

Aya A. Mitani, PhD, MPH

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EDUCATION

Doctor of Philosophy in Biostatistics *2014 - 2019*

Boston University, Boston, MA

Dissertation: Modeling Dental Disease in a Longitudinal Study

Advisor: Kerrie P. Nelson, PhD

Master of Public Health in Biostatistics *2006 - 2008*

Yale University School of Public Health, New Haven, CT

Bachelor of Arts in Mathematics (Honors) *2002 - 2006*

Pitzer College, Claremont, CA

GRANTS AND FELLOWSHIPS

NRSA Individual Pre-doctoral Fellowship (F31), *2017 - 2020*

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)

Pre-doctoral Fellow *2007*

Biostatistics Branch, Department of Cancer Epidemiology and Genetics,

National Cancer Institute, Rockland, MD

PREVIOUS EXPERIENCE

Graduate Research Assistant *2014 - 2017*

Modeling Agreement in Cancer Diagnostic Tests (PI: Kerrie Nelson)

Boston University School of Public Health, Boston, MA

Biostatistician *2011 - 2014*

Quantitative Sciences Unit

Stanford University, Palo Alto, CA

Biostatistician *2008 - 2011*

Department of Anesthesia

Brigham and Womens Hospital, Boston, MA

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

TEACHING EXPERIENCE

Student Instructor	<i>Fall 2016, Spring 2017, Summer 2017</i>
Introduction to Statistical Computing (BS723), Boston University School of Public Health	
Teaching Assistant	<i>Spring 2016</i>
Introduction to Statistical Computing (BS723), Boston University School of Public Health	
Teaching Assistant	<i>Fall 2007</i>
Introduction to Statistical Thinking I (BIS505a), Yale University School of Public Health	

PUBLICATIONS

Peer-Reviewed Publications

- [1] **Mitani, A. A.**, E. K. Kaye, and K. P. Nelson. “Marginal analysis of ordinal clustered longitudinal data with informative cluster size”. In: *Biometrics* (2019). Printed online. PMID: 30859544.
- [2] K. P. Nelson, **Mitani, A. A.**, and D. Edwards. “Evaluating the effects of rater and subject factors on measures of association”. In: *Biom J* 60.3 (May 2018), pp. 639–656. PMID: 29349801.
- [3] **Mitani, A. A.**, P. E. Freer, and K. P. Nelson. “Summary measures of agreement and association between many raters’ ordinal classifications”. In: *Ann Epidemiol* 27.10 (Oct. 2017), pp. 677–685. PMID: 29029991.
- [4] **Mitani, A. A.** and K. P. Nelson. “Modeling agreement between binary classifications of multiple raters in R and SAS”. In: *JMASM* 16.2 (2017), Article 15.
- [5] M. E. Montez-Rath, K. Kapphahn, M. B. Mathur, **Mitani, A. A.**, D. J. Hendry, and M. Desai. “Guidelines for generating right-censored outcomes from a Cox model extended to accommodate time-varying covariates”. In: *JMASM* 16.1 (2017), pp. 86–106.
- [6] K. P. Nelson, **Mitani, A. A.**, and D. Edwards. “Assessing the influence of rater and subject characteristics on measures of agreement for ordinal ratings”. In: *Stat Med* 36.20 (Sept. 2017), pp. 3181–3199. PMID: 28612356.

