ALEXANDER W. LEVIS

(current as of February 2026)

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Professional Experience

2025- UNIVERSITY OF PENNSYLVANIA
Assistant Professor, Department of Biostatistics, Epidemiology and Informatics.

2022-2025 CARNEGIE MELLON UNIVERSITY
Postdoctoral Researcher, Department of Statistics & Data Science.
Advisors: Edward Kennedy and Luke Keele.

Education

2017-2022 HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH
PhD in Biostatistics. (GPA: 4.00/4.00)
Advisor: Sebastien Haneuse.
Dissertation: "Robust methods for causal inference and missing data in electronic health record-based comparative effectiveness research."

2017-2019 HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH
MA in Biostatistics. (GPA: 4.00/4.00)

2015-2017 MCGILL UNIVERSITY
MSc in Biostatistics. (GPA: 4.00/4.00)
Advisor: Robert Platt.
Thesis: "Simulation and causal inference methods for repeated measures or longitudinal data."

2012-2015 MCGILL UNIVERSITY
BSc in Pharmacology. (GPA: 4.00/4.00)

Research Interests

- ◇ Causal inference: observational studies, instrumental variables, partial identification, optimal dynamic treatment regimes, resource constraints, sensitivity analysis, transportability
- ◇ Distribution shift & missing data
- ◇ Semiparametric efficiency theory, nonparametrics & machine learning

Other Experience & Training

2019-2022 HARVARD UNIVERSITY
Statistical Consultant, Harvard Biostatistics Student Consulting Center

2014-2017 MCGILL UNIVERSITY
Research Assistant/Analyst, Department of Psychiatry
Supervisor: Brett Thombs

Selected Awards & Funding

2022	Certificate of Distinction in Teaching. *Harvard University*.
2020	Certificate of Distinction in Teaching. *Harvard University*.
2019	Robert B. Reed Prize for Excellence in Biostatistical Sciences, for receiving the highest grade on the Biostatistics Department's doctoral written qualifying exam. *Harvard University*.
2016	Master's Training Award. *Fonds de recherche du Québec – Santé.*
2015	Frederick Banting & Charles Best Graduate Scholarship. *Canadian Institutes of Health Research*.
2015	Dean's Convocation Prize. *McGill University*

Preprints and Submitted Manuscripts

Levis, A.W., Ben-Michael, E., Kennedy, E.H. Intervention effects based on potential benefit. arXiv:2405.08727. Submitted to *Biometrika*.

Levis, A.W., Kennedy, E.H., McClean, A., Balakrishnan, S., Wasserman, L. Stochastic interventions, sensitivity analysis, and optimal transport. arXiv:2411.14285. In preparation for submission to the *Annals of Statistics*.

Benz, L., Mukherjee, R., Wang, R., Arterburn, D., Fischer, H., Lee, C., Shortreed, S.M., Haneuse, S., **Levis, A.W.** Robust causal inference for EHR-based studies of point exposures with missingness in eligibility criteria. arXiv:2504.16230. Under revision at the *Journal of the American Statistical Association*.

Wang, G., **Levis, A.W.**, Steingrimsson, J.A., Dahabreh, I.J. Efficient estimation of subgroup treatment effects using multi-source data. arXiv:2402.02684.

Wang, G., **Levis, A.W.**, Steingrimsson, J.A., Dahabreh, I.J. Causal inference under transportability assumptions for conditional relative effect measures. arXiv:2402.02702.

Zeng, Z., **Levis, A.W.**, Lee, J., Kennedy, E.H., Keele, L. Nonparametric estimation of local treatment effects with continuous instruments. arXiv:2504.03063. Under review at the *Journal of the Royal Statistical Society: Series B*.

Rakshit, P., **Levis, A.W.**, Keele, L. Local effects of continuous instruments without positivity. arXiv:2409.07350. Under revision for the *Journal of the Royal Statistical Society: Series B*.

McClean, A., **Levis, A.W.**, Williams, N.T., Díaz, I. Longitudinal weighted and trimmed treatment effects with flip interventions. arXiv:2506.09188. Under revision for the *Journal of the American Statistical Association*.

