

Rolando De la Cruz Mesía

University Address

Department of Public Health
School of Medicine
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Education

- 2005 Ph.D. in Statistics
Pontificia Universidad Católica de Chile, Chile
- 2000 M.S. in Statistics
Pontificia Universidad Católica de Chile, Chile
- 1996 B.S. in Physics and Mathematics
Universidad Nacional de Trujillo, Peru

Academic Appointments

- 09/10 – present Assistant Professor
Department of Public Health, Pontificia Universidad Católica de Chile, Chile
- 08/05 – present Adjunct Assistant Professor
Department of Statistics, Pontificia Universidad Católica de Chile, Chile
- 03/07 – 08/10 Adjunct Assistant Professor
Department of Public Health, Pontificia Universidad Católica de Chile, Chile

Other Appointments

- 11/05 – 11/07 Postdoctoral position
Department of Statistics, Pontificia Universidad Católica de Chile, Chile
- 03/05 – 12/06 Faculty Part Time
Faculty of Engineering and Sciences, Universidad Adolfo Ibañez, Chile
- 08/01 – 07/05 Associate Instructor
Department of Statistics, Pontificia Universidad Católica de Chile, Chile
- 04/00 – 12/04 Research Assistant
Department of Statistics, Pontificia Universidad Católica de Chile, Chile
- 08/97 – 12/02 Teaching Assistant for graduate and undergraduate courses
Departments of Statistics and Mathematics
Pontificia Universidad Católica de Chile, Chile
(teaching, grading)
- 08/99 – 12/99 Faculty Part Time
Institute of Mathematics and Physics, University of Talca, Chile
- 04/96 – 07/96 Training Pre-professional
National Institute of Statistics and Informatics, La Libertad Region, Peru

Research Interests

Longitudinal data models, Data mining, Parametric and Non-parametric Bayesian statistics, Mixture models, Joint modeling, Statistical modeling in crime, Spatial data analysis, Biostatistics.

Honors and Awards

- 2007 Mención Especial en el Area de Estadística, Premio Aranda Ordaz para tesis doctorales
Sociedad Bernoulli (Regional Latinoamericana)
- 2005 **David P. Byar Young Investigator Award**
American Statistical Association – ASA, Biometrics Section
- 2005 **Laha Travel Award**
Institute of Mathematical Statistics – IMS
- 2005 TOP 1 among all the statistics PhD students enrolled in 2001
Pontificia Universidad Católica de Chile, Chile
- 2004 SBSS Student Travel Award to attend the JSM 2004
Section on Bayesian Statistical Sciences (SBSS) of the American Statistical Association
- 2004 CONICYT Grant to attend the JSM 2004
The National Commission for Scientific and Technological Research, CONICYT
Chilean Government
- 2004 SBSS Student Travel Award to attend the ISBA 2004 World Meeting
Section on Bayesian Statistical Sciences (SBSS) of the American Statistical Association
- 2004 DIPUC Grant to attend the ISBA 2004 World Meeting
Dirección General de Postgrado, Investigación, Centros y Programas, DIPUC
Pontificia Universidad Católica de Chile
- 2004 IMS Student Travel Award to attend the IX CLAPEM
Institute of Mathematical Statistics – IMS
- 2003 Beca de Estancia para Alumnos de Doctorado
MECESUP PUC-0103
- 2002 CONICYT Doctoral Fellowship
The National Commission for Scientific and Technological Research, CONICYT
Chilean Government
- 2001 DIPUC Fellowship
Dirección General de Postgrado, Investigación, Centros y Programas, DIPUC
Pontificia Universidad Católica de Chile
- 1998 TOP 1 among all the statistics MSc students enrolled in 1997
Pontificia Universidad Católica de Chile, Chile
- 1998 Summer Fellowship
Institute of Mathematics and Statistics, University of São Paulo, Brazil
- 1997 DIPUC Fellowship
Dirección General de Postgrado, Investigación, Centros y Programas, DIPUC
Pontificia Universidad Católica de Chile
- 1996 TOP 2 among all the statistics undergraduate students enrolled in 1991
Universidad Nacional de Trujillo, Peru

Publications

PAPERS IN REFEREED STATISTICAL JOURNALS:

