

OLIVER BEMBOM
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EDUCATION

PhD in Biostatistics, 2007

University of California, Berkeley

Grade point average: 4.0

Adviser: Dr. Mark J. van der Laan, 2006 recipient of the Presidents' Award for best statistician in the world under 40.

Dissertation: *Statistical methods for causal inference when the assumption of experimental treatment assignment is violated.*

MPH in Epidemiology/Biostatistics, 2004

University of California, Berkeley

Grade point average: 4.0

Master's thesis: *Asthma hospitalization rates among young children in California.*

BA in Molecular and Cell Biology, 2002

University of California, Berkeley

Grade point average: 4.0

Highest Distinction of General Scholarship.

Honors thesis: *Use of Intracellular Single-chain Antibodies To Modulate Transcription Factor Activity.*

AREAS OF EXPERTISE

Causal effect estimation based on Marginal Structural Models.

Survival analysis, missing data and censored data.

Variable importance estimation with high-dimensional data, including biomarker discovery.

Targeted maximum likelihood estimation.

Prediction algorithms for high-dimensional data.

Multiple testing.

Statistical computing in R, SAS, and STATA, with additional programming experience in C, C++, Java, and Perl.

Agile development based on online project management software (AceProject), a continuous build system with automated unit testing (CruiseControl), and requirement and bug tracking (Bugzilla).

EMPLOYMENT**Statistician**, November 2007 - Present

Target Analytics, Berkeley, CA

Designed and programmed the statistical engine for state-of-the-art causal inference software.

Consulted a development-stage pharmaceutical company on a drug trial that had failed to gain FDA approval. Revealed a sub-population of patients for whom the drug in question is highly effective, as a result of which the company was re-capitalized to conduct a new trial. Defined parameters of the group sequential design of this new trial.

Assistant Adjunct Professor, January 2008 - September 2008

Division of Biostatistics, University of California, Berkeley

Conducted research in the area of causal inference and taught a graduate-level biostatistics course on *Categorical Data Analysis*.**TEACHING EXPERIENCE****Instructor**, Spring 2008

Division of Biostatistics, University of California, Berkeley

Taught a graduate-level biostatistics course on *Categorical Data Analysis*.**Substitute Lecturer**, Fall 2006

Division of Biostatistics, University of California, Berkeley

Prepared and held the following lectures for a graduate-level biostatistics course on *Censored Longitudinal Data and Causality*:

- Derivation of the double robust estimator of the marginal variable importance of a binary treatment variable*
- The causal effect of recent leisure-time physical activity on all-cause mortality among the elderly*

Substitute Lecturer, Spring 2006

Division of Biostatistics, University of California, Berkeley

Prepared and held the following lectures for a graduate-level biostatistics course on *Survival Analysis and Causality*:

- Derivation of the Kaplan-Meier estimator as the nonparametric maximum-likelihood estimator of the survival function*
- Derivation of Greenwood's formula for the asymptotic variance of the Kaplan-Meier estimator*
- Estimation and inference for multivariate multiplicative intensity models based on the profile partial likelihood*
- Fitting multiplicative intensity models using `coxph()` in R*

Teaching Assistant, August 2000 - May 2003

Department of Statistics, University of California, Berkeley

Teaching assistant for various undergraduate statistics classes. Duties included conducting discussion sections, preparing and grading quizzes, as well as grading midterm and final exams.

Outstanding Graduate Student Instructor Award, 2002 - 2003.**AWARDS AND HONORS**

- Biostatistics Extraordinary Research Award (2008): The department’s highest honor, awarded at most once a year in recognition “of a Graduating Student’s research work that is considered to be extraordinary, beyond the highest expectations of a PhD student”.
- Chin Long Chiang Biostatistics Student of the Year (2008).
- Jiann-Ping Hsu Award for Excellence and Scholarship (2006 - 2007).
- Walter G. and Julia Perker Scholarship (2003 - 2004).
- School of Public Health University Fellowship (2002 - 2004).
- Outstanding Undergraduate Scholar Award (2002): The department’s second-highest honor, awarded annually “for outstanding undergraduate scholarly achievements in Molecular and Cell Biology”.
- Phi Beta Kappa, 2002.
- Siegfried Roggenbuck Scholarship, 1999-2002.
- Edmund Vey Scholarship, 2000.
- Ernst Stewner Scholarship, 1999-2000.