Levis, A.W., Kennedy, E.H., Keele, L. Nonparametric identification and efficient estimation of causal effects with instrumental variables. arXiv:2402.09332. In preparation for submission to the *Journal of the Royal Statistical Society: Series A*.

Loewinger, G., **Levis, A.W.**, Cui, E., Pereira, F. Fast penalized generalized estimating equations for large longitudinal functional datasets. arXiv:2506.20437. Under revision for *Biometrics*.

Loewinger, G., Stensrud, M.J., Nayak, S.M., Yaden, D., **Levis, A.W.** Causal inference in studies with functional unmasking: psychedelics and beyond. medRxiv:10.64898/2025.12.05.25341713. Submitted to *American Journal of Psychiatry*.

Peer-Reviewed Publications

33. Liu, Y., **Levis, A.W.**, Zhu, K., Yang, S., Gilbert, P.B. and Han, L. Targeted data fusion for causal survival analysis under distribution shift. arXiv:2501.18798. *Proceedings of the 14th International Conference on Learning Representations* (Accepted).

32. Loewinger, G.*, **Levis, A.W.***, Pereira, F., 2026+. Nonparametric causal inference for optogenetics: sequential excursion effects for dynamic regimes. arXiv:2405:18597. *Journal of the American Statistical Association, Applications and Case Studies* (Accepted).

31. Benz, L., **Levis, A.W.**, Haneuse, S., 2025. Comparing causal inference methods for point exposures with missing confounders: a simulation study. *BMC Medical Research Methodology*, 25(222). doi:10.1186/s12874-025-02675-2.

30. **Levis, A.W.**, Kennedy, E.H., 2025+. Discussion of "Causal and counterfactual views of missing data models" by Razieh Nabi, Rohit Bhattacharya, Ilya Shpitser, and James M. Robins. arXiv:2506.13025. *Statistica Sinica* (Accepted).

29. **Levis, A.W.**, Bonvini, M.*, Zeng, Z.*, Keele, L., Kennedy, E.H., 2025. Covariate-assisted bounds on causal effects with instrumental variables. *Journal of the Royal Statistical Society: Series B*, p. qkaf028. doi:10.1093/jrsssb/qkaf028.

28. Sun, S., Haneuse, S., **Levis, A.W.**, Lee, C., Arterburn, D.E., Fischer, H., Shortreed, S., Mukherjee, R., 2025. Estimating weighted quantile treatment effects with missing data by double-sampling. *Biometrics*, 81(2), p. ujaf038. doi:10.1093/biomtc/ujaf038.

27. **Levis, A.W.**, Mukherjee, R., Wang, R., Fischer, H., Haneuse, S., 2024. Double sampling for informatively missing data in electronic health record-based comparative effectiveness research. *Statistics in Medicine*, 43(30), p. 6086-6098. doi:10.1002/sim.10298.

26. **Levis, A.W.***, Loewinger, G.*, Pereira, F., 2024. Causal inference in the closed-loop: marginal structural models for sequential excursion effects. arXiv:2405:18597v1. *The Thirty-eighth Annual Conference on Neural Information Processing Systems*. https://openreview.net/forum?id=BgZcuEsYU8.

25. Takatsu, K., **Levis, A.W.**, Kennedy, E.H., Kelz, R., Keele, L., 2024. Doubly robust machine learning for an instrumental variable study of surgical care for cholecystitis. *Journal of the Royal Statistical Society: Series A*, p. qnae089. doi:10.1093/jrsssa/qnae089.

24. **Levis, A.W.**, Mukherjee, R., Wang, R., Haneuse, S., 2024. Robust causal inference for point exposures with missing confounders. *The Canadian Journal of Statistics*, p. e11832. doi:10.1002/cjs.11832.

23. Golden, C.D., Zamborain-Mason, J., **Levis, A.W.**, Rice, B.L., Allen, L.H., Hampel, D., Hazen, J., Metcalf, C.J.E., Randriamady, H.J., Shahab-Ferdows, S., Wu, S.M., Haneuse, S., 2024. Prevalence of micronutrient deficiencies across diverse environments in rural Madagascar. *Frontiers in Nutrition*, 11, p. 1389080. doi:10.3389/fnut.2024.1389080.