13. DE LA CRUZ, R., MARSHALL, G., AND QUINTANA, F.A. (2011) Logistic regression when covariates are random effects from a non-linear mixed model. *Biometrical Journal*, DOI: 10.1002/bimj.201000142.
12. PEWSEY, A., SHIMIZU, K., AND DE LA CRUZ, R. (2011) On an extension of the von Mises distribution due to Batschelet. *Journal of Applied Statistics*, 38(5), 1073–1085.
11. MEZA, C., OSORIO, F., AND DE LA CRUZ, R. (2010). Estimation in nonlinear mixed-effects models using heavy-tailed distributions. *Statistics and Computing*, DOI: 10.1007/s11222-010-9212-1.
10. DE LA CRUZ, R., AND BRANCO, M. (2009). Bayesian analysis for nonlinear regression model under skewed errors, with application in growth curves. *Biometrical Journal*, 51(4), 588–609.
9. MARSHALL, G., DE LA CRUZ-MESÍA, R., QUINTANA, F.A., AND BARÓN, A.E. (2009). Discriminant analysis for longitudinal data with multiple continuous outcomes with possibly missing data. *Biometrics*, 65(1), 69–80.
8. DE LA CRUZ, R. (2008). Bayesian nonlinear regression models with skew-elliptical errors: Applications to the classification of longitudinal profiles. *Computational Statistics and Data Analysis*, 53(2), 436–449.
7. DE LA CRUZ-MESÍA, R., QUINTANA, F.A., AND MARSHALL, G. (2008). Model-based clustering for longitudinal data. *Computational Statistics and Data Analysis*, 52(3), 1441–1457.
6. DE LA CRUZ-MESÍA, R. (2007). Review of the book “Introduction to Randomized Controlled Clinical Trials, 2nd Edition” by J.N.S. Matthews. *Journal of Applied Statistics*, 34(8), 1012–1013.
5. DE LA CRUZ-MESÍA, R., AND QUINTANA, F.A. (2007). A model-based approach to Bayesian classification with applications to predicting pregnancy outcomes from longitudinal β -hCG profiles. *Biostatistics*, 8(2), 228–238.
4. DE LA CRUZ-MESÍA, R., QUINTANA, F.A., AND MÜLLER, P. (2007). Semiparametric Bayesian classification with longitudinal markers. *Journal of the Royal Statistical Society, Series C, (Applied Statistics)*, 56(2), 119–137.
3. MARSHALL, G., DE LA CRUZ-MESÍA, R., BARÓN, A., RUTLEDGE, J.H., AND ZERBE, G. (2006). Nonlinear random effects models for multivariate responses with missing data. *Statistics in Medicine*, 25(16), 2817–2830.
2. DE LA CRUZ-MESÍA, R., AND MARSHALL, G. (2006). Nonlinear random effects models with continuous time autoregressive errors: A Bayesian approach. *Statistics in Medicine*, 25 (9), 1471–1484.
1. DE LA CRUZ-MESÍA, R., AND MARSHALL, G. (2003). A Bayesian approach for nonlinear regression model with continuous errors. *Communications in Statistics: Theory and Methods*, 32 (8), 1631–1646.

PAPERS IN REFEREED MEDICAL JOURNALS:

3. SANTOS, J.L., DE LA CRUZ, R., HOLST, C., GRAU, K., NARANJO, C., MAIZ, A., ASTRUP, A., ET AL. Allelic variants of the melanocortin-3 receptor gene (MC3R) and weight loss in obesity: a randomised trial of hypo-energetic high- versus low-fat diets. *PLoS ONE*, In Press.
2. BEDREGAL, P., HERNÁNDEZ, V., PRADO, P., CASTAÑÓN, C., MINGO, V., AND DE LA CRUZ, R. (2010). Hacia la evaluación de “Chile Crece Contigo”: Resultados psicosociales del estudio piloto. *Revista Médica de Chile*, 138, 770–772.
1. VALDERAS, J.P., IRRIBARRA, V., BOZA, C., DE LA CRUZ, R., LIBERONA, Y., ACOSTA, A.M., YOLITO, M., AND MAIZ, A. (2010). Medical and surgical treatments for obesity have opposite effects on peptide YY and appetite: a prospective study controlled for weight loss. *Journal of Clinical Endocrinology & Metabolism*, 95(3), 1069–1075.