PUBLICATIONS**Refereed Publications**

1. M.G. Goveia, N. Shaikh, Windham G, **O. Bembom**, K. Feldman, and R. Kreutzer (2005). Asthma awareness/environmental practices in childcare centers. *Pediatric Asthma, Allergy and Immunology*, 18(1):12-24.
2. Y. Wang, **O. Bembom**, and M.J. van der Laan (2007). Data-Adaptive Estimation of the Treatment-Specific Mean. *Journal of Statistical Planning and Inference*, 137(6):1871-1887.
3. **O. Bembom**, S. Keleş, and M.J. van der Laan (2007). Supervised Detection of Conserved Motifs in DNA Sequences with *cosmo*. *Statistical Applications in Genetics and Molecular Biology*: Vol. 6 : Iss. 1, Article 8. <http://www.bepress.com/sagmb/vol6/iss1/art8>.

4. **O. Bembom** and M.J. van der Laan (2007). Statistical methods for analyzing sequentially randomized trials. *Journal of the National Cancer Institute*, 99(21):1577-1582.
5. **O. Bembom** and M.J. van der Laan (2007). A practical illustration of the importance of realistic individualized treatment rules in causal inference. *Electronic Journal of Statistics*, 1:574-596.
6. **O. Bembom** and M.J. van der Laan (2008). Analyzing sequentially randomized trials based on causal effect models for realistic individualized treatment rules. *Statistics in Medicine*, 27(19):3689-3716.
7. **O. Bembom**, M.L. Petersen, S.-Y. Rhee, W. J. Fessel, S.E. Sinisi, R.W. Shafer, and M.J. van der Laan (2009). Biomarker discovery using targeted maximum likelihood estimation: Application to the treatment of antiretroviral resistant HIV infection. *Statistics in Medicine*, 28(1): 152-172.
8. S. Morshed, T. Miclau III, **O. Bembom**, M. Cohen, M.M. Knudson, J.M. Colford (2009). Delayed femoral shaft fracture internal fixation reduced mortality among multi-system trauma patients. (To appear in *Journal of Bone and Joint Surgery*.)
9. **O. Bembom**, M.J. van der Laan, T. Haight, and I.B. Tager (2009). Lifetime and current leisure time physical activity and all-cause mortality in an elderly cohort. (To appear in *Epidemiology*.)

Book Chapters and Conference Proceedings

10. **O. Bembom**, M.L. Petersen, and M.J. van der Laan (2006). Identifying important explanatory variables for time-varying outcomes. In W. Dubitzky, M. Granzow, and D.P. Berrar (eds.), *Fundamentals of Data Mining in Genomics and Proteomics*, Springer, Chapter 11, p. 227-250.

Technical Reports and Submitted Manuscripts

11. **O. Bembom**, M.J. van der Laan, and I.B. Tager (2007). The causal effect of recent leisure-time physical activity on all-cause mortality among the elderly. *UC Berkeley Division of Biostatistics Working Paper Series*. Working Paper 214. <http://www.bepress.com/ucbbiostat/paper214>.
12. **O. Bembom** and M.J. van der Laan (2007). Estimating the effect of vigorous physical activity on mortality in the elderly based on realistic individualized treatment and intention-to-treat rules. *UC Berkeley Division of Biostatistics Working Paper Series*. Working Paper 217. <http://www.bepress.com/ucbbiostat/paper217>.
13. **O. Bembom** and M.J. van der Laan (2008). Data-adaptive selection of the truncation level for Inverse-Probability-of-Treatment-Weighted estimators. *UC Berkeley Division of Biostatistics Working Paper Series*. Working Paper 230. <http://www.bepress.com/ucbbiostat/paper230>. (Submitted to *Biometrics*.)

14. **O. Bembom**, W.J. Fessel, R.W. Shafer, and M.J. van der Laan (2008). Data-adaptive selection of the adjustment set in variable importance estimation. *UC Berkeley Division of Biostatistics Working Paper Series*. Working Paper 231. <http://www.bepress.com/ucbbiostat/paper231>. (Submitted to *The Annals of Applied Statistics*.)

California Department of Health Services Publications

15. J.K. Stockman, N. Shaikh, J. von Behren, **O. Bembom**, and R. Kreutzer (2003). California County Asthma Hospitalization Chart Book: Data from 1998-2000. California Department of Health Services, Environmental Health Investigations Branch.
16. J.K. Stockman, K. Garcia, J. von Behren, **O. Bembom**, N. Shaikh, and R. Kreutzer (2004). Asthma Disparities Among African-Americans. *California Asthma Facts, Volume 2, Issue 1*. California Department of Health Services, Environmental Health Investigations Branch.