22. Liu, Y., **Levis, A.W.**, Normand, S. -L., Han, L., 2024. Multi-source conformal inference under distribution shift. arXiv:2405.09331. *Proceedings of the 41st International Conference on Machine Learning*.

21. Kwakkenbos, L., Carrier, M.E., Welling, J., Levis, B., **Levis, A.W.**, Sauve, M., Turner, K.A., Tao, L., Aguila, K., Carboni-Jiménez, A., Cañedo-Ayala, M., 2022. Randomized controlled trial of an internet-based self-guided hand exercise program to improve hand function in people with systemic sclerosis: the Scleroderma Patient-centered Intervention Network Hand Exercise Program (SPIN-HAND) trial. *Trials*, 23(1), p. 994. doi:10.1186/s13063-022-06923-4.

20. Koffman, L., **Levis, A.W.**, Haneuse, S., Johnson, E., Bock, S., McSperitt, D., Gupta, A. Arterburn, D., 2021. Evaluation of intensive telephonic nutritional and lifestyle counseling to enhance outcomes of bariatric surgery. *Obesity Surgery*, 32, p. 133-141. doi:10.1007/s11695-021-05749-4.

19. Truche, P., Botelho, F., Bowder, A.N., **Levis, A.W.**, Greenberg, S.L., Smith, E., Corlew, S., Bickler, S., Rice, H.E., Ameh, E.A., Meara, J.G., 2021. Potentially avertable child mortality associated with surgical workforce scale-up in low-and middle-income countries: a global study. *World Journal of Surgery*, 45(9), p. 2643-2652. doi:10.1007/s00268-021-06181-6.

18. Thombs, B.D., Kwakkenbos, L., Levis, B., Bourgeault, A., Henry, R.S., **Levis, A.W.**, Harb, S., Tao, L., Carrier, M.E., Bustamante, L., Duchek, D., 2021. Effects of a multi-faceted education and support programme on anxiety symptoms among people with systemic sclerosis and anxiety during COVID-19 (SPIN-CHAT): a two-arm parallel, partially nested, randomised, controlled trial. *The Lancet Rheumatology*, 3(6), p. e427-e437. doi:10.1016/S2665-9913(21)00060-6.

17. Koffman, L., **Levis, A.W.**, Arterburn, D., Coleman, K.J., Herrinton, L.J., Cooper, J., Ewing, J., Fischer, H., Fraser, J.R., Johnson, E., Taylor, B., 2021. Investigating bias from missing data in an electronic health records-based study of weight loss after bariatric surgery. *Obesity Surgery*, 31, p. 2125-2135. doi:10.1007/s11695-021-05226-y.

16. Harel, D., Levis, B., Ishihara, M., **Levis, A.W.**, Vigod, S.N., Howard, L.M., Thombs, B.D., Benedetti, A., DEPRESsion Screening Data (DEPRESSD) EPDS Collaboration, Sun, Y., He, C., 2021. Shortening the Edinburgh postnatal depression scale using optimal test assembly methods: Development of the EPDS-Dep-5. *Acta Psychiatrica Scandinavica*, 143(4), p. 348-362. doi:10.1111/acps.13272.

15. Cañedo-Ayala, M., Rice, D.B., **Levis, A.W.**, Chiovitti, M., Thombs, B.D., 2020. Balance of group sizes in randomized controlled trials published in American Psychological Association journals. *Health Psychology*, 39(11), p. 956. doi:10.1037/hea0001020.

14. Rice, D.B., Carboni-Jiménez, A., Cañedo-Ayala, M., Turner, K.A., Chiovitti, M., **Levis, A.W.**, Thombs, B.D., 2020. Perceived benefits and facilitators and barriers to providing psychosocial interventions for informal caregivers of people with rare diseases: a scoping review. *The Patient-Patient-Centered Outcomes Research*, 13, p. 471-519. doi:10.1007/s40271-020-00441-8.

