

Lilia Leticia Ramírez Ramírez

Profesor Asociado

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EDUCATIONAL HISTORY

- **2003-2008.** Ph.D. (Statistics). Thesis: “On the dynamics of infectious diseases in non-homogeneous populations”. Supervisor: Dr. Mary E. Thompson. *University of Waterloo*. Canadá.
- **1997-2000.** M.Sc. (Statistics, graduated with recognition for highest GPA). Thesis: “Inferencia Estadística del ADN de plantas Mediante Citometría de Flujo” (“Stat. Inf. of Plants’ DNA using Flow Citometry”). Supervisor: Dr. Eloísa Díaz Francés Murguía. *University of Guanajuato (UG) /Centre for Mathematical Research (CIMAT)*, Guanajuato, Mexico.
- **1992–1996.** (Actuarial Science, graduate with honours). Thesis: “Algunas Generalizaciones de la Ley de Grandes Números y el Lema de Borel-Cantelli” (“Some Generalizations of the Law of Large Numbers and the Borel-Cantelli Lemma”). Supervisor: Dr. Begoña Fernández Fernández. *Autonomous National University of Mexico (UNAM)*, Mexico City, Mexico.

EMPLOYMENT HISTORY

- **Since Aug 2011.** Assistant/Associate Professor. *Instituto Tecnológico Autónomo de México (ITAM)*. Mexico City, Mexico.
- **Jan 2009-July 2011.** Postdoctoral Fellow working in a joint project with the Infonaut Inc., the Region of Peel (Public Health), and the Ontario Agency for Health Protection and Promotion (OAHPP). Funded by MITACS Accelerate Internship and UW-Fields Postdoctoral Fellowship. *University of Waterloo*. Canada.
- **Winter Term 2005.** Research Assistant for the project: Forecasting of some annual incidence health rates on the region of Waterloo. Joint project with the Public Health office in the region. Supervisor: Dr. Mary Thompson, *University of Waterloo*. Canada..
- **Oct–Dec 2000.** Research Assistant for Dr. Johan Van Horebeek. *CIMAT*. Mexico.
- **Feb 2001-Aug 2003.** Investigator. Population Council of Guanajuato. *Government of the State of Guanajuato*. Mexico.

PROFESSIONAL RECOGNITION AND HONORS

- **Oct 2013.** Elected Member of the International Statistical Institute. *ISI*.

- **Spring 2008.** Math Graduate Experience Award. *University of Waterloo.*
- **1996-1997.** Scholarship for high performance students to study a second language. *UNAM-CELE.* The scholarship was for 50% for tuition and fees. I completed 390 hour at *Instituto Anglo Mexicano de Cultura.*
- **1993-1994 and 1994-1995.** Undergraduate Award for high performance students. *Fundación UNAM.*

PROFESSIONAL MEMBERSHIPS

- **2014-now** Member of the Mexican National Research (Candidato).
- **2014-now** Member of the ASA Caucus for Women in Statistics.
- **Oct 2013-now** Elected Member of the International Statistical Institute (ISI).
- **2013-now** Member of American Statistical Association (ASA).
- **2013-now** Member of the ISI committee on Women in Statistics.
- **2012-now** Member of Mexican Statistical Association (AME).
- **2010-now** Member of the International Environmetrics Society (TIES).
- **2006-now** Member of the Statistical Society of Canada (SSC).

RESEARCH INTERESTS

Random Networks, Epidemic Models, Classification ,Computer Statistics, Statistical applications to environmental, social and actuarial problems.

PEER REVIEWED PUBLICATIONS

A) ARTICLES PUBLISHED/ACCEPTED

- (1) Ramírez Ramírez, L.L. and Thompson, M.E. (2014). Probability intervals based on mean and variance of final outbreak size for diseases spreading in networks. *Methodology and Computing in Applied Probability.* 16(4): 839-862.
- (2) Ramírez-Ortegón, M.A., Ramírez-Ramírez, L.L., Märgner, V., Messaoud I.B., Cuevas, E. and Rojas, R. (2014). An analysis of the transition proportion for binarization in handwritten historical documents. *Pattern Recognition* 47(8), 2635-2651.
- (3) Ramírez-Ortegón, M.A, Ramírez-Ramírez, L.L., Ben Messaoud, I., Mägner, I., Cuevas, E. and Rojas, R. (2013). A model for the gray-intensity distribution of historical handwritten documents and its application for binarization. *International Journal on Document Analysis and Recognition.* 17(2),139-160

- (4) Ramírez Ramírez, L.L., Gel, Y., Thompson, M.E., De Villa, E. and McPherson, M. (2013). A new surveillance and spatio-temporal visualization tool SIMID: SIMulation of Infectious Diseases using Random Networks and GIS. *Computer Methods and Programs in Biomedicine*. 110(3),455-70
- (5) Ramírez Ramírez, L.L., Gel, Y. and Ruggeri, F. (2011). Modelos prob. de predicción para variables atmosféricas usando el método de perturbación geoestadístico y modelos jerárquicos bayesianos de tiempo y espacio. In: Reyes Cervantes, H. J, et al (Eds). *Matemáticas, Estadística y Medio Ambiente*. Benemérita Universidad Autónoma de Puebla Press, Mexico 57-66.
- (6) Ramírez-Ortegón, M.A., Tapia, E., Ramírez Ramírez, L. L., Rojas, R. and Cuevas, E. (2010). Transition pixel: A concept for binarization based on edge detection and gray-intensity histograms. *Pattern Recognition*, 43(4):1233-1243.
- (7) Chávez-Hernández, A.M., Macías-García, L.F., Palatto-Merino, H. and Ramírez, L. (2004). Epidemiología del suicidio en el estado de Guanajuato. *Salud Mental*, 27(2):15-20.

B) SUBMITTED/MANUSCRIPTS IN PREPARATION

- Gel, Y., Lyubchich, V. and Ramirez Ramirez, L.L. Information greedy “patchwork” bootstrap on random networks. Sent to *JASA (Applications and Case Studies)*.
- Guerrero, V.M., Islas Camargo, A. and Ramirez Ramirez, L.L. Trend estimation of multivariate time series with controlled smoothness. Sent to *Econometric Reviews*.
- Thompson, M.E. Ramirez Ramirez L.L., Lyubchich, V. and Gel Y.R. Using bootstrap for statistical inference on random graphs. Sent to *Canadian Journal of Statistics*.

C) UNREFEREED REPORTS

- Technical Report: Kelly, R., Kasurak, A., Ramirez Ramirez, L.L., Gel, Y. and C. Duguay (2011). Synergy of CoReH2O SAR and Microwave Radiometry Data to Retrieve Snow and Ice Parameters. The 4th deliverable document (D4) for the European Space Agency ESTEC Contract No. 22829/09/NL/JC, 34 pages.
- Technical Report: Anvari, V., Atapour, M., Bourouiba. L., Caudillo Mata, L. A., Collinson S., Johnson, A., Madras N., Miasnikof, P., Ramírez Ramírez, L.L., Sánchez-Bravo, I. “Mathematical Models for Estimating the Risk of vCJD Transmission”. Report of the modelling done during the Math-in-Medicine Study Group. OCCAM-Fields-MITACS Biomedical Problems Solving Workshop. June 22-26, 2009, Toronto. Canada.
- Chapter in Book: Chávez Hernández, A. M., Macías García, L. F. Ramírez Ramírez, L. and Palatto Merino, H. (2003). Capítulo 1: Datos epidemiológicos sobre suicidio consumado en el Estado de Guanajuato En: Chávez Hernández, y Macías García, Ed (2003). *El fenómeno del suicidio en el Estado de Guanajuato*. Ed. Univ. de Guanajuato.

D) SOFTWARE DISTRIBUTIONS

- 2006. Ramirez Ramirez, L.L. and Thompson, M. R Package: InfNet.

E) INVITED PRESENTATIONS

- Big Data Opportunities: Use of Social Media Analytics for Forecasting Infectious Diseases. 24th Annual Conference of The International Environmetrics Society (TIES). Guangzhou, China. Dec 2014.
- Big Data Opportunities: Forecasting Infectious Diseases using Social Media Analytics. The Third International Conference on the Interface between Statistics and Engineering 2014 (ICISE2014). Hong Kong, China. Dec 2014.
- Infectious Outbreak Prediction based on network epidemic models, official and social media information. Univ. of Texas at Dallas. EUA. Nov 2014.
- Predicción de brotes infecciosos usando datos de redes sociales. IIMAS. México D.F. México. Oct 2014.
- Modern Methods for Modeling and Forecasting of Infectious Diseases: From Visualization to Random Networks and Social Media, Joint Statistical Meetings (JSM), Boston, Massachusetts, USA, Aug 2014.
- Trend estimation of multivariate time series with controlled smoothness, BIRS Workshop 14w5157, Recent Advances and Trends in Time Series Analysis: Nonlinear Time Series, High Dimensional Inference and Beyond. Banff International Research Station for Mathematical Innovation and Discovery, Banff, AB, Canada, Apr 2014.
- On the Latin American Women with Higher Education, 59th World Statistics Congress of the International Statistical Institute. Hong Kong, China, Aug 2013.
- A new surveillance and spatio-temporal visualization tool: SIMID. The 23rd Annual TIES Conference. