

# Aya A. Mitani

<https://ayamitani.github.io>

Prepared on: July 10, 2021

## EDUCATION

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**PhD in Biostatistics** *2019*  
Boston University Boston, MA  
Dissertation: “Modeling dental disease progression in a longitudinal study”  
Advisor: Kerrie Nelson, PhD

**MPH in Biostatistics** *2008*  
Yale University New Haven, CT

**BA in Mathematics (Honors)** *2006*  
Pitzer College Claremont, CA

## PROFESSIONAL EXPERIENCE

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**Assistant Professor** *Aug 2020 – Present*  
University of Toronto Dalla Lana School of Public Health Toronto, ON  
Division of Biostatistics

**Postdoctoral Research Fellow** *Sept 2019 – July 2020*  
Harvard T. H. Chan School of Public Health Boston, MA  
Department of Biostatistics  
Advisor: Sebastien Haneuse, PhD

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

**Biostatistician** *May 2008 – Jan 2011*  
Brigham and Women’s Hospital Boston, MA  
Department of Anesthesia

## GRANTS

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### Completed

**NRSA Individual Pre-doctoral Fellowship (F31)** *2017 – 2019*  
**National Institute of Dental and Craniofacial Research**  
Title: Modeling Dental Disease Progression in a Longitudinal Study  
Role: Principal Investigator

## HONORS, AWARDS AND FELLOWSHIPS

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IMS New Researcher Travel Award	2020
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
Pre-doctoral Cancer Research Training Fellowship, National Cancer Institute	2007
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

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### Dalla Lana School of Public Health

Instructor, Analysis of Correlated Data	Winter 2021
Co-instructor, Doctoral Student Seminar	Fall 2020, Winter 2021

### Boston University School of Public Health

Instructor, Introduction to Statistical Computing	Fall 2016, Spring & Summer 2017
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## ADVISING

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### Thesis supervision

Xinyang (Sean) Feng (MS, Biostatistics)	2021 – Present
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### Thesis committee membership

Menelaos Konstantinidis (MS, Biostatistics)	2020 – Present
Sylvia Li (MS, Biostatistics)	2021 – Present
Alex Bushby (PhD, Biostatistics)	2021 – Present

### Thesis internal examination

Kuan Liu (PhD, Biostatistics)	2021
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## PROFESSIONAL SERVICE

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### Memberships in Professional Organizations

Statistical Society of Canada	2021 – Present
Eastern North American Region of the International Biometrics Society	2018 – Present
American Statistical Association	2006 – Present
Institute of Mathematical Statistics	2017 – 2020
New England Statistical Society	2019 – 2020

**Conference Organization and Service**

Session Chair, Annual Meeting of Statistical Society of Canada, Virtual 2021  
 Topic-contributed Session Organizer, Joint Statistical Meetings, Virtual 2020

**Department, School, University Service**

Member, Biostatistics PhD Admissions Committee, DLSPH 2021 – 2022  
 Member, Biostatistics PhD Comprehensive Exam Committee, DLSPH 2021 – 2022  
 Member, Graduate Department Academic Appeals Committee, DLSPH 2020 – 2021  
 Chair, Awards Committee, Postdoctoral Association Council, HSPH, 2019 – 2020  
 Biostatistics Department Representative, Postdoctoral Association Council, HSPH 2019 – 2020  
 Student Representative, Biostatistics PhD Program Review Evaluation Committee, BUSPH 2018  
 Student Representative, L. Adrienne Cupples Award Committee, BUSPH 2016  
 Panelist, Graduate School Information Session by Statistics Club, BUSPH 2016  
 President, Biostatistics Student Association, BUSPH 2016 – 2017  
 Vice President of Academic Affairs, Biostatistics Student Association, BUSPH 2015 – 2016

**Editorial roles**

Statistical Reviewer, JAMA Network Open 2019 – Present  
 Ad-Hoc Reviewer,  
 - Biometrical Journal  
 - Canadian Medical Association Journal  
 - Dentistry Journal  
 - BMC Medical Research Methodology  
 - Advances in Statistical Analysis  
 - Annals of Applied Statistics  
 - Statistical Methods in Medical Research  
 - Journal of Statistical Computation and Simulation  
 - Journal of Modern Applied Statistical Methods

**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.

## PUBLICATIONS

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### Peer-Reviewed Publications