Manuscripts in Preparation

17. H. Shim, **O. Bembom**, and S. Keleş. Combining heterogeneous sources of genome-wide data to improve detection of regulatory motifs.

Software

18. **O. Bembom**, S. Keleş, and M.J. van der Laan (2006). `ccosmo`: A stand-alone C program for the supervised detection of conserved motifs in DNA sequences (<http://cosmoweb.berkeley.edu/software.html>).
19. **O. Bembom**, S. Keleş, and M.J. van der Laan (2006). `cosmoweb`: A web application for the supervised detection of conserved motifs in DNA sequences (<http://cosmoweb.berkeley.edu>).
20. **O. Bembom**, F. Gallusser, and S. Dudoit (2006). `cosmo`: An R package for the supervised detection of conserved motifs in DNA sequences (<http://www.bioconductor.org>, <http://cosmoweb.berkeley.edu/software.html>).
21. F. Gallusser, **O. Bembom**, and S. Dudoit (2007). `cosmoGUI`: An R package for the interactive construction of constraint sets as used by the `cosmo` R package (<http://www.bioconductor.org>, <http://cosmoweb.berkeley.edu/software.html>).
22. **O. Bembom** (2007). `seqLogo`: An R package for plotting DNA sequence logos (<http://www.bioconductor.org>, <http://cosmoweb.berkeley.edu/software.html>).
23. **O. Bembom** (2008). `tIPTW`: An R package for data-adaptively truncated IPTW estimation. (<http://www.stat.berkeley.edu/~laan/Software/>).

PRESENTATIONS

Invited Presentations

- **O. Bembom**. Implementing COMODE as a web application. *UC Berkeley Biostatistics Seminar*. February 1, 2005. Berkeley, California, USA.
- **O. Bembom**. COMODE - A web application for constrained motif detection. *UC Berkeley Statistics and Genomics Seminar*. April 14, 2005. Berkeley, California, USA.
- **O. Bembom**. An application of History-Adjusted Marginal Structural Models. *UC Berkeley Biostatistics Seminar*. November 29, 2005. Berkeley, California, USA.
- **O. Bembom**, M.J. van der Laan, A.E. Hubbard, and N.P. Jewell. Estimation of Treatment Effects in Randomized Trials with Non-compliance and a Dichotomous Outcome. *23rd International Biometrics Conference*. July 16-21, 2006. Montréal, Quebec, Canada.
- **O. Bembom**. Supervised detection of conserved motifs in DNA sequences with *cosmo*. *UC Berkeley Statistics and Genomics Seminar*. September 7, 2006. Berkeley, California, USA.
- **O. Bembom** and M.J. van der Laan. Analyzing sequentially randomized trials based on causal effect models for realistic individualized treatment rules. *2007 Joint Statistical Meetings*. July 29 - August 2, 2007. Salt Lake City, Utah, USA.

Contributed Presentations

- J. von Behren, N. Shaikh, **O. Bembom**, and R. Kreutzer. Predictors of asthma hospitalization and prevalence rates in California. Poster presentation. *American Public Health Association 131st Annual Meeting and Exposition*. November 15-19, 2003. San Francisco, California, USA.
- S. Morshed, T. Miclau III, **O. Bembom**, and J.M. Colford, Jr.. Delayed femoral shaft fracture internal fixation in multi-system trauma patients decreases mortality in the National Trauma Data Bank. *Orthopaedic Trauma Association Annual Meeting*. October 18-20, 2007. Boston, Massachusetts, USA.
- S. Morshed, T. Miclau III, **O. Bembom**, and J.M. Colford, Jr.. Delayed femoral shaft fracture internal fixation in multi-system trauma patients decreases mortality in the National Trauma Data Bank. *75th Annual Meeting of the American Academy of Orthopaedic Surgeons*. March 5-9, 2008. San Francisco, California, USA.

REFEREE SERVICE

- *The Annals of Statistics.*
- *Bioinformatics.*
- *Journal of Applied Statistics.*
- *Journal of the Royal Statistical Society, Series B.*
- *Journal of Statistical Planning and Inference.*
- *Statistical Applications in Genetics and Molecular Biology.*
- *Statistics in Medicine.*