

Aya A. Mitani

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<https://ayamitani.github.io>

CURRENT POSITION

Harvard T. H. Chan School of Public Health

Department of Biostatistics
Postdoctoral Research Fellow
Advisor: Sebastien Haneuse, PhD

Boston, MA
Sept 2019 – Present

EDUCATION

Boston University

PhD in Biostatistics
Dissertation: Modeling Dental Disease Progression in a Longitudinal Study
Advisor: Kerrie Nelson, PhD

Boston, MA
2008

Yale University

MPH in Biostatistics

New Haven, CT
2008

Pitzer College

BA in Mathematics (Honors)

Claremont, CA
2006

GRANTS AND FELLOWSHIPS

NRSA Individual Pre-doctoral Fellowship (F31)

National Institute of Dental and Craniofacial Research

Title: Modeling Dental Disease Progression in a Longitudinal Study
Role: Principal Investigator
Impact score: 18 (Funded after first round of reviews)

2017 – 2019

Pre-doctoral Cancer Research Training Fellowship

National Cancer Institute

Department of Cancer Epidemiology and Genetics, Biostatistics Branch

Summer 2007

HONORS AND AWARDS

BUSPH Biostatistics Doctoral Applied Research Paper Award

2019

Winner, BU Department of Biostatistics Student Paper Competition

2019

IBM Student Research Award, New England Statistical Symposium

2018

Mu Sigma Rho, The National Statistics Honorary Society

2017

Annual Scientific Award, Society of Critical Care Medicine

2011

Graduated with Honors in Mathematics, Pitzer College

2006

Best Presentation in Geometry, MASS, Pennsylvania State University

2005

Research Experience for Undergraduates, Claremont Colleges (Funded by NSF)

2005

Sigma Xi, The Scientific Research Society

2005

RESEARCH EXPERIENCE

Boston University School of Public Health Boston, MA
 Graduate Research Assistant 2014 – 2017
 Modeling Agreement in Cancer Diagnostic Tests (PI: Kerrie Nelson)

Stanford University Palo Alto, CA
 Quantitative Sciences Unit 2011 – 2014
 Biostatistician

Brigham and Womens Hospital Boston, MA
 Department of Anesthesia 2008 – 2011
 Biostatistician

TEACHING EXPERIENCE

Boston University School of Public Health Boston, MA
 Instructor, Introduction to Statistical Computing Fall 2016, Spring & Summer 2017
 Teaching Assistant, Introduction to Statistical Computing Spring 2016

Yale University School of Public Health New Haven, CT
 Teaching Assistant & SAS Lab Instructor, Introduction to Statistical Thinking I Fall 2007

MEMBERSHIPS, ACTIVITIES & SERVICE

Memberships in Professional Organizations

New England Statistical Society 2019 – Present
 Eastern North American Region of the International Biometrics Society 2018 – Present
 Institute of Mathematical Statistics 2017 – Present
 American Statistical Association 2006 – Present

Community Activities & Service

Biostatistics Department Representative, Postdoctoral Association Council, Harvard T. H. Chan School of Public Health 2019 – 2020
 Student Representative, Biostatistics PhD Program Review Evaluation Committee, Boston University 2018
 Student Representative, L. Adrienne Cupples Award Committee, Boston University 2016
 Panelist, Graduate School Information Session by Statistics Club, Boston University 2016
 President, Biostatistics Student Association, Boston University 2016 – 2017
 Vice President of Academic Affairs, Biostatistics Student Association, Boston University 2015 – 2016

Journal Review

Statistical Reviewer, JAMA Network Open
Journal of Modern Applied Statistical Methods (1)

2019 – Present
2018

SOFTWARE

R Packages

CWGEE (<https://github.com/AyaMitani/CWGEE>),
Cluster weighted generalized estimating equations for clustered longitudinal data with informative cluster size.

ipccwGEE (<https://github.com/AyaMitani/ipccwGEE>),
Cluster weighted generalized estimating equations with inverse probability centering weights for clustered longitudinal data with informative cluster size and informative drop-out.

modelkappa (<https://github.com/AyaMitani/modelkappa>),
Calculates model-based kappa of agreement and association and their standard errors for multiple raters each assessing multiple cases.

