

Aya A. Mitani, PhD, MPH

Department of Biostatistics, Harvard T. H. Chan School of Public Health, Boston, MA

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Updated: September 19, 2019

EDUCATION

Doctor of Philosophy in Biostatistics *2014 - 2019*

Boston University, Boston, MA

Dissertation: Modeling Dental Disease Progression 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

ACADEMIC POSITIONS

Postdoctoral Research Fellow *2019 - Present*

Department of Biostatistics

Harvard T. H. Chan School of Public Health, Boston, MA

Advisor: Sebastien Haneuse, PhD

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

EMPLOYMENT

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	<i>2019</i>
Winner, BU Department of Biostatistics Student Paper Competition	<i>2019</i>
IBM Student Research Award, New England Statistical Symposium	<i>2018</i>
Mu Sigma Rho, The National Statistics Honorary Society	<i>2017</i>
Annual Scientific Award, Society of Critical Care Medicine	<i>2011</i>
Graduated with Honors in Mathematics, Pitzer College	<i>2006</i>
Best Presentation in Geometry, MASS, Pennsylvania State University	<i>2005</i>
Research Experience for Undergraduates, Claremont Colleges (Funded by NSF)	<i>2005</i>
Sigma Xi, The Scientific Research Society	<i>2005</i>

TEACHING EXPERIENCE

Student Instructor*Fall 2016, Spring 2017, Summer 2017*

Introduction to Statistical Computing (BS723),
Boston University School of Public Health

Teaching Assistant*Spring 2016*

Introduction to Statistical Computing (BS723),
Boston University School of Public Health

Teaching Assistant*Fall 2007*

Introduction to Statistical Thinking I (BIS505a),
Yale University School of Public Health

PUBLICATIONS

Peer-Reviewed Publications

- [1] **Mitani, A. A.**, Kaye, Elizabeth K., and Nelson, Kerrie P. "Marginal analysis of ordinal clustered longitudinal data with informative cluster size". In: *Biometrics* 75.3 (2019), pp. 938–949. PMID: 30859544.
- [2] Nelson, K. P., **Mitani, A. A.**, and Edwards, D. "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.**, Freer, P. E., and Nelson, K. P. "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 Nelson, K. P. "Modeling agreement between binary classifications of multiple raters in R and SAS". In: *JMASM* 16.2 (2017), pp. 277–309.