PROCEEDINGS:

1. DE LA CRUZ, R., EYHERAMENDY, S., MEZA, C., AND OSORIO, F. (2010). Exact estimation procedures in a spatial mixed-effects probit model with binary outcomes. In *Proceedings of the Joint Statistical Meetings*, Statistical Computing Section, Alexandria, VA: American Statistical Association, 3629–3637.

ABSTRACTS:

2. SANTOS, J.L., MARTINEZ, J.A., SORENSEN, T., DE LA CRUZ, R., ET AL. (2010). Allelic Variants of the Melanocortin-3 Receptor Gene (MC3R) and Weight Loss in Obesity: Interaction with Hypo-energetic High-fat Versus Low-fat Diets. *Journal of Nutrigenetics and Nutrigenomics*, 3(2-3), 104–105.
1. VALDERAS, J.P., IRRIBARRA, V., MORENO, M., ET AL. (2008). Different effects of roux-en-y gastric bypass (RGYB), sleeve gastrectomy (SG), and medical treatment (MED) of obesity on PYY, hunger and satiety, for similar magnitudes of weight loss: a preliminary report. *International Journal of Obesity*, 32, S72.

Submitted Manuscripts

2. CIANELLI, R., FERRER, L., NORR, F., K., MINER, S., PERAGALLO, N., McELMURRY, B., LEVY., J., NORR., J., DE LA CRUZ, R. HIV Prevention for Chilean Women. Submitted for *Health Care for Women International*.
1. DE LA CRUZ, R. Bayesian analysis for heteroscedastic nonlinear mixed-effects models under heavy-tailed distributions.

Invited Presentations - Seminars

Flexible modeling of random effects in nonlinear mixed-effects models. Departamento de Matemáticas, Universidad de Antofagasta, Chile, October, 2010.

Bayesian parametric and semiparametric approaches for joint modeling a primary endpoint and longitudinal measurements. Departamento de Estatística, Universidade Estadual de Campinas, Campinas, Brazil, March, 2009.

Bayesian parametric and semiparametric approaches for joint modeling a primary endpoint and longitudinal measurements. Departamento de Estatística, Universidade São Paulo, São Paulo, Brazil, March, 2009.

- A Bayesian method for joint modeling a primary endpoint and longitudinal measurements. Departamento de Estadística, Universidad de Concepción, Concepción, Chile, November 17, 2008.
- Nonlinear regression models with skew-elliptical errors: Applications to the classification of longitudinal profiles. Departamento de Estadística, Universidad de Valparaíso, Valparaíso, Chile, June, 2007.
- Nonlinear regression models with skew-elliptical errors: Applications to the classification of longitudinal profiles. Departamento de Estadística e Investigación Operativa, Universidad Rey Juan Carlos, Madrid, Spain, December, 2006.
- Discriminant Analysis for Unbalanced Multivariate Longitudinal Data. Departamento de Estadística, Pontificia Universidad Católica de Chile. Santiago, Chile, December 2003.