Languages

R, SAS, Stata, Shell scripting, L^AT_EX

PUBLICATIONS

Peer-Reviewed Publications

1. **Mitani, A. A.**, Kaye, E. K. & Nelson, K. P. Marginal analysis of ordinal clustered longitudinal data with informative cluster size. *Biometrics* **75**, 938–949 (2019). PMID: 30859544.
2. Nelson, K. P., **Mitani, A. A.** & Edwards, D. Evaluating the effects of rater and subject factors on measures of association. *Biom J* **60**, 639–656 (May 2018). PMID: 29349801.
3. **Mitani, A. A.**, Freer, P. E. & Nelson, K. P. Summary measures of agreement and association between many raters' ordinal classifications. *Ann Epidemiol* **27**, 677–685 (Oct. 2017). PMID: 29029991.
4. **Mitani, A. A.** & Nelson, K. P. Modeling agreement between binary classifications of multiple raters in R and SAS. *JMASM* **16**, 277–309 (2017).
5. Nelson, K. P., **Mitani, A. A.** & Edwards, D. Assessing the influence of rater and subject characteristics on measures of agreement for ordinal ratings. *Stat Med* **36**, 3181–3199 (Sept. 2017). PMID: 28612356.

6. Winkelmayer, W. C., Goldstein, B. A., **Mitani, A. A.**, Ding, V. Y., Airy, M., Mandayam, S., Chang, T. I., Brookhart, M. A. & Fishbane, S. Safety of Intravenous Iron in Hemodialysis: Longer-term Comparisons of Iron Sucrose Versus Sodium Ferric Gluconate Complex. *Am. J. Kidney Dis.* **69**, 771–779 (June 2017). PMID: 28063734.
7. Montez-Rath, M. E., Kapphahn, K., Mathur, M. B., **Mitani, A. A.**, Hendry, D. J. & Desai, M. Guidelines for generating right-censored outcomes from a Cox model extended to accommodate time-varying covariates. *JMASM* **16**, 86–106 (2017).
8. Desai, M., **Mitani, A. A.**, Bryson, S. W. & Robinson, T. Multiple Imputation when Rate of Change is the Outcome of Interest. *JMASM* **15**, Article 10 (2016).
9. **Mitani, A. A.**, Kurian, A. W. & Desai, M. Navigating choices when applying multiple imputation in the presence of multi-level categorical interaction effects. *Statistical Methodology* **27**, 82–99 (2015).
10. Winkelmayer, W. C., Chang, T. I., **Mitani, A. A.**, Wilhelm-Leen, E. R., Ding, V., Chertow, G. M., Brookhart, M. A. & Goldstein, B. A. Longer-term outcomes of darbepoetin alfa versus epoetin alfa in patients with ESRD initiating hemodialysis: a quasi-experimental cohort study. *Am. J. Kidney Dis.* **66**, 106–113 (July 2015). PMID: 25943715.
11. Shen, J. I., **Mitani, A. A.** & Winkelmayer, W. C. Heparin use in hemodialysis patients following gastrointestinal bleeding. *Am. J. Nephrol.* **40**, 300–307 (2014). PMID: 25341418.
12. Shen, J. I., Montez-Rath, M. E., **Mitani, A. A.**, Erickson, K. F. & Winkelmayer, W. C. Correlates and variance decomposition analysis of heparin dosing for maintenance hemodialysis in older US patients. *Pharmacoepidemiol Drug Saf* **23**, 515–525 (May 2014). PMID: 24677688.
13. Kurella-Tamura, M., Goldstein, B. A., Hall, Y. N., **Mitani, A. A.** & Winkelmayer, W. C. State medicaid coverage, ESRD incidence, and access to care. *J. Am. Soc. Nephrol.* **25**, 1321–1329 (June 2014). PMID: 24652791.
14. Oxman, D. A., Adams, C. D., Deluke, G., Philbrook, L., Ireland, P., **Mitani, A.**, Panizales, C., Frendl, G. & Rogers, S. O. Improving Antibiotic De-Escalation in Suspected Ventilator-Associated Pneumonia: An Observational Study With a Pharmacist-Driven Intervention. *J Pharm Pract* **28**, 457–461 (Oct. 2015). PMID: 24651641.
15. Winkelmayer, W. C., **Mitani, A. A.**, Goldstein, B. A., Brookhart, M. A. & Chertow, G. M. Trends in anemia care in older patients approaching end-stage renal disease in the United States (1995-2010). *JAMA Intern Med* **174**, 699–707 (May 2014). PMID: 24589911.
16. Kurian, A. W., **Mitani, A.**, Desai, M., Yu, P. P., Seto, T., Weber, S. C., Olson, C., Kenkare, P., Gomez, S. L., de Bruin, M. A., Horst, K., Belkora, J., May, S. G., Frosch, D. L., Blayney, D. W., Luft, H. S. & Das, A. K. Breast cancer treatment across health care systems: linking electronic medical records and state registry data to enable outcomes research. *Cancer* **120**, 103–111 (Jan. 2014). PMID: 24101577.
17. Arce, C. M., Goldstein, B. A., **Mitani, A. A.** & Winkelmayer, W. C. Trends in relative mortality between Hispanic and non-Hispanic whites initiating dialysis: a retrospective study of the US Renal Data System. *Am. J. Kidney Dis.* **62**, 312–321 (Aug. 2013). PMID: 23647836.
18. Arce, C. M., Goldstein, B. A., **Mitani, A. A.**, Lenihan, C. R. & Winkelmayer, W. C. Differences in access to kidney transplantation between Hispanic and non-Hispanic whites by