- [5] Montez-Rath, M. E., Kapphahn, K., Mathur, M. B., **Mitani, A. A.**, Hendry, D. J., and Desai, M. "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] Nelson, K. P., **Mitani, A. A.**, and Edwards, D. "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] Winkelmayer, W. C., Goldstein, B. A., **Mitani, A. A.**, Ding, V. Y., Airy, M., Mandayam, S., Chang, T. I., Brookhart, M. A., and Fishbane, S. "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] Desai, M., **Mitani, A. A.**, Bryson, S. W., and Robinson, T. "Multiple Imputation when Rate of Change is the Outcome of Interest". In: *JMASM* 15.1 (2016), Article 10.
- [9] **Mitani, A. A.**, Kurian, A. W., and Desai, M. "Navigating choices when applying multiple imputation in the presence of multi-level categorical interaction effects". In: *Statistical Methodology* 27 (2015), pp. 82–99.
- [10] Oxman, D. A., Adams, C. D., Deluke, G., Philbrook, L., Ireland, P., **Mitani, A.**, Panizales, C., Frendl, G., and Rogers, S. O. "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] Winkelmayer, W. C., Chang, T. I., **Mitani, A. A.**, Wilhelm-Leen, E. R., Ding, V., Chertow, G. M., Brookhart, M. A., and Goldstein, B. A. "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] Kurella-Tamura, M., Goldstein, B. A., Hall, Y. N., **Mitani, A. A.**, and Winkelmayer, W. C. "State medicaid coverage, ESRD incidence, and access to care". In: *J. Am. Soc. Nephrol.* 25.6 (June 2014), pp. 1321–1329. PMID: 24652791.
- [13] Kurian, A. W., **Mitani, A.**, Desai, M., Yu, P. P., Seto, T., Weber, S. C., Olson, C., Kenkare, P., Gomez, S. L., Bruin, M. A. de, Horst, K., Belkora, J., May, S. G., Frosch, D. L., Blayney, D. W., Luft, H. S., and Das, A. K. "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] Shen, J. I., **Mitani, A. A.**, and Winkelmayer, W. C. "Heparin use in hemodialysis patients following gastrointestinal bleeding". In: *Am. J. Nephrol.* 40.4 (2014), pp. 300–307. PMID: 25341418.
- [15] Shen, J. I., Montez-Rath, M. E., **Mitani, A. A.**, Erickson, K. F., and Winkelmayer, W. C. "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] Winkelmayer, W. C., **Mitani, A. A.**, Goldstein, B. A., Brookhart, M. A., and Chertow, G. M. "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] Arce, C. M., Goldstein, B. A., **Mitani, A. A.**, Lenihan, C. R., and Winkelmayer, W. C. "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] Arce, C. M., Goldstein, B. A., **Mitani, A. A.**, and Winkelmayer, W. C. "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] Carabuena, J. M., **Mitani, A. A.**, Liu, X., Kodali, B. S., and 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". In: *Anesth. Analg.* 116.1 (Jan. 2013), pp. 145–154. PMID: 23223103.
- [20] Fox, A. A., Nascimben, L., Body, S. C., Collard, C. D., **Mitani, A. A.**, Liu, K. Y., Muehlschlegel, J. D., Shernan, S. K., and Marcantonio, E. R. "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] Kumar, S., Fioritto, A., **Mitani, A.**, Desai, M., Gunaratnam, N., and Ladabaum, U. "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] Ladabaum, U., Fioritto, A., **Mitani, A.**, Desai, M., Kim, J. P., Rex, D. K., Imperiale, T., and 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". In: *Gastroenterology* 144.1 (Jan. 2013), pp. 81–91. PMID: 23041328.
- [23] Nair, S. S., **Mitani, A. A.**, Goldstein, B. A., Chertow, G. M., Lowenberg, D. W., and Winkelmayer, W. C. "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] Shen, J. I., **Mitani, A. A.**, Chang, T. I., and Winkelmayer, W. C. "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] Shen, J. I., **Mitani, A. A.**, Saxena, A. B., Goldstein, B. A., and Winkelmayer, W. C. "Determinants of peritoneal dialysis technique failure in incident US patients". In: *Perit Dial Int* 33.2 (2013), pp. 155–166. PMID: 23032086.
- [26] Arce, C. M., **Mitani, A. A.**, Goldstein, B. A., and Winkelmayer, W. C. "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] Elie-Turenne, M. C., Hou, P. C., **Mitani, A.**, Barry, J. M., Kao, E. Y., Cohen, J. E., Frendl, G., Gajic, O., and Gentile, N. T. "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] Garfield, J. M., Garfield, F. B., Holzman, R., **Mitani, A. A.**, and Tsen, L. C. "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] Hou, P. C., Elie-Turenne, M. C., **Mitani, A.**, Barry, J. M., Kao, E. Y., Cohen, J. E., Frendl, G., Gajic, O., and Gentile, N. T. "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] Mizuguchi, K. A., **Mitani, A.**, Waikar, S. S., Ireland, P., Panizales, C., Deluke, G., Sugarbaker, D. J., Bonventre, J. V., and Frendl, G. "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] Nowak-Machen, M., Rawn, J. D., Shekar, P. S., **Mitani, A.**, Tuli, S., Bingold, T. M., Lawlor, G., Eltzschig, H. K., Shernan, S. K., and 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". In: *Crit Care* 16.1 (Jan. 2012), R17. PMID: 22277113.
- [32] Sarin, P., Philip, B. K., **Mitani, A.**, Eappen, S., and Urman, R. D. "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] Urman, R. D., Sarin, P., **Mitani, A.**, Philip, B., and Eappen, S. "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] Colvin, A. C., Wang, C. F., Soens, M. A., **Mitani, A. A.**, Strichartz, G., and Gerner, P. "Prolonged cutaneous analgesia with transdermal application of amitriptyline and capsaicin". In: *Reg Anesth Pain Med* 36.3 (2011), pp. 236–240. PMID: 21364497.
- [35] 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., and Woolf, C. J. "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] 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., 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] Pfeiffer, R. M., **Mitani, A.**, Landgren, O., Ekblom, A., Kristinsson, S. Y., Bjorkholm, M., Biggar, R. J., and Brinton, L. A. "Timing of births and endometrial cancer risk in Swedish women". In: *Cancer Causes Control* 20.8 (Oct. 2009), pp. 1441–1449. PMID: 19565342.
- [38] Anderson, W. F., Rosenberg, P. S., Menashe, I., **Mitani, A.**, and Pfeiffer, R. M. "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] Pfeiffer, R. M., **Mitani, A.**, Matsuno, R. K., and Anderson, W. F. “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] Hardin, J., **Mitani, A.**, Hicks, L., and VanKoten, B. “A robust measure of correlation between two genes on a microarray”. In: *BMC Bioinformatics* 8 (June 2007), p. 220. PMID: 17592643.

Manuscripts Submitted

- [1] **Mitani, A. A.**, Kaye, E. K., and Nelson, K. P. “Marginal analysis of multiple correlated outcomes with informative cluster size”. Submitted, Sep. 2019.
- [2] **Mitani, A. A.**, Kaye, E. K., and Nelson, K. P. “Modeling tooth-loss using inverse probability censoring weights in longitudinal clustered data with informative cluster size”. Submitted, Sep. 2019.

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] Peloso, G 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.**, Kaye, E. K., and 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., and 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., and 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., and 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.** and Hardin, J. “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>

Conference Organization

Session Organizer, Joint Statistical Meetings, Philadelphia, PA	<i>2020</i>
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Community Activities & Service

Student Representative, Ph.D. Program Review Evaluation Committee, Biostatistics Department, Boston University	<i>2018</i>
Panelist, Graduate School Information Session hosted by the Statistics Club, Boston University	<i>2016</i>
President, Biostatistics Student Association, Boston University	<i>2016 - 2017</i>
Vice President of Academic Affairs, Biostatistics Student Association, Boston University	<i>2015 - 2016</i>

Journal Review

Statistical Reviewer, JAMA Network Open	<i>2019 - Present</i>
Journal of Modern Applied Statistical Methods (1)	<i>2018</i>

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, \LaTeX