- [7] W. C. Winkelmayer, B. A. Goldstein, **Mitani, A. A.**, V. Y. Ding, M. Airy, S. Mandayam, T. I. Chang, M. A. Brookhart, and S. Fishbane. "Safety of Intravenous Iron in Hemodialysis: Longer-term Comparisons of Iron Sucrose Versus Sodium Ferric Gluconate Complex". In: *Am. J. Kidney Dis.* 69.6 (June 2017), pp. 771–779. PMID: 28063734.
- [8] M. Desai, **Mitani, A. A.**, S. W. Bryson, and T. Robinson. "Multiple Imputation when Rate of Change is the Outcome of Interest". In: *JMASM* 15.1 (2016), Article 10.
- [9] **Mitani, A. A.**, A. W. Kurian, and M. Desai. "Navigating choices when applying multiple imputation in the presence of multi-level categorical interaction effects". In: *Statistical Methodology* 27 (2015), pp. 82–99.
- [10] D. A. Oxman, C. D. Adams, G. Deluke, L. Philbrook, P. Ireland, **Mitani, A.**, C. Panizales, G. Frendl, and S. O. Rogers. "Improving Antibiotic De-Escalation in Suspected Ventilator-Associated Pneumonia: An Observational Study With a Pharmacist-Driven Intervention". In: *J Pharm Pract* 28.5 (Oct. 2015), pp. 457–461. PMID: 24651641.
- [11] W. C. Winkelmayer, T. I. Chang, **Mitani, A. A.**, E. R. Wilhelm-Leen, V. Ding, G. M. Chertow, M. A. Brookhart, and B. A. Goldstein. "Longer-term outcomes of darbepoetin alfa versus epoetin alfa in patients with ESRD initiating hemodialysis: a quasi-experimental cohort study". In: *Am. J. Kidney Dis.* 66.1 (July 2015), pp. 106–113. PMID: 25943715.
- [12] M. Kurella-Tamura, B. A. Goldstein, Y. N. Hall, **Mitani, A. A.**, and W. C. Winkelmayer. "State medicaid coverage, ESRD incidence, and access to care". In: *J. Am. Soc. Nephrol.* 25.6 (June 2014), pp. 1321–1329. PMID: 24652791.
- [13] A. W. Kurian, **Mitani, A.**, M. Desai, P. P. Yu, T. Seto, S. C. Weber, C. Olson, P. Kenkare, S. L. Gomez, M. A. de Bruin, K. Horst, J. Belkora, S. G. May, D. L. Frosch, D. W. Blayney, H. S. Luft, and A. K. Das. "Breast cancer treatment across health care systems: linking electronic medical records and state registry data to enable outcomes research". In: *Cancer* 120.1 (Jan. 2014), pp. 103–111. PMID: 24101577.
- [14] J. I. Shen, **Mitani, A. A.**, and W. C. Winkelmayer. "Heparin use in hemodialysis patients following gastrointestinal bleeding". In: *Am. J. Nephrol.* 40.4 (2014), pp. 300–307. PMID: 25341418.
- [15] J. I. Shen, M. E. Montez-Rath, **Mitani, A. A.**, K. F. Erickson, and W. C. Winkelmayer. "Correlates and variance decomposition analysis of heparin dosing for maintenance hemodialysis in older US patients". In: *Pharmacoepidemiol Drug Saf* 23.5 (May 2014), pp. 515–525. PMID: 24677688.
- [16] W. C. Winkelmayer, **Mitani, A. A.**, B. A. Goldstein, M. A. Brookhart, and G. M. Chertow. "Trends in anemia care in older patients approaching end-stage renal disease in the United States (1995-2010)". In: *JAMA Intern Med* 174.5 (May 2014), pp. 699–707. PMID: 24589911.
- [17] C. M. Arce, B. A. Goldstein, **Mitani, A. A.**, C. R. Lenihan, and W. C. Winkelmayer. "Differences in access to kidney transplantation between Hispanic and non-Hispanic whites by geographic location in the United States". In: *Clin J Am Soc Nephrol* 8.12 (Dec. 2013), pp. 2149–2157. PMID: 24115195.
- [18] C. M. Arce, B. A. Goldstein, **Mitani, A. A.**, and W. C. Winkelmayer. "Trends in relative mortality between Hispanic and non-Hispanic whites initiating dialysis: a retrospective study of the US Renal Data System". In: *Am. J. Kidney Dis.* 62.2 (Aug. 2013), pp. 312–321. PMID: 23647836.
- [19] J. M. Carabuena, **Mitani, A. A.**, X. Liu, B. S. Kodali, and L. C. Tsen. "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”. In: *Anesth. Analg.* 116.1 (Jan. 2013), pp. 145–154. PMID: 23223103.
- [20] A. A. Fox, L. Nascimben, S. C. Body, C. D. Collard, **Mitani, A. A.**, K. Y. Liu, J. D. Muehlschlegel, S. K. Shernan, and E. R. Marcantonio. “Increased perioperative b-type natriuretic peptide associates with heart failure hospitalization or heart failure death after coronary artery bypass graft surgery”. In: *Anesthesiology* 119.2 (Aug. 2013), pp. 284–294. PMID: 23695172.
 - [21] S. Kumar, A. Fioritto, **Mitani, A.**, M. Desai, N. Gunaratnam, and U. Ladabaum. “Optical biopsy of sessile serrated adenomas: do these lesions resemble hyperplastic polyps under narrow-band imaging?” In: *Gastrointest. Endosc.* 78.6 (Dec. 2013), pp. 902–909. PMID: 23849819.
 - [22] U. Ladabaum, A. Fioritto, **Mitani, A.**, M. Desai, J. P. Kim, D. K. Rex, T. Imperiale, and N. Gunaratnam. “Real-time optical biopsy of colon polyps with narrow band imaging in community practice does not yet meet key thresholds for clinical decisions”. In: *Gastroenterology* 144.1 (Jan. 2013), pp. 81–91. PMID: 23041328.
 - [23] S. S. Nair, **Mitani, A. A.**, B. A. Goldstein, G. M. Chertow, D. W. Lowenberg, and W. C. Winkelmayer. “Temporal trends in the incidence, treatment, and outcomes of hip fracture in older patients initiating dialysis in the United States”. In: *Clin J Am Soc Nephrol* 8.8 (Aug. 2013), pp. 1336–1342. PMID: 23660182.
 - [24] J. I. Shen, **Mitani, A. A.**, T. I. Chang, and W. C. Winkelmayer. “Use and safety of heparin-free maintenance hemodialysis in the USA”. In: *Nephrol. Dial. Transplant.* 28.6 (June 2013), pp. 1589–1602. PMID: 23563280.
 - [25] J. I. Shen, **Mitani, A. A.**, A. B. Saxena, B. A. Goldstein, and W. C. Winkelmayer. “Determinants of peritoneal dialysis technique failure in incident US patients”. In: *Perit Dial Int* 33.2 (2013), pp. 155–166. PMID: 23032086.
 - [26] C. M. Arce, **Mitani, A. A.**, B. A. Goldstein, and W. C. Winkelmayer. “Hispanic ethnicity and vascular access use in patients initiating hemodialysis in the United States”. In: *Clin J Am Soc Nephrol* 7.2 (Feb. 2012), pp. 289–296. PMID: 22114148.
 - [27] M. C. Elie-Turenne, P. C. Hou, **Mitani, A.**, J. M. Barry, E. Y. Kao, J. E. Cohen, G. Frendl, O. Gajic, and N. T. Gentile. “Lung injury prediction score for the emergency department: first step towards prevention in patients at risk”. In: *Int J Emerg Med* 5.1 (Sept. 2012), p. 33. PMID: 22943391.
 - [28] J. M. Garfield, F. B. Garfield, R. Holzman, **Mitani, A. A.**, and L. C. Tsen. “Practice policies for older anesthesiologists in academic departments: a national survey of academic departmental chairpersons”. In: *J Clin Anesth* 24.5 (Aug. 2012), pp. 357–363. PMID: 22617418.
 - [29] P. C. Hou, M. C. Elie-Turenne, **Mitani, A.**, J. M. Barry, E. Y. Kao, J. E. Cohen, G. Frendl, O. Gajic, and N. T. Gentile. “Towards prevention of acute lung injury: frequency and outcomes of emergency department patients at-risk - a multicenter cohort study”. In: *Int J Emerg Med* 5.1 (May 2012), p. 22. PMID: 22632126.
 - [30] K. A. Mizuguchi, **Mitani, A.**, S. S. Waikar, P. Ireland, C. Panizales, G. Deluke, D. J. Sugarbaker, J. V. Bonventre, and G. Frendl. “Use of postoperative creatinine to predict sustained kidney injury in patients undergoing mesothelioma surgery”. In: *Clin J Am Soc Nephrol* 7.7 (July 2012), pp. 1071–1078. PMID: 22537654.
 - [31] M. Nowak-Machen, J. D. Rawn, P. S. Shekar, **Mitani, A.**, S. Tuli, T. M. Bingold, G. Lawlor, H. K. Eltzschig, S. K. Shernan, and P. Rosenberger. “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”. In: *Crit Care* 16.1 (Jan. 2012), R17. PMID: 22277113.