- geographic location in the United States. *Clin J Am Soc Nephrol* **8**, 2149–2157 (Dec. 2013). PMID: 24115195.
19. Fox, A. A., Nascimben, L., Body, S. C., Collard, C. D., **Mitani, A. A.**, Liu, K. Y., Muehlschlegel, J. D., Shernan, S. K. & Marcantonio, E. R. Increased perioperative b-type natriuretic peptide associates with heart failure hospitalization or heart failure death after coronary artery bypass graft surgery. *Anesthesiology* **119**, 284–294 (Aug. 2013). PMID: 23695172.
 20. Kumar, S., Fioritto, A., **Mitani, A.**, Desai, M., Gunaratnam, N. & Ladabaum, U. Optical biopsy of sessile serrated adenomas: do these lesions resemble hyperplastic polyps under narrow-band imaging? *Gastrointest. Endosc.* **78**, 902–909 (Dec. 2013). PMID: 23849819.
 21. Nair, S. S., **Mitani, A. A.**, Goldstein, B. A., Chertow, G. M., Lowenberg, D. W. & Winkelmayer, W. C. Temporal trends in the incidence, treatment, and outcomes of hip fracture in older patients initiating dialysis in the United States. *Clin J Am Soc Nephrol* **8**, 1336–1342 (Aug. 2013). PMID: 23660182.
 22. Shen, J. I., **Mitani, A. A.**, Chang, T. I. & Winkelmayer, W. C. Use and safety of heparin-free maintenance hemodialysis in the USA. *Nephrol. Dial. Transplant.* **28**, 1589–1602 (June 2013). PMID: 23563280.
 23. Shen, J. I., **Mitani, A. A.**, Saxena, A. B., Goldstein, B. A. & Winkelmayer, W. C. Determinants of peritoneal dialysis technique failure in incident US patients. *Perit Dial Int* **33**, 155–166 (2013). PMID: 23032086.
 24. Carabuena, J. M., **Mitani, A. A.**, Liu, X., Kodali, B. S. & Tsen, L. C. The learning curve associated with the epidural technique using the Episure AutoDetect versus conventional glass syringe: an open-label, randomized, controlled, crossover trial of experienced anesthesiologists in obstetric patients. *Anesth. Analg.* **116**, 145–154 (Jan. 2013). PMID: 23223103.
 25. Ladabaum, U., Fioritto, A., **Mitani, A.**, Desai, M., Kim, J. P., Rex, D. K., Imperiale, T. & Gunaratnam, N. Real-time optical biopsy of colon polyps with narrow band imaging in community practice does not yet meet key thresholds for clinical decisions. *Gastroenterology* **144**, 81–91 (Jan. 2013). PMID: 23041328.
 26. Elie-Turenne, M. C., Hou, P. C., **Mitani, A.**, Barry, J. M., Kao, E. Y., Cohen, J. E., Frendl, G., Gajic, O. & Gentile, N. T. Lung injury prediction score for the emergency department: first step towards prevention in patients at risk. *Int J Emerg Med* **5**, 33 (Sept. 2012). PMID: 22943391.
 27. Garfield, J. M., Garfield, F. B., Holzman, R., **Mitani, A. A.** & Tsen, L. C. Practice policies for older anesthesiologists in academic departments: a national survey of academic departmental chairpersons. *J Clin Anesth* **24**, 357–363 (Aug. 2012). PMID: 22617418.
 28. Mizuguchi, K. A., **Mitani, A.**, Waikar, S. S., Ireland, P., Panizales, C., Deluke, G., Sugarbaker, D. J., Bonventre, J. V. & Frendl, G. Use of postoperative creatinine to predict sustained kidney injury in patients undergoing mesothelioma surgery. *Clin J Am Soc Nephrol* **7**, 1071–1078 (July 2012). PMID: 22537654.
 29. Sarin, P., Philip, B. K., **Mitani, A.**, Eappen, S. & Urman, R. D. Specialized ambulatory anesthesia teams contribute to decreased ambulatory surgery recovery room length of stay. *Ochsner J* **12**, 94–100 (2012). PMID: 22778673.

