

# Aya A. Mitani

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<https://ayamitani.github.io>

## CURRENT POSITION

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### Harvard T. H. Chan School of Public Health

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

Boston, MA  
*Sept 2019 – Present*

## EDUCATION

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### 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

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### 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

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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**

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

<b>Stanford University</b>	Palo Alto, CA
Quantitative Sciences Unit	<i>2011 – 2014</i>
Biostatistician	

<b>Brigham and Womens Hospital</b>	Boston, MA
Department of Anesthesia	<i>2008 – 2011</i>
Biostatistician	

**TEACHING EXPERIENCE**

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<b>Boston University School of Public Health</b>	Boston, MA
Student Instructor, Introduction to Statistical Computing	<i>Fall 2016, Spring – Summer 2017</i>
Teaching Assistant, Introduction to Statistical Computing	<i>Spring 2016</i>

<b>Yale University School of Public Health</b>	New Haven, CT
Teaching Assistant, Introduction to Statistical Thinking I	

**MEMBERSHIPS, ACTIVITIES & SERVICE**

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**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, Biostatistics PhD Program Review Evaluation Committee, Boston University	<i>2018</i>
Student Representative, L. Adrienne Cupples Award Committee, Boston University	<i>2016</i>
Panelist, Graduate School Information Session by 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

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### 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<sup>A</sup>T<sub>E</sub>X

## PUBLICATIONS

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### 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. 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).
6. 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.
7. 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.

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. 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.
11. 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.
12. 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.
13. 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.
14. 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.
15. 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.
16. 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.
17. 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.
18. 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.
19. 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.
20. 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.
21. 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.
  22. 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.
  23. 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.
  24. 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.
  25. 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.
  26. 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.
  27. 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.
  28. 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.
  29. 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.
  30. 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.
  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. & 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.

32. 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.
33. 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.
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. 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.
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. 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.
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* Under review.
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

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## 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. & **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. & 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

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