Invited Presentations - Conferences

- Logistic regression with random effects covariates from an asymmetric nonlinear mixed model. IV Skew Workshop: Probabilistic and Inferential Aspects of Skew-Symmetric Models A Workshop in Honour of Adelchi Azzalini's 60th Birthday. May 16th to May 19th, 2011. Santiago, Chile.
- Modelamiento Estadístico en Ciencias de la Salud (short course). II Escuela de Invierno de Estadística 2010. September 06 to 07, 2010. Universidad de Concepción. Concepción, Chile.
- Flexible modeling of random effects in nonlinear mixed-effects models. VIII Escuela de Invierno de Análisis Estocástico y Aplicaciones. July 19 to 23, 2010. Valparaíso, Chile.
- Introduction to Mixed-Effects Models (short course). XVII Semana de la Estadística en Valparaíso. October 28 to 30, 2009, Valparaíso, Chile.
- Estimation in nonlinear mixed effects models using heavy-tailed distributions. XIX Capricorn Mathematical Congress, COMCA 2009. August 05 to 07, 2009, Antofagasta, Chile.
- Hierarchical Bayesian classification with multivariate longitudinal markers. Primer Seminario de Estadística 2009. August 04, 2009, Universidad de Antofagasta, Antofagasta, Chile.
- Hierarchical Bayesian classification with multivariate longitudinal markers. Workshop de la Sección Bayesiana. July 09, 2009, Concepción, Chile,
- Bayesian parametric and semiparametric approaches for joint modeling a primary endpoint and longitudinal measurements. IX Jornadas Nacionales de Bioestadística. January 7–9, 2009, Concepción, Chile.
- Joint modeling a primary endpoint and longitudinal data. XVIII Capricorn Mathematical Congress, COMCA 2008. August 2008, Iquique, Chile.
- Introduction to Spatial Data Analysis (short course). VIII Jornadas Nacionales de Bioestadística. January 3–5, 2008, Santiago, Chile.
- Nonlinear regression models with skew-elliptical errors: Applications to the classification of longitudinal profiles. "Jornada Skew". Departamento de Matemáticas, Universidad de Extremadura, June 28, 2007, Badajoz, Spain,.
- Nonlinear regression models with skew-elliptical errors: Applications to the classification of longitudinal profiles. VII Latin American Congress of Statistics Societies, CLATSE VII. October 10–13, 2006, Rosario, Argentina.

Contributed Presentations

- Classification of multivariate longitudinal data through a semiparametric mixed-effects model with nonstandard assumptions. 2011 Joint Statistical Meetings. July 30 to August 4, 2011. Miami, USA.
- Bayesian analysis for nonlinear mixed-effects models under heavy-tailed distributions. XII Escola de Modelos de Regressão. March 13–16, 2011, Fortaleza, Brazil.
- Exact REML estimation procedure in the spatial probit normal model for binary outcomes. 2010 Joint Statistical Meetings. July 31 to August 5, 2010. Vancouver, Canada.
- Estimation in non-linear mixed-effects model under heavy-tailed distributions using a stochastic approximation of the EM algorithm (*poster*). XI Escola de Modelos de Regressão. March 1–4, 2009, Recife, Brazil.
- Joint modeling a primary endpoint and longitudinal data. XI Escola de Modelos de Regressão. March 1–4, 2009, Recife, Brazil.
- A robust nonlinear mixed-effects model using the SAEM algorithm. Joint Statistical Meetings 2008. August 3–7, 2008, Denver, Colorado, USA.
- Joint modeling a primary endpoint and longitudinal data. VIII Latin American Congress of Statistics Societies, CLATSE VIII. October 7–10, 2008, Montevideo, Uruguay.
- Modelos de regresión no-lineales con distribuciones elípticas asimétricas: aplicaciones a la clasificación de perfiles longitudinales. XXXIV Jornadas Nacionales de Estadística 2007. October de 2007, Antofagasta, Chile.
- Nonlinear regression models with skew-elliptical errors: Applications to classification of longitudinal profiles. XI Conferencia Española y Primer Encuentro Iberoamericano de Biometría. June 20 to 22, 2007, Salamanca, Spain.
- Bayesian Non-linear Regression Models with Skew-Elliptical Distributions. X Capricorn Mathematical Congress, COMCA 2006. August, 2006, La Serena, Chile.
- Discriminant Analysis in Longitudinal Data through a Bayesian Semi-parametric Model. Joint Statistical Meetings 2005. August 7–11, 2005, Minneapolis, Minnesota, U.S.A.
- Bayesian Clustering in Longitudinal Data. VI Latin American Congress of Statistics Societies, CLATSE VI. November 3–5, 2004, Concepción, Chile.
- Bayesian Cluster Analysis for Longitudinal Data. Joint Statistical Meetings 2004. August 8–12, 2004, Toronto, Canada.
- Bayesian Discrimination in Longitudinal Data. (*poster*) ISBA 2004 World Meeting. May 23–27, Viña del Mar, Chile.
- Nonlinear Random-Effects Models for Multivariate Responses with Missing Data. IX Latin American Congress on Probability and Mathematical Statistics. March 22–26, 2004, Punta del Este, Uruguay.
- Análisis Discriminante usando Datos Longitudinales con Respuestas Múltiples. IV Jornada de Bioestadística de la Sociedad Chilena de Estadística. Departamento de Estadística, Instituto de Matemáticas y Física, Facultad de Ciencias, Universidad de Valparaíso. January 2004, Valparaíso, Chile.