30. Hou, P. C., Elie-Turenne, M. C., **Mitani, A.**, Barry, J. M., Kao, E. Y., Cohen, J. E., Frendl, G., Gajic, O. & Gentile, N. T. Towards prevention of acute lung injury: frequency and outcomes of emergency department patients at-risk - a multicenter cohort study. *Int J Emerg Med* **5**, 22 (May 2012). PMID: 22632126.
31. Urman, R. D., Sarin, P., **Mitani, A.**, Philip, B. & Eappen, S. Presence of anesthesia resident trainees in day surgery unit has mixed effects on operating room efficiency measures. *Ochsner J* **12**, 25–29 (2012). PMID: 22438778.
32. Arce, C. M., **Mitani, A. A.**, Goldstein, B. A. & Winkelmayer, W. C. Hispanic ethnicity and vascular access use in patients initiating hemodialysis in the United States. *Clin J Am Soc Nephrol* **7**, 289–296 (Feb. 2012). PMID: 22114148.
33. Nowak-Machen, M., Rawn, J. D., Shekar, P. S., **Mitani, A.**, Tuli, S., Bingold, T. M., Lawlor, G., Eltzschig, H. K., Shernan, S. K. & Rosenberger, P. Descending aortic calcification increases renal dysfunction and in-hospital mortality in cardiac surgery patients with intraaortic balloon pump counterpulsation placed perioperatively: a case control study. *Crit Care* **16**, R17 (Jan. 2012). PMID: 22277113.
34. Colvin, A. C., Wang, C. F., Soens, M. A., **Mitani, A. A.**, Strichartz, G. & Gerner, P. Prolonged cutaneous analgesia with transdermal application of amitriptyline and capsaicin. *Reg Anesth Pain Med* **36**, 236–240 (2011). PMID: 21364497.
35. Pfeiffer, R. M., **Mitani, A.**, Landgren, O., Ekbom, A., Kristinsson, S. Y., Bjorkholm, M., Biggar, R. J. & Brinton, L. A. Timing of births and endometrial cancer risk in Swedish women. *Cancer Causes Control* **20**, 1441–1449 (Oct. 2009). PMID: 19565342.
36. Garfield, J. M., Garfield, F. B., Hevelone, N. D., Bhattacharyya, N., Dedrick, D. F., Ashley, S. W., Nadel, E. S., Katz, J. T., Kim, C. & **Mitani, A. A.** Doctors in acute and longitudinal care specialties emphasise different professional attributes: implications for training programmes. *Med Educ* **43**, 749–756 (Aug. 2009). PMID: 19659488.
37. Binshtok, A. M., Gerner, P., Oh, S. B., Puopolo, M., Suzuki, S., Roberson, D. P., Herbert, T., Wang, C. F., Kim, D., Chung, G., **Mitani, A. A.**, Wang, G. K., Bean, B. P. & Woolf, C. J. Coapplication of lidocaine and the permanently charged sodium channel blocker QX-314 produces a long-lasting nociceptive blockade in rodents. *Anesthesiology* **111**, 127–137 (July 2009). PMID: 19512868.
38. Anderson, W. F., Rosenberg, P. S., Menashe, I., **Mitani, A.** & Pfeiffer, R. M. Age-related crossover in breast cancer incidence rates between black and white ethnic groups. *J. Natl. Cancer Inst.* **100**, 1804–1814 (Dec. 2008). PMID: 19066264.
39. Pfeiffer, R. M., **Mitani, A.**, Matsuno, R. K. & Anderson, W. F. Racial differences in breast cancer trends in the United States (2000–2004). *J. Natl. Cancer Inst.* **100**, 751–752 (May 2008). PMID: 18477805.
40. Hardin, J., **Mitani, A.**, Hicks, L. & VanKoten, B. A robust measure of correlation between two genes on a microarray. *BMC Bioinformatics* **8**, 220 (June 2007). PMID: 17592643.