- [32] P. Sarin, B. K. Philip, **Mitani, A.**, S. Eappen, and R. D. Urman. “Specialized ambulatory anesthesia teams contribute to decreased ambulatory surgery recovery room length of stay”. In: *Ochsner J* 12.2 (2012), pp. 94–100. PMID: 22778673.
- [33] R. D. Urman, P. Sarin, **Mitani, A.**, B. Philip, and S. Eappen. “Presence of anesthesia resident trainees in day surgery unit has mixed effects on operating room efficiency measures”. In: *Ochsner J* 12.1 (2012), pp. 25–29. PMID: 22438778.
- [34] A. C. Colvin, C. F. Wang, M. A. Soens, **Mitani, A. A.**, G. Strichartz, and P. Gerner. “Prolonged cutaneous analgesia with transdermal application of amitriptyline and capsaicin”. In: *Reg Anesth Pain Med* 36.3 (2011), pp. 236–240. PMID: 21364497.
- [35] A. M. Binshtok, P. Gerner, S. B. Oh, M. Puopolo, S. Suzuki, D. P. Roberson, T. Herbert, C. F. Wang, D. Kim, G. Chung, **Mitani, A. A.**, G. K. Wang, B. P. Bean, and C. J. Woolf. “Coapplication of lidocaine and the permanently charged sodium channel blocker QX-314 produces a long-lasting nociceptive blockade in rodents”. In: *Anesthesiology* 111.1 (July 2009), pp. 127–137. PMID: 19512868.
- [36] J. M. Garfield, F. B. Garfield, N. D. Hevelone, N. Bhattacharyya, D. F. Dedrick, S. W. Ashley, E. S. Nadel, J. T. Katz, C. Kim, and **Mitani, A. A.** “Doctors in acute and longitudinal care specialties emphasise different professional attributes: implications for training programmes”. In: *Med Educ* 43.8 (Aug. 2009), pp. 749–756. PMID: 19659488.
- [37] R. M. Pfeiffer, **Mitani, A.**, O. Landgren, A. Ekbom, S. Y. Kristinsson, M. Bjorkholm, R. J. Biggar, and L. A. Brinton. “Timing of births and endometrial cancer risk in Swedish women”. In: *Cancer Causes Control* 20.8 (Oct. 2009), pp. 1441–1449. PMID: 19565342.
- [38] W. F. Anderson, P. S. Rosenberg, I. Menashe, **Mitani, A.**, and R. M. Pfeiffer. “Age-related crossover in breast cancer incidence rates between black and white ethnic groups”. In: *J. Natl. Cancer Inst.* 100.24 (Dec. 2008), pp. 1804–1814. PMID: 19066264.
- [39] R. M. Pfeiffer, **Mitani, A.**, R. K. Matsuno, and W. F. Anderson. “Racial differences in breast cancer trends in the United States (2000-2004)”. In: *J. Natl. Cancer Inst.* 100.10 (May 2008), pp. 751–752. PMID: 18477805.
- [40] J. Hardin, **Mitani, A.**, L. Hicks, and B. VanKoten. “A robust measure of correlation between two genes on a microarray”. In: *BMC Bioinformatics* 8 (June 2007), p. 220. PMID: 17592643.