13. Wu, Y., Levis, B., Riehm, K.E., Saadat, N., **Levis, A.W.**, Azar, M., Rice, D.B., Boruff, J., Cuijpers, P., Gilbody, S., Ioannidis, J.P., 2020. Equivalency of the diagnostic accuracy of the PHQ-8 and PHQ-9: a systematic review and individual participant data meta-analysis. *Psychological Medicine*, 50(8), p. 1368-1380. doi:10.1017/S0033291719001314.

12. Thombs, B.D., **Levis, A.W.**, Azar, M., Saadat, N., Riehm, K.E., Sanchez, T.A., Chiovitti, M.J., Rice, D.B., Levis, B., Fedoruk, C., Lyubenova, A., 2020. Group sample sizes in nonregulated health care intervention trials described as randomized controlled trials were overly similar. *Journal of Clinical Epidemiology*, 120, p. 8-16. doi:10.1016/j.jclinepi.2019.12.011.

11. He, C., Levis, B., Riehm, K.E., Saadat, N., **Levis, A.W.**, Azar, M., Rice, D.B., Krishnan, A., Wu, Y., Sun, Y., Imran, M., 2020. The accuracy of the Patient Health Questionnaire-9 algorithm for screening to detect major depression: an individual participant data meta-analysis. *Psychotherapy and Psychosomatics*, 89(1), p. 25-37. doi:10.1159/000502294.

10. Azar, M., Riehm, K.E., Saadat, N., Sanchez, T., Chiovitti, M., Qi, L., Rice, D.B., Levis, B., Fedoruk, C., **Levis, A.W.**, Kloda, L.A., 2019. Evaluation of journal registration policies and prospective registration of randomized clinical trials of nonregulated health care interventions. *JAMA Internal Medicine*, 179(5), p. 624-632. doi:10.1001/jamainternmed.2018.8009.

9. Ishihara, M., Harel, D., Levis, B., **Levis, A.W.**, Riehm, K.E., Saadat, N., Azar, M., Rice, D.B., Sanchez, T.A., Chiovitti, M.J., Cuijpers, P., 2019. Shortening self-report mental health symptom measures through optimal test assembly methods: Development and validation of the Patient Health Questionnaire-Depression-4. *Depression and Anxiety*, 36(1), p. 82-92. doi:10.1002/da.22841.

8. Levis, B., Benedetti, A., Riehm, K.E., Saadat, N., **Levis, A.W.**, Azar, M., Rice, D.B., Chiovitti, M.J., Sanchez, T.A., Cuijpers, P., Gilbody, S., 2018. Probability of major depression diagnostic classification using semi-structured versus fully structured diagnostic interviews. *The British Journal of Psychiatry*, 212(6), p. 377-385. doi:10.1192/bjp.2018.54.

7. Thombs, B.D., Kwakkenbos, L., **Levis, A.W.**, Benedetti, A., 2018. Addressing overestimation of the prevalence of depression based on self-report screening questionnaires. *Canadian Medical Association Journal*, 190, p. E44-E49. doi:10.1503/cmaj.170691.

6. Delisle, V.C., Gumuchian, S.T., Rice, D.B., **Levis, A.W.**, Kloda, L.A., Körner, A., Thombs, B.D., 2017. Perceived benefits and factors that influence the ability to establish and maintain patient support groups in rare diseases: a scoping review. *The Patient-Patient-Centered Outcomes Research*, 10, p. 283-293. doi:10.1007/s40271-016-0213-9.

5. Levis, B., Benedetti, A., **Levis, A.W.**, Ioannidis, J.P., Shrier, I., Cuijpers, P., Gilbody, S., Kloda, L.A., McMillan, D., Patten, S.B., Steele, R.J., 2017. Selective cutoff reporting in studies of diagnostic test accuracy: a comparison of conventional and individual-patient-data meta-analyses of the Patient Health Questionnaire-9 depression screening tool. *Americal Journal of Epidemiology*, 185(10), p. 954-964. doi:10.1093/aje/kww191.