1. **Mitani, A. A.**, Kaye, E. K. & Nelson, K. P. Accounting for tooth-loss using inverse probability censoring weights in longitudinal clustered data with informative cluster size. Accepted to *Annals of Applied Statistics*.
2. **Mitani, A. A.**, Mercaldo, N. D., Haneuse, S. & Schildcrout, J. S. Survey design and analysis considerations when utilizing misclassified sampling strata. Accepted to *BMC Medical Research Methodology*.
3. **Mitani, A. A.**, Kaye, E. K. & Nelson, K. P. Marginal analysis of multiple outcomes with informative cluster size. *Biometrics* **77**, 271–282 (2021). PMID: 30859544.
4. **Mitani, A. A.** & Haneuse, S. Invited Commentary: Small data challenges of studying rare diseases. *JAMA Network Open* **3** (2020). PMID: 32202640.
5. Ladabaum, U., Mannalithara, A., **Mitani, A.** & Desai, M. Clinical and economic impact of tailoring screening to predicted colorectal cancer risk: A decision analytic modeling study. *Cancer Epidemiol Biomarkers Prev.* **29**, 318–328 (2020). PMID: 31796524.
6. **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.
7. 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.
8. **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.
9. **Mitani, A. A.** & Nelson, K. P. Modeling agreement between binary classifications of multiple raters in R and SAS. *JMASM* **16**, 277–309 (2017).
10. 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.
11. Winkelmayr, 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.
12. 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).
13. 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).
14. **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).
15. Winkelmayr, 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.
16. Shen, J. I., **Mitani, A. A.** & Winkelmayr, W. C. Heparin use in hemodialysis patients following gastrointestinal bleeding. *Am. J. Nephrol.* **40**, 300–307 (2014). PMID: 25341418.

17. 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.
18. 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.
19. Oxman, D. A., Adams, C. D., Deluke, G., Philbrook, L., Ireland, P., **Mitani, A.**, Panizales, C., Frenzl, 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.
20. 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.
21. 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.
22. 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.
23. 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.
24. 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.
25. 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.
26. 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.
27. 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.
28. 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.
29. 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.
30. 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.

31. 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.
32. 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.
33. 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.
34. 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.
35. 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.
36. 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.
37. 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.
38. Nowak-Machen, M., Rawn, J. D., Shekar, P. S., **Mitani, A.**, Tuli, S., Bingold, T. M., Lawlor, G., Eltzhig, 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.
39. 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.
40. Pfeiffer, R. M., **Mitani, A.**, Landgren, O., Ekblom, 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.
41. 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.
42. 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.
43. 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.
44. 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.

45. 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.

## TALKS & SEMINARS

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### Invited

1. How to write your own R package and upload it to GitHub. The Biostatistics Seminar Series, University of Toronto Dalla Lana School of Public Health (Jan. 2021).
2. Marginal analysis of multiple outcomes with informative cluster size. Biostatistics Division, University of Toronto Dalla Lana School of Public Health, Toronto, ON (Mar. 2020).
3. Marginal analysis of multiple outcomes with informative cluster size. Statistics Seminar, University of Waterloo, Waterloo, ON (Jan. 2020).
4. Informative cluster size in observational studies. HIV Working Group, Harvard Chan School, Boston, MA (Nov. 2019).
5. Modeling tooth-loss using inverse probability censoring weights in longitudinal clustered data with informative cluster size. New England Statistical Symposium, Hartford, CT (May 2019).
6. Marginal analysis of ordinal clustered longitudinal data with informative cluster size. New England Statistical Symposium, University of Massachusetts Amherst, Amherst, MA (Apr. 2018).
7. Applying for Individual (pre- and post-doctoral) Fellowship Awards from the NIH. Biostatistics Student Association Seminar, Boston University, Boston, MA (Oct. 2017).
8. Multiple imputation in practice – approaches for handling categorical and interaction variables. QSU Research Methods Seminar, Stanford University, Palo Alto, CA (May 2013).
9. Basic statistics for journal reading. Faculty Breakout Session, Department of Anesthesiology, Perioperative and Pain Medicine, Brigham and Women’s Hospital, Boston, MA (Feb. 2010).

### Topic-contributed

1. Marginal analysis of multiple outcomes with informative cluster size. Joint Statistical Meetings, Virtual (Aug. 2020).

### Contributed

1. Ordinal clustered data with informative cluster size in a longitudinal study. ENAR, Philadelphia, PA. (Mar. 2019).
2. Marginal analysis of ordinal clustered longitudinal data with informative cluster size. Joint Statistical Meetings, Vancouver, BC (July 2018).
3. Variable selection with multiply imputed data when considering interaction effects. Joint Statistical Meetings, Montreal, QC (Aug. 2013).
4. 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. Biweight correlation as a measure of distance between genes on a microarray. Joint Statistical Meetings, Seattle, WA (Aug. 2006).

## **Webinars**

1. Panelist, NIH Graduate and Postdoctoral Fellowships: Opportunities and Advice. Webinar from the ASA Committee on Funded Research (Jan. 2021).
2. Instructor, Issues and guidelines of multiple imputation in practice. Webinar training series, ASA Section for Statistical Programmers and Analysts (Apr. 2013).

## **PERSONAL INFORMATION**

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### **Work authorization**

U.S. citizen; Canadian permanent resident

### **Language**

Native in English and Japanese