# Andrés Felipe Barrientos

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## Education

- Ph.D. in Statistics, Pontificia Universidad Católica de Chile, Chile, 2012.
- B.S. in Statistics, Universidad del Valle, Colombia, 2006.

## Dissertation

"Theory and Applications of Dependent Nonparametric Bayesian Models for Bounded and Unbounded Responses."
Advisor: Fernando Quintana. Co-advisor: Alejandro Jara.

## Positions

- Postdoctoral Associate, Department of Statistical Science, Duke University, USA, March 2015 - present.
- Visiting Research Fellow, Department of Statistics and Data Sciences, University of Texas at Austin, USA, October 2014 - December 2014.
- Postdoctoral Fellow, Department of Statistics, Pontificia Universidad Católica de Chile, October 2012 - October 2014.
- Profesor Auxiliar (in Spanish), School of Industrial Engineering and Statistics, Universidad del Valle, Colombia, July 2006 - February 2008. Non-tenure entry level professorship position in the Colombian public system; precedes assistant professorship.

## Honors, Awards, and Fellowships

- Finalist for Savage Award, Theory & Methods, for best Bayesian dissertation, 2013.
- FONDECYT 2012 Postdoctoral Grant, Chile, 2012.
- Maximum Distinction, Ph.D. in Statistics, Pontificia Universidad Católica de Chile, Chile, 2012.
- Bayesianos SOCHE Young Investigator Award, Bayesian section of the Chilean Society of Statistics, Chile, 2010.
- CONICYT Fellowship for Latin American Doctoral Students, Chile, 2008.

# Refereed Journals

1. Barrientos, A. F., Reiter, J. P., Machanavajjhala, A., and Chen, Y. (2018b). Differentially private significance tests for regression coefficients. *arXiv preprint arXiv:1705.09561. Journal of Computational and Graphical Statistics*, forthcoming.

2. Gutiérrez, L., Barrientos, A. F., González, J., and Taylor-Rodríguez, D. (2018). A Bayesian nonparametric multiple testing procedure for comparing several treatments against a control. *Bayesian Analysis*, forthcoming, paper available at `https://goo.gl/TDv6k8`.

3. Akande, O., Barrientos, A. F., and Reiter, J. P. (2018a). Simultaneous edit and imputation for household data with structural zeros. *arXiv preprint arXiv:1804.05144. Journal of Survey Statistics and Methodology*, forthcoming.

4. Akande, O., Reiter, J. P., and Barrientos, A. F. (2018b). Multiple imputation of missing values in household data with structural zeros. *arXiv preprint arXiv:1707.05916. Survey Methodology*, forthcoming.

5. Barrientos, A. F., Bolton, A., Balmat, T., Reiter, J. P., de Figueiredo, J. M., Machanavajjhala, A., Chen, Y., Kneifel, C., and DeLong, M. (2018a). Providing access to confidential research data through synthesis and verification: An application to data on employees of the U.S. federal government. *The Annals of Applied Statistics*, 12(2):1124–1156.

6. Chen, Y., Barrientos, A. F., Machanavajjhala, A., and Reiter, J. P. (2018). Is my model any good: differentially private regression diagnostics. *Knowledge and Information Systems*, 54(1):33–64.

7. Barrientos, A. F., Jara, A., and Quintana, F. A. (2017a). Fully nonparametric regression for bounded data using dependent Bernstein polynomials. *Journal of the American Statistical Association*, 112(518):806–825.

8. Barrientos, A. F., Jara, A., and Wehrhahn, C. (2017b). Posterior convergence rate of a class of Dirichlet process mixture model for compositional data. *Statistics & Probability Letters*, 120:45–51.

9. Barrientos, A. F., Jara, A., and Quintana, F. A. (2015). Bayesian density estimation for compositional data using random Bernstein polynomials. *Journal of Statistical Planning and Inference*, 166:116–125.

10. González, J., Barrientos, A. F., and Quintana, F. A. (2015). Bayesian nonparametric estimation of test equating functions with covariates. *Computational Statistics & Data Analysis*, 89:222–244.

11. Barrientos, A. F., Jara, A., and Quintana, F. A. (2012). On the support of MacEachern's dependent Dirichlet processes and extensions. *Bayesian Analysis*, 7(2):277–310.

12. Barrientos, A. F., Olaya, J., and González, V. (2007). A spline model for electricity demand forescasting. *Revista Colombiana de Estadística (Colombian Journal of Statistics)*, 30(2):187–202.

## Refereed Conference Proceedings and Book Chapters

1. Chen, Y., Machanavajjhala, A., Reiter, J. P., and Barrientos, A. F. (2016). Differentially private regression diagnostics. *Proceedings of the IEEE International Conference on Data Mining 2016*, ICDM, 81–90.

2. González, J., Barrientos, A. F., and Quintana, F. A. (2014). A dependent Bayesian nonparametric model for test equating. In *Quantitative Psychology Research: The 78th Annual Meeting of the Psychometric Society*, pages 213–226. Springer International Publishing.

## Submitted and Working Papers

1. Barrientos, A. F. and Peña, V. (2018). Bayesian bootstraps for massive data. Revision submitted, draft available at `https://goo.gl/dRt5Li`.

2. Wehrhahn, C., Jara, A., and Barrientos, A. F. (2018). On the small sample behavior of Dirichlet process mixture models for data supported on compact intervals. Submitted, draft available at `http://goo.gl/oZGm5Y`.

3. Barrientos, A. F. and Canale, A. (2018). A Bayesian goodness-of-fit test for regression. Working paper, draft available at `http://goo.gl/T3wRFQ`.

## Teaching Experience

- Instructor of record for Regression Analysis. Department of Statistical Science, Duke University, USA, Spring 2018.
- Teaching Assistant for Advanced Statistical Computing, Statistical Analysis with Missing Data, and Bayesian Nonparametric Methods. Department of Statistics, Pontificia Universidad Católica de Chile, Chile, March 2010 - July 2012.
- Instructor of record for introductory courses covering frequentist and Bayesian statistics. School of Industrial Engineering and Statistics, Universidad del Valle, Colombia, July 2006 - February 2008. Taught 3 courses per semester.

## Student Advising

- Claudia Wehrhahn, Ph.D. Thesis, Pontificia Universidad Católica de Chile, Chile, 2016. Co-advised with Alejandro Jara. Currently a Postdoctoral Associate, Department of Applied Mathematics and Statistics, UC Santa Cruz, USA.

- Fabián Fuentealba, M.Sc. Thesis, Pontificia Universidad Católica de Chile, Chile, 2015. Co-advised with María José García-Zattera. Currently a Data Analyst, Measurement Center MIDE UC, Chile.
- Rodrigo Rubio, M.Sc. Thesis, Pontificia Universidad Católica de Chile, Chile, 2013. Co-advised with Miguel de Carvalho. Currently a Ph.D. Student, Department of Statistics, Pontificia Universidad Católica de Chile, Chile.

## Professional Service

- Referee. Journals include *Bayesian Analysis, Biometrical Journal, Canadian Journal of Statistics, Computational Statistics & Data Analysis, Electronic Journal of Statistics, Journal of Official Statistics, Journal of Statistical Planning and Inference, Journal of Statistical Software, Journal of the American Statistical Association, Statistics and Computing,* and *Statistical Science*.
- Organizer. Invited session at the International Conference on Advances in Interdisciplinary Statistics and Combinatorics: "Bayesian Nonparametric Methods and Applications," USA, 2018.
- Member. Program committee of Workshop at NIPS: "All of Bayesian Nonparametrics (Especially the Useful Bits)," Canada, 2018.

## Presentations

1. "A Bayesian goodness-of-fit test for regression," International Conference on Advances in Interdisciplinary Statistics and Combinatorics, USA, October 2018. Invited talk.
2. "Differentially private sign and significance for regression coefficients," The Sixth Annual Canadian Statistics Student Conference, Canada, June 2018. Invited talk.
3. "Bayesian nonparametric goodness-of-fit testing for regression," O-Bayes17, USA, December 2017. Contributed poster.
4. "Differentially private sign and significance for regression coefficients," Joint Statistical Meeting, USA, August 2017. Invited discussant.
5. "Bayesian bootstraps for massive data," 11th Workshop in Bayesian Nonparametrics, France, June 2017. Contributed talk.
6. "Bayesian bootstraps for massive data," V Latin American Meeting on Bayesian Statistics, Mexico, June 2017. Invited talk.
7. "Differential private sign and significance of regression coefficients," International Conference on Advances in Interdisciplinary Statistics and Combinatorics, USA, September 2016. Invited talk.

8. "Bayesian nonparametric approaches for the analysis of compositional data based on Bernstein polynomials," Joint Statistical Meeting, USA, August 2015. Invited talk.

9. "Bayesian goodness-of-fit testing for density regression," 10th Workshop in Bayesian Nonparametrics, USA, June 2015. Invited Talk.

10. "Predictor-dependent inequality modeling," Departmental Seminar, Department of Statistics and Data Sciences, University of Texas at Austin, USA, October 2014. Invited talk.

11. "Bayesian density estimation for compositional data using random Bernstein polynomials," XL Jornadas Nacionales de Estadística, Chile, October 2013. Contributed talk.

12. "Bayesian density estimation for compositional data using random Bernstein polynomials," Departmental Seminar, Collegio Carlo Alberto, Italy, July 2013. Invited talk.

13. "Bayesian density estimation for compositional data using random Bernstein polynomials," 9th Workshop in Bayesian Nonparametrics, The Netherlands, June 2013. Contributed poster.

14. "On the support of MacEachern's dependent Dirichlet processes," III Latin American Meeting on Bayesian Statistics and XXXVIII National Meeting of Statistics, Chile, October 2011. Contributed talk.

15. "On the support of MacEachern's dependent Dirichlet processes," 8th Workshop on Bayesian Nonparametrics, Mexico, June 2011. Contributed poster.

16. "Dependent Bernstein polynomials for bounded density regression," IX Seminario Chileno de Estadística Bayesiana, Universidad de Talca, Chile, January 2011. Contributed talk.

17. "Dependent Bernstein polynomials for bounded density regression," IX Congreso Latinoamericano de Sociedades de Estadística, Chile, October 2010. Contributed talk.