Visiting Positions

- 2010 Visiting Scholar (May-June)
Department of Statistics, University of Connecticut, USA
- 2009 Visiting Professor (March and May)
Department of Statistics, Universidade Estadual de Campinas, Brazil
- 2009 Visiting Professor (March and May)
Department of Statistics, University of São Paulo, Brazil
- 2008 Visiting Professor (November)
Department of Statistics, Universidad de Concepción, Chile
- 2007 Visiting Professor (June)
Department of Mathematics, Universidad de Extremadura, Spain
- 2006 Visiting Professor (Nov.-Dec.)
Department of Mathematics, Universidad de Extremadura, Spain
- 2005 Visiting Ph.D. Student (April-May)
Department of Biostatistics
The University of Texas, M. D. Anderson Cancer Center, Houston, TX., U.S.A.
- 1998 Summer Student (Jan.-Feb.)
Institute of Mathematics and Statistics, University of São Paulo, Brazil

Grants

ON GOING GRANTS

- 2010 Proyecto ANILLO ACT87. “Quantitative methods in security”.
Role: Investigador Titular, (three years)
- 2009 Proyecto FONIS SA09I20011. “Incidencia, factores de riesgo, caracterización y pronóstico de episodios de neutropenia febril en adultos con linfoma o leucemia en quimioterapia”.
Role: Profesional Científico-Técnico, (eighteen months)
- 2008 Proyecto FONDECYT – INICIACION EN INVESTIGACION 11080017. “Contributions to mixed-effects models: New developments and applications”.
Role: PI, (three years)

COMPLETED GRANTS

- 2009 Proyecto para MIDEPLAN. “Levantamiento y análisis de información sobre desarrollo infantil y sus principales determinantes sociales y económicas, en el contexto de la evaluación del Sistema Chile Crece Contigo”.
Role: Encargado Diseño y Análisis Estadístico, (one year)
- 2007 Proyecto Inicio 06/2007, VRAID – PUC. “Generalized linear models when covariates are subject-specific parameters in a non-linear mixed-effects model for longitudinal measurements”.
Role: PI, (one year)
- 2007 Proyecto para el MINSAL. “Estudio de Carga de Enfermedad y Carga Atribuible 2007”.
Role: Consultor Estadística y Modelos (eighteen months)
- 2006 Proyecto para el MINEDUC. “Estudio de valor agregado SIMCE”.
Role: Consultor Académico, (two years)
- 2005 Proyecto FONDECYT – POSTDOCTORADO 3060071. “Non-linear regression models with skew-elliptical distributions with applications to the classification of longitudinal profiles”.
Role: PI, (two years)

Refereeing

Computational Statistics and Data Analysis, Communications in Statistics: Simulation & Computation, Sankhyā, The Indian Journal of Statistics, Statistical Modelling, Journal of Applied Statistics, Communications in Statistics: Theory & Methods, Statistics and Probability Letters, Intelligent Data Analysis, Annals of Applied Statistics.

Theses

- DE LA CRUZ-MESÍA, R. (2005). *“Discriminant and cluster analysis for longitudinal data”*. Ph.D. Thesis, Department of Statistics, Pontificia Universidad Católica de Chile.
- DE LA CRUZ-MESÍA, R. (1999). *“A Bayesian analysis of nonlinear random effects model with continuous error”*. M.S. Thesis, Department of Statistics, Pontificia Universidad Católica de Chile.

Students

Undergraduate students:

- Carolina Naranjo. *“Allelic variants of the melanocortin-3 receptor gene (MC3R) and weight loss in obesity: a randomised trial of hypo-energetic high- versus low-fat diets”*. Department of Statistics, Pontificia Universidad Católica de Chile. Finished February, 2009. Co-tutoring Prof. José Luis Santos.