4. **Levis, A.W.**, Harel, D., Kwakkenbos, L., Carrier, M.E., Mouthon, L., Poiraudeau, S., Bartlett, S.J., Khanna, D., Malcarne, V.L., Sauve, M., van den Ende, C.H., 2016. Using optimal test assembly methods for shortening patient-reported outcome measures: Development and validation of the Cochin Hand Function Scale-6: A scleroderma patient-centered intervention network cohort study. *Arthritis Care & Research*, 68(11), p. 1704-1713. doi:10.1002/acr.22893.

3. Coronado-Montoya, S., **Levis, A.W.**, Kwakkenbos, L., Steele, R.J., Turner, E.H., Thombs, B.D., 2016. Reporting of positive results in randomized controlled trials of mindfulness-based mental health interventions. *PloS One*, 11(4):e0153220. doi:10.1371/journal.pone.0153220.

2. **Levis, A.W.**, Leentjens, A.F., Levenson, J.L., Lumley, M.A., Thombs, B.D., 2015. Comparison of self-citation by peer reviewers in a journal with single-blind peer review versus a journal with open peer review. *Journal of Psychosomatic Research*, 79(6), p. 561-565. doi:10.1016/j.jpsychores.2015.08.004.

1. Thombs, B.D., **Levis, A.W.**, Razykov, I., Syamchandra, A., Leentjens, A.F., Levenson, J.L., Lumley, M.A., 2015. Potentially coercive self-citation by peer reviewers: a cross-sectional study. *Journal of Psychosomatic Research*, 78(1), p. 1-6. doi:10.1016/j.jpsychores.2014.09.015.

Invited Talks

3. Iowa State University, Department of Statistics. (4/2026)
2. McGill University, Department of Biostatistics. (2/2026)
1. University of Massachusetts, Amherst, Department of Biostatistics. (11/2025)

Conference Presentations *(* = invited)*

14. *International Conference on Computational & Methodological Statistics, London, UK. (12/2025)
13. *American Causal Inference Conference, Detroit, MI. (5/2025)
12. Joint Statistical Meetings, Portland, OR. (8/2024)
11. American Causal Inference Conference, Seattle, WA. (5/2024)
10. Joint Statistical Meetings, Toronto, ON. (8/2023)
9. American Causal Inference Conference, Austin, TX. (5/2023)
8. East North American Region Spring Meeting, Nashville, TN. (3/2023)
7. International Conference on Computational & Methodological Statistics, London, UK. (12/2022)
6. Joint Statistical Meetings, Washington, DC. (8/2022)
5. East North American Region Spring Meeting, Houston, TX. (3/2022)
4. Joint Statistical Meetings, Virtual Conference. (8/2021)
3. International Conference on Computational & Methodological Statistics, Virtual Conference. (12/2020)
2. Joint Statistical Meetings, Denver, CO. (8/2019)
1. Statistical Society of Canada Annual Meeting, St. Catharines, ON. (5/2016)

Editorial Service

2025- Associate Editor, *Observational Studies*

Referee Service

Statistical Journals

Annals of Applied Statistics
Biometrics
Biometrika
Biostatistics
Electronic Journal of Statistics
Journal of the American Statistical Association
Journal of the Royal Statistical Society: Series A
Journal of the Royal Statistical Society: Series B
Journal of Causal Inference
Observational Studies

Selected Other Scientific Journals

American Journal of Epidemiology

Conferences

NeurIPS

Teaching Experience

Guest Lectures at Carnegie Mellon University

Fall 2022	Modern Causal Inference (36-732)

Teaching Assistant at Harvard University

Fall 2021	Theory and Methods for Causality II (BST 257)
Spring 2020	Statistical Inference I (BST 231)
Fall 2019	Advanced Regression and Statistical Learning (BST 235)
Fall 2018	Core Principles of Biostatistics and Epidemiology for Public Health Practice (ID 201)

Additional Academic Service

Co-organizer (2024-2025), Causal Inference Working Group, *Carnegie Mellon University*
Qualifying exam tutor (2019) for Biostatistics PhD Students, *Harvard University*