Manuscripts Under Review

1. **Mitani, A. A.**, Kaye, E. K. & Nelson, K. P. Marginal analysis of multiple outcomes with informative cluster size. Invited for revision at *Biometrics*.
2. **Mitani, A. A.**, Kaye, E. K. & Nelson, K. P. Modeling tooth-loss using inverse probability censoring weights in longitudinal clustered data with informative cluster size. Under review.

TALKS & SEMINARS

Invited

1. **Mitani, A. A.** Informative cluster size in observational studies. HIV Working Group, Harvard Chan School, Boston, MA (Nov. 2019).
2. **Mitani, A.** Modeling tooth-loss using inverse probability censoring weights in longitudinal clustered data with informative cluster size. New England Statistical Symposium, Hartford, CT (May 2019).
3. **Mitani, A.** Marginal analysis of ordinal clustered longitudinal data with informative cluster size. New England Statistical Symposium, University of Massachusetts Amherst, Amherst, MA (Apr. 2018).
4. Peloso, G. & **Mitani, A.** Applying for Individual (pre- and post-doctoral) Fellowship Awards from the NIH. Biostatistics Student Association Seminar, Boston University, Boston, MA (Oct. 2017).
5. **Mitani, A.** Multiple imputation in practice – approaches for handling categorical and interaction variables. QSU Research Methods Seminar, Stanford University, Palo Alto, CA (May 2013).
6. **Mitani, A.** Issues and guidelines of multiple imputation in practice. Webinar training series, ASA Section for Statistical Programmers and Analysts (Apr. 2013).
7. **Mitani, A.** Basic statistics for journal reading. Faculty Breakout Session, Department of Anesthesiology, Perioperative and Pain Medicine, Brigham and Women's Hospital, Boston, MA (Feb. 2010).

Contributed

1. **Mitani, A. A.**, Kaye, E. K. & Nelson, K. P. Ordinal clustered data with informative cluster size in a longitudinal study. ENAR, Philadelphia, PA. (Mar. 2019).
2. **Mitani, A. A.**, Kaye, E. K. & Nelson, K. P. Marginal analysis of ordinal clustered longitudinal data with informative cluster size. Joint Statistical Meetings, Vancouver, Canada (July 2018).
3. **Mitani, A. A.**, Kurian, A. W., Das, A. K. & Desai, M. Variable selection with multiply imputed data when considering interaction effects. Joint Statistical Meetings, Montreal, Canada (Aug. 2013).

4. **Mitani, A. A.**, Kurian, A. W., Das, A. K. & Desai, M. The implications of software choice for handling missing data in the presence of interaction effects involving at least one categorical variable. Joint Statistical Meetings, San Diego, CA (July 2012).
5. **Mitani, A. A.** & Hardin, J. Biweight correlation as a measure of distance between genes on a microarray. Joint Statistical Meetings, Seattle, WA (Aug. 2006).

REFERENCES

Kerrie Nelson, PhD
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Section Chief of Biostatistics
Director of the Quantitative Sciences Unit
Director of the Biostatistics Shared Resource for the Stanford Cancer Institute
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