

## Contact Information

**Address:** University of Texas Health Science Center at Houston  
School of Public Health, Department of Biostatistics  
1200 Herman Pressler, RAS E805  
Houston TX 77030  
**e-mail:** Luis.G.LeonNovelo@uth.tmc.edu  
**Phone:** 713-500-9573

## Research Interests

Applications of statistical methods in biomedical studies, in particular, traumatic brain injury, electronic health records and genomics research. Bayesian Statistics: Survey data, Model Selection, Nonparametric, Bayes Factors, Markov Chain Monte Carlo Methods and objective Bayes.

## Education

- Ph.D. in Statistics. Rice University/M.D. Anderson Cancer Center. December 2009.
  - Thesis: Bayesian Semiparametric and Flexible Models for Analyzing Biomedical Data. Advisor: Professor Peter Müller. GPA 4.0.
- M.A. in Statistics. Rice University. December 2007. Advisor: Professor Peter Müller.
- M.S. in Probability and Statistics. Universidad Nacional Autónoma de México (UNAM). December 2005.
  - Thesis: Bayesian Dirichlet Process Mixture Applications. Advisor: Professor Eduardo Gutiérrez Peña.
  - GPA 9.5 out of 10.
- B.S. in Mathematics. UNAM. December 2002.
  - Thesis: Convergence of Empirical Processes. Advisor: Professor Raúl Rueda.
  - GPA 9.9 out of 10

## Honors

- Francisco Aranda Award for the second best M.S. thesis in Statistics in Mexico, 2005.
- *cum laude* for B.S. earned at UNAM, 2002.

## Experience

Jan '15-Present. Assistant Professor. Department of Biostatistics. University of Texas Health Science Center at Houston- School of Public Health  
Aug '12-Jan '15. Assistant Professor. Department of Mathematics. University of Louisiana at Lafayette.  
Aug '09-Aug '12. Post Doctoral Associate. Department of Statistics and Institute of Food and Agricultural Sciences, University of Florida. Supervisor: Professor George Casella.  
June '07-Aug '07. Internship at the Division of Quantitative Sciences, M.D. Anderson Cancer Center. Houston, TX.

## Teaching

- At University of Texas Health Science Center at Houston- School of Public Health (with evaluation score out of 5):
  - Categorical Data Analysis Spring 2018
  - Intermediate Biostatistics Spring 2015; Fall: 2015, 2016 (3.05), 2017 (4.17), 2018
  - Bayesian Data Analysis Spring: 2015 and 2017 (4.78)
- At the University of Louisiana *at Lafayette*:
  - Categorical Data Analysis. Fall 2014
  - Applied Design of Experiment. Spring 2014
  - Applied Regression Analysis. Fall: 2012 and 2013
  - Elementary Statistics. Fall: 2012, 2013 and 2014
- At the University of Florida:
  - Markov Chain Monte Carlo. Fall 2011

## Related Skills

- Collaboration with researchers from a variety of disciplines at M.D. Anderson Cancer Center.
- Cooperative research with physicians and geneticists at Shands Hospital and University of Florida.
- Proficient with statistical software packages: R and S-plus.
- Programming with Mathematica and C.
- Knowledge of Latex and Microsoft Office.
- Experience with Unix systems.

## Publications

### Methodological

- [1] **Luis G León-Novelo**, Alison R Gerken, Rita M Graze, Lauren M McIntyre, and Marroni Fabio. Direct testing for allele-specific expression differences between conditions. *G3: Genes Genomes Genetics*, 8(2):447–460, 2018.
- [2] Matthew D Koslovsky, Michael D Swartz, Wenyaw Chan, **Luis Leon-Novelo**, Anna V Wilkinson, Darla E Kendzor, and Michael S Businelle. Bayesian variable selection for multistate Markov models with interval-censored data in an ecological momentary assessment study of smoking cessation. *Biometrics*, 74(2):636–644, 2018.
- [3] M. D. Koslovsky, M. D. Swartz, **L. Leon-Novelo**, W. Chan, and A. V. Wilkinson. Using the em algorithm for bayesian variable selection in logistic regression models with related covariates. *Journal of Statistical Computation and Simulation*, 88(3):575–596, 2018.

- [4] **Luis G León Novelo**, Andrew Womack, Hongxiao Zhu, and Xiaowei Wu. A Bayesian analysis of quantal bioassay experiments incorporating historical controls via Bayes factors. *Statistics in medicine*, 36(12):1907–1923, 2017.
- [5] **Luis León-Novelo**, Claudio Fuentes, and Sarah Emerson. Marginal likelihood estimation of negative binomial parameters with applications to RNA-seq data. *Biostatistics*, 18(4):637–650, 2017.
- [6] Justin M Fear, **Luis G León-Novelo**, Alison M Morse, Alison R Gerken, Kjong Van Lehman, John Tower, Sergey V Nuzhdin, and Lauren M McIntyre. Buffering of genetic regulatory networks in *drosophila melanogaster*. *Genetics*, pages genetics–116, 2016.
- [7] **Luis G León-Novelo**, Lauren M McIntyre, Justin M Fear, and Rita M Graze. A flexible Bayesian method for detecting allelic imbalance in rna-seq data. *BMC genomics*, 15(1):920, 2014.
- [8] Andrew J Womack, **Luis León-Novelo**, and George Casella. Inference from intrinsic Bayes procedures under model selection and uncertainty. *Journal of the American Statistical Association*, 109(507):1040–1053, 2014.
- [9] K Krishnamoorthy and **Luis León-Novelo**. Small sample inference for gamma parameters: one-sample and two-sample problems. *Environmetrics*, 25(2):107–126, 2014.
- [10] **Luis G León-Novelo**, Peter Müller, Wadih Arap, Mikhail Kolonin, Jessica Sun, Renata Pasqualini, and Kim-Anh Do. Semiparametric Bayesian inference for phage display data. *Biometrics*, 69(1):174–183, 2013.
- [11] **Luis G León-Novelo**, Peter Müller, Wahid Arap, Jessica Sun, Renata Pasqualini, and Kim-Anh Do. Bayesian decision theoretic multiple comparison procedures: An application to phage display data. *Biometrical Journal*, 55(3):478–489, 2013.
- [12] **Luis Leon-Novelo**, Elías Moreno, and George Casella. Objective Bayes model selection in probit models. *Statistics in medicine*, 31(4):353–365, 2012.
- [13] **LG Leon-Novelo**, B Nebiyu Bekele, Peter Müller, F Quintana, and K Wathen. Borrowing strength with nonexchangeable priors over subpopulations. *Biometrics*, 68(2):550–558, 2012.
- [14] **Luis Leon-Novelo** and George Casella. Prior influence in linear regression when the number of covariates increases to infinity. *Statistics & Probability Letters*, 82(3):438–445, 2012.
- [15] **LG Leon-Novelo**, X Zhou, B Nebiyu Bekele, and P Müller. Assessing toxicities in a clinical trial: Bayesian inference for ordinal data nested within categories. *Biometrics*, 66(3):966–974, 2010.

## Applications

- [16] Julia MP Poritz, Mark Sherer, Pamela A Kisala, David Tulsy, **Luis Leon-Novelo**, and Esther Ngan. Responsiveness of the traumatic brain injury–quality of life (TBI-QOL) measurement system. *Archives of physical medicine and rehabilitation*, 2018.
- [17] Julia MP Poritz, , Leia Vos, Esther Ngan, **Luis Leon-Novelo**, and Mark Sherer. Gender differences in employment and economic quality of life following traumatic brain injury. *To appear in Rehabilitation Psychology*, 2018.
- [18] Julia MP Poritz, Lindsey M Harik, Leia Vos, Esther Ngan, **Luis Leon-Novelo**, and Mark Sherer. Perceived stigma and its association with participation following traumatic brain injury. *To appear in Stigma and Health*, 2018.
- [19] Angelle M Sander, Allison N Clark, Laura M van Veldhoven, Robin Hanks, Tessa Hart, **Luis Leon Novelo**, Esther Ngan, and David B Arciniegas. Factor analysis of the everyday memory questionnaire in persons with traumatic brain injury. *The Clinical Neuropsychologist*, 32(3):495–509, 2018.
- [20] Matthew D Koslovsky, Emily T Hébert, Michael D Swartz, Wenyaw Chan, **Luis Leon-Novelo**, Anna V Wilkinson, Darla E Kendzor, and Michael S Businelle. The time-varying relations between risk factors and smoking before and after a quit attempt. *Nicotine & Tobacco Research*, 2017.
- [21] Mark Sherer, Julia MP Poritz, David Tulsy, Pamela Kisala, **Luis Leon-Novelo**, and Esther Ngan. Conceptual structure of health-related quality of life for persons with traumatic brain injury: Confirmatory factor analysis of the TBI-QOL. *Archives of physical medicine and rehabilitation*, 2017.
- [22] Mark Sherer, Jennie Ponsford, Amelia Hicks, **Luis Leon-Novelo**, Esther Ngan, and Angelle M Sander. Cross-validation of a classification system for persons with traumatic brain injury in the posthospital period. *Journal of head trauma rehabilitation*, 32(5):E17–E25, 2017.
- [23] Kaisa M Kemppainen, Alexandria N Ardissonne, Austin G Davis-Richardson, Jennie R Fagen, Kelsey A Gano, **Luis G León-Novelo**, Kendra Vehik, George Casella, Olli Simell, Anette G Ziegler, et al. Early childhood gut microbiomes show strong geographic differences among subjects at high risk for type 1 diabetes. *Diabetes care*, 38(2):329–332, 2015.
- [24] **Luis León-Novelo**, Kaisa M Kemppainen, ALEXANDRIA ARDISSONE, Austin Davis-Richardson, Jennie Fagen, Kelsey Gano, Eric W Triplett, TEDDY Study Group, et al. Two applications of permutation tests in biostatics. *Boletín de la Sociedad Matemática Mexicana*, 19(2):255, 2013.

- [25] RM Graze, **LL Novelo**, V Amin, JM Fear, G Casella, SV Nuzhdin, and LM McIntyre. Allelic imbalance in drosophila hybrid heads: exons, isoforms, and evolution. *Molecular biology and evolution*, 29(6):1521–1532, 2012.
- [26] Adriana Giongo, Kelsey A Gano, David B Crabb, Nabanita Mukherjee, **Luis L Novelo**, George Casella, Jennifer C Drew, Jorma Ilonen, Mikael Knip, Heikki Hyöty, et al. Toward defining the autoimmune microbiome for type 1 diabetes. *The ISME journal*, 5(1):82, 2011.

## **Presentations**

### **Invited:**

1. Fully Bayesian Estimation under Informative Sampling. Department of Probability and Statistics Seminar. National Autonomous University of Mexico, Mexico City, MX, March 12, 2018.
2. Marginal Likelihood Estimation of Negative Binomial Parameters with Applications to RNA-Seq Data. Department of Statistics Missouri Colloquium Series. University of Missouri, Columbia, MO, September 30, 2016.
3. Bayesian Analysis of Quantal Bioassay Experiments via Bayes Factors and Assessing Toxicities in a Clinical Trial. University of Missouri School of Medicine, Columbia, MO, September 29, 2016.
4. Two Bayesian Applications of Negative Binomial Models for the Analysis of RNA Next Generation Sequencing Data; Oregon State University Statistics Department Weekly Seminar. Corvallis, OR, October 29, 2015.
5. Controlling for Systematic Bias in Allelic Imbalance Estimation Using a Negative Binomial Bayesian Model; 2015 Lloyd Roeling UL Lafayette Mathematics Conference: Statistics. Lafayette, LA, November 20 -21 2015.
6. Assessing Toxicities in a Clinical Trial: Bayesian Inference for Ordinal Nested in Categorical Data; StatFest, University of Nevada at Reno, November 15, 2014.
7. A Bayesian Analysis of Bioassay Experiments. The 2013 Annual Meeting of the WNAR/IMS, Los Angeles, CA, June 16-19, 2013. Also presented (as contributed) at the ENAR 2015 Spring Meeting, Miami, FL, March 15-18, 2015.
8. Semiparametric Bayesian inference for phage display experiments. Probability and Statistics Seminar, IIMAS, UNAM, Mexico City, May 19, 2008
9. Objective Bayes Model Selection in Probit Models. JSM, Miami, FL, 2011; SACNAS, San Jose, CA, 2011.
10. Non-Parametric Bayesian Modeling of Success Rates in a Phase II Clinical Trial with Patients Presenting Different Subtypes of the Disease under Study. University of Florida Statistics Seminar, Gainesville, FL, 2009.

### **Contributed:**

1. Bayesian Analysis of Survey Data with Sampling Weights. JSM 2017, Baltimore, MD.

2. Bayesian Analysis of Quantal Bioassay Experiments Incorporating Historical Controls via Bayes Factors. JSM 2016, Chicago, IL.
3. Controlling for Systematic Bias in Allelic Imbalance Estimation Using a Negative Binomial Bayesian Model. ENAR 2016 Spring Meeting, Austin, TX.
4. A Bayesian Analysis of Bioassay Experiments. Louisiana Chapter of the ASA: Fall 2014 Meeting. Lafayette, LA. Nov 7, 2014.
5. A Bayesian Analysis of Bioassay Experiments. Louisiana Chapter of the ASA: Spring 2013 Meeting. Lafayette, LA. April 26, 2013.
6. Borrowing Strength with Non-Exchangeable Priors over Subpopulations. 8<sup>th</sup> Bayesian Non Parametric Workshop, Veracruz, Mexico, 2011.
7. Non-Parametric Bayesian Modeling of Success Rates in a Phase II Clinical Trial with Patients Presenting Different Subtypes of the Disease under Study. ENAR, San Antonio, TX, 2009; WNAR, Portland, OR, 2009; University of Florida Statistics Seminar, Gainesville, FL, 2009.
8. Bayesian Modeling for High Dimensional Count Data. ENAR, Arlington, VA, 2008; Fall Conference on Statistics in Biology, Iowa State University, Ames, IA, 2008.
9. Assessing Toxicities in a Clinical Trial: Bayesian Inference for Ordinal Data Nested within Categories. Annual meeting of the Mexican Statistical Association, Veracruz, Mexico, 2008.

## Posters

1. Bayesian Analysis of Survey Data with Sampling Weights. 2017 ENAR Spring meeting, Washington, DC, 2017
2. A Bayesian Analysis of Bioassay Experiments. ISBA meeting, Cancun, Mexico, 2014 and SRCOS Summer Research Conference 2014, Galveston TX 2014.
3. Bayesian Modeling for High Dimensional Count Data. Ninth Valencia International Meeting on Bayesian Statistics, Valencia, Spain, 2010.
4. Assessing Toxicities in a Clinical Trial: Bayesian Inference for Ordinal Data Nested within Categories. Bayesian Biostatistics Conference, Houston, TX, 2009.

## Funding

- Current
  - Role: Co-investigator (CoI) 09/01/18-08/31/19 Effort: 20%  
Collaborative Agreement: Memorial & UTHSC  
Hermann Health (TIRR)  
Provide Statistical Support to investigators at TIRR to develop manuscripts  
and grants and provide guidance to investigators on statistical aspects of research.
- Completed:
  - Role: Co-investigator (PI) 09/01/15-08/31/18 Effort: 20%  
Collaborative Agreement: Memorial & UTHSC  
Hermann Health (TIRR)  
Provide Statistical Support to investigators at TIRR to develop manuscripts  
and grants and provide guidance to investigators on statistical aspects of research.