and Rapkin, B. D. (2020). Capturing patient experience: Does quality-of-life appraisal entail a new class of measurement? *Journal of Patient-Reported Outcomes 4*:85.

Schwartz, C. E., Stark, R. B., Michael, W., and Rapkin, B. (2020). Understanding haemophilia caregiver burden: Does appraisal buffer the impact of haemophilia on caregivers over time? *Psychology and Health 35*:12.

Bartley, B. L., Schwartz, C. E., Stark, R. B., Georgiopoulos, A. M., Friedman, D., Richards, C. J., Dorkin, H. L., Kinane, T. B., Neuringer, I. P., and Yonker, L. M. (2020). Lung transplant referral practice patterns: A survey of cystic fibrosis physicians and general pulmonologists. *BMC Pulmonary Medicine*, DOI: 10.1186/s12890-020-1067-4.

Schwartz, C. E., Stark, R. B., Balasuberamaniam, P., Shrikumar, M., Wasim, A., and Finkelstein, J. A. (2020). Responsiveness of standard spine outcome tools: Do they measure up? *Journal of Neurosurgery: Spine* (February, DOI: https://doi.org/10.3171/2019.12.SPINE191367).

Papadopoulos, A. and Stark, R. B. (2020). Does home health care increase the probability of 30-day hospital readmission? Interpreting coefficient sign reversals, or their absence, in binary logistic regression analysis. *The American Statistician* (January, DOI: 10.1080/00031305.2019.1704873).

Schwartz, C. E., Stark, R. B., Stucky, B., Michael, W., and Rapkin, B. (2020). Positive emotions despite substantial burden: The alchemy of haemophilia caregiving. *Haemophilia 26*:1, 86-96. DOI: 10.1111/hae.13874.

Stark, R. B., and Courtney, L. (2015). Analyzing not just for correlation but for causation. White paper prepared for ReInforced Care, Inc. http://www.reinforcedcare.com.

Stark, R. B., and Courtney, L. (2014). Joint replacement outweighs other factors in determining CMS readmission penalties. White paper prepared for ReInforced Care, Inc. http://www.reinforcedcare.com.

Stark, R. B., and Courtney, L. (2014). Clinicians benefit with the use of predictive tools. *Case In Point 12*:4, 1, 8-11.

Stark, R. B., and Lutz, E. (2013). Predicting your hospital's readmission penalty and gauging your ROI: A new approach. White paper prepared for ReInforced Care, Inc. http://www.reinforcedcare.com/financial-benefits.

Stark, R. B., and Scholder, T. (2011). What drives student choices? Applying behavioral economics to higher education. White paper prepared for Maguire Associates, Inc. http://www.maguireassoc.com/resources/paper-archives/. Revised 2018 as Applying behavioral economics to the business of higher education; https://yellowbrickstats.com/documents/BehavioralEconomicsHigherEducation.pdf.

Simons, S., Stark, R. B., and DeMarco, R. F. (2011). A new, four-item instrument to measure workplace bullying. *Research in Nursing and Health 34*, 132-140.

Eddy Spicer, D., Stark, R. B., and Wiske, M. S. (2006). Assessment tango: The dance between nurturing and measuring learning in online professional development. *The Evaluation Exchange, 11*:4, 9.

Stark, R. B. (2002). Modeling student evaluations. In L. H. Ludlow and C. Rosca, Eds., *A longitudinal analysis of one professor's course evaluations*, Volume III (pp. 7-49). Boston: Boston College Press.

Stark, R. B. (2001). Statistical methods of detecting copying on multiple choice tests: A review and an application. http://yellowbrickstats.com/cheatingabstract.htm.

Presentations

Mirabile, R., and Stark, R. B. (2022, July). Predictive modeling in enrollment management: Uses and misuses. Enrollment Management Symposium, Philadelphia, Pennsylvania.

Stark, R. B. (2022, January). Analyzing traffic-stop cases in light of *Commonwealth v. Long*. https://www.integrativestatistics.com/expert-witness-services.html.

Stark, R. B. (2021, October). No impact of Asian ethnicity on interpretation of EORTC QLQ-C30 scores: Group differences and differential item functioning in Paroxysmal Nocturnal Hemoglobinuria. 28th Annual Conference of the International Society for Quality of Life Research, held online.

Stark, R. B. (2021, October). Measuring Duchenne muscular dystrophy impact: Development of a proxy-reported measure derived from PROMIS item banks. 28th Annual Conference of the International Society for Quality of Life Research, held online.

Stark, R. B. (2020, February). What a "Batman graph" shows about US income: A cautionary tale of correlation, principal components, and nonlinear regression. 5th annual Analytics Without Borders Conference: Bentley, Tufts, and Bryant Universities, Boston, Massachusetts.

Stark, R. B. (2018, October). Pitfalls of public performance analysis. 11th annual conference of the National Center for Public Performance, Suffolk University, Boston, MA.

Stark, R. B. (2018, March). Applying behavioral economics to the business of higher education. 3rd annual Analytics Without Borders Conference: Bentley and Bryant Universities, Waltham, Massachusetts.

Stark, R. B. (2014, December). How to read a research article – for non-statisticians: Gun ownership and stranger and nonstranger firearm homicide rates. Massachusetts Association of Public Health Nurses, Metrowest/Central Chapter, Natick, Massachusetts.

Stark, R. B., and Courtney, L. (2014, May). Post-discharge puzzles: Readmission and home health services. 4th Annual New England Home Care Conference, Boston, Massachusetts.

Butler, L. M., and Stark, R. B. (2011, November). Do we have a retention problem or do we have a problem with retention? 7th Annual National Symposium on Student Retention, Charleston, South Carolina.

Parrott, S., and Stark, R. B. (2010, December). Drive retention performance through a comprehensive action plan (Webinar, CD). http://www.magnapubs.com/catalog/retention-performance/.

Stark, R. B., and Butler, L. (2010, November). Retention in 8-D. 6th Annual National Symposium on Student Retention, Mobile, Alabama.

Eddy Spicer, D., and Stark, R. B. (2006, April). Beyond self-report: Analyzing shifts in teaching practice following innovative professional development. Annual meeting of the American Educational Research Association, San Francisco, California.

Eddy Spicer, D., Hetland, L., Stark, R. B., and Wiske, M. S. (2005, April). Quality assurance "middleware" for gauging learning effectiveness in online teacher professional development. Annual meeting of the American Educational Research Association, Montréal, Canada.

Reports

Stark, R. B. (2020). Credential status of employees in C766 approved private special education school programs, SY 2019. Prepared for the Massachusetts Association of 766 Approved Private Schools. *(One in a series of reports prepared annually, 2005 to 2020.)*

Stark, R. B. (2020). Employee retention in C766 approved private special education school programs, SY 2005 to SY 2019. Prepared for the Massachusetts Association of 766 Approved Private Schools. *(One in a series of reports prepared annually, 2006 to 2020.)*

Dodenhoff, D., and Stark, R. B. (2019). Evaluation report: Telematics and collision-avoidance technologies. Assessment of school-bus safety interventions, prepared for the Arizona School Risk Retention Trust, Inc.

Stark, R. B. (2009). Staff salaries and their links to credential and retention rates in Massachusetts private special education schools, 2004-07: Overview and technical report. Prepared for the Massachusetts Association of 766 Approved Private Schools.

Eddy Spicer, D., and Stark, R. B. (2007). An evaluation of the Binghamton Summer Academy sponsored by the Broome-Tioga Board of Cooperative Educational Services (BOCES). Prepared for the Binghamton, New York Public School District.

Stark, R. B. (2007). Student referral survey report 2006: Referral trends in 169 private schools providing special education programs. Prepared for the Massachusetts Association of 766 Approved Private Schools.

Other

Stark, R. B. (2022). Poor-quality official data impedes justice in racial-bias cases. Letter to the editor, *Massachusetts Lawyers Weekly*, December 5, 2022 (posted online December 2).

Stark, R. B. (2022). Statistician points to 'shortcomings' in traffic stop report. Letter to the editor, *Massachusetts Lawyers Weekly*, April 11, 2022 (posted online April 8).

Stark, R. B. (2015-2022). Integrative Statistics Blog. https://www.integrativestatistics.com/blog.

PROFESSIONAL ASSOCIATIONS

JOURNAL OF COLLEGE STUDENT RETENTION. Peer reviewer.

ONE CAN HELP, a Boston nonprofit serving at-risk youth. Advisory Board.

STRATEGIES FOR YOUTH: CONNECTING COPS AND KIDS. Volunteer evaluator.

NEW ENGLAND STATISTICAL SOCIETY. Mentor.

AMERICAN STATISTICAL ASSOCIATION.

AMERICAN EDUCATIONAL RESEARCH ASSOCIATION. Judged research proposals submitted for national conference in the Measurement and Research Methodology Division.