Manuscripts in Progress

- [1] **Mitani, A. A.**, E. K. Kaye, and K. P. Nelson. “Marginal analysis of multiple correlated outcomes with informative cluster size”. In preparation.
- [2] **Mitani, A. A.**, E. K. Kaye, and K. P. Nelson. “Modeling tooth-loss using inverse probability censoring weights in longitudinal clustered data with informative cluster size”. In preparation.

TALKS & SEMINARS

Invited

- [1] **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.
- [2] **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.
- [3] G Peloso and **Mitani, A.** “Applying for Individual (pre- and post-doctoral) Fellowship Awards from the NIH”. Biostatistics Student Association Seminar, Boston University, Boston, MA. Oct. 2017.
- [4] **Mitani, A.** “Issues and guidelines of multiple imputation in practice”. Webinar training series, ASA Section for Statistical Programmers and Analysts. Apr. 2013.
- [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.** “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.**, E. K. Kaye, and K. P. Nelson. “Ordinal Clustered Data with Informative Cluster Size in a Longitudinal Study”. ENAR, Philadelphia, PA. Mar. 2019.
- [2] **Mitani, A. A.**, E. K. Kaye, and K. P. Nelson. “Marginal analysis of ordinal clustered longitudinal data with informative cluster size”. Joint Statistical Meetings, Vancouver, Canada. July 2018.
- [3] **Mitani, A. A.**, A. W. Kurian, A. K. Das, and M. Desai. “Variable selection with multiply imputed data when considering interaction effects”. Joint Statistical Meetings, Montreal, Canada. Aug. 2013.
- [4] **Mitani, A. A.**, A. W. Kurian, A. K. Das, and M. Desai. “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.** and J. Hardin. “Biweight correlation as a measure of distance between genes on a microarray”. Joint Statistical Meetings, Seattle, WA. Aug. 2006.

MEMBERSHIPS, ACTIVITIES & SERVICE

Memberships in Professional Organizations

New England Statistical Society	<i>2019 - Present</i>
Eastern North American Region of the International Biometrics Society	<i>2018 - Present</i>
Institute of Mathematical Statistics	<i>2017 - Present</i>
American Statistical Association	<i>2006 - Present</i>

Community Activities & Service

Student Representative, Ph.D. Program Review Evaluation Committee, Biostatistics Department, Boston University *2018*
Panelist, Graduate School Information Session hosted by the 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

Journal of Modern Applied Statistical Methods (1) *2018*

SOFTWARE

R Package

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

Languages

R, SAS, Stata, Shell scripting, \LaTeX