MS students:

- Alfredo Durán. Expected July 2011.
- Romina Vergara. *“On discriminant analysis using the skew-normal distribution”*. Department of Statistics, Pontificia Universidad Católica de Chile. In progress.
- Denisse López. *“Detection of a change-point in regression models with nonstandard assumptions”*. Department of Statistics, Pontificia Universidad Católica de Chile. Finished July, 2011.
- Carolina Naranjo. *“Análisis del efecto del gen MC3R sobre la pérdida de grasa corporal y disminución del diámetro de cintura usando modelos lineales mixtos”*. Department of Statistics, Pontificia Universidad Católica de Chile. Finished December, 2010. Co-tutoring Prof. José Luis Santos.
- Patricia Muñoz. *“A comparison of two estimation methods for logistic regression model whose covariates are random effects in a nonlinear mixed-effects model”*. Department of Statistics, Pontificia Universidad Católica de Chile. Finished July, 2009.
- Alejandra Rodríguez. *“Análisis discriminante para datos longitudinales basado en modelos lineales paramétricos y semiparamétricos: Un enfoque Bayesiano”*. Department of Statistics, Pontificia Universidad Católica de Chile. Finished July, 2006.
- Paula Salinas. *“Análisis discriminante para datos longitudinales basado en modelos lineales paramétricos y semiparamétricos”*. Department of Statistics, Pontificia Universidad Católica de Chile. Finished July, 2006.

Professional Membership

International Society for Bayesian Analysis (ISBA), American Statistical Association (ASA), Institute of Mathematical Statistics (IMS), International Biometric Society (IBS), Chilean Statistical Society (SOCHE), International Society for Pharmacoeconomics and Outcomes Research (ISPOR).

Organisation of Conferences and Workshop

“III Latin American Meeting on Bayesian Statistics”, and “XXXVIII National Meeting of Statistics”. Pucón, Chile. October 23–27, 2011 (member of the organiser committee)

“XI Chilean Biometric Conference”, and “IX Chilean Bayesian Workshop”. Santiago, Chile. January 12–14, 2011 (member of the scientific committee)

“Simposio sobre Modelamiento Estadístico 2010”. Valparaíso, Chile. December 02–03, 2010
(co-organiser and member of the scientific committee)

“X Chilean Biometric Conference”, and “II Chilean Bayesian Workshop”. Santiago, Chile. January 12–15, 2010 (organiser and member of the scientific committee)

“Simposio sobre Modelamiento Estadístico 2009”. Valparaíso, Chile. December 17–18, 2009
(co-organiser and member of the scientific committee)

“Simposio en Modelos Mixtos con Aplicaciones en Biometría”. Valparaíso, Chile. December 17, 2008 (co-organiser and member of the scientific committee)

“VIII Chilean Biometric Conference”. Santiago, Chile. January 03–05, 2008 (member of the scientific committee)

Service to Funding Organizations

Reviewer for the Fondo Nacional de Investigación y Desarrollo en Salud, FONIS – Chile

Reviewer for the Fondo Nacional de Desarrollo Científico y Tecnológico, FONDECYT – Chile

Reviewer for the National Security Agency Mathematical Sciences Program, USA

Courses Taught

AT PONTIFICIA UNIVERSIDAD CATÓLICA DE CHILE:

(EPG and MSP correspond to MSc/PhD level courses)

EPG3701 Generalized Linear Models (Twice)

EPG3381 Statistical Consulting (Once)

EPG3601 Advanced Statistical Computing (Twice)

EPG3306 Statistical Methods I (Once)

ELM2450 Categorical Data Analysis (Once)

ELM2430 Multivariate Analysis (Four times)

EYP2300 Statistical Methods for Chemistry and Pharmacy (Twice)

EYP1112 Probability (Once)

EYP2216 Statistical for Civil Construction (Seven times)

EYP3208 Biostatistics in Clinical Research (Three times)

EYP2705 Introduction to Statistical Computing (Once)

MSP3004 Biostatistics II (Four times)

MSP3017 Multivariate Statistical Methods (Once)

AT UNIVERSIDAD ADOLFO IBAÑEZ:

MES700 Statistical Methods (Four times)

PRB100 Probability and Statistics (Twice)

PRB200 Probability and Statistical Inference (Three times)

ALG200 Linear Algebra (Twice)

MAT112 Linear Algebra for Social Sciences (Twice)

MAT110 Algebra (Once)

AT UNIVERSIDAD DE TALCA:

Statistics for Engineering (Once)

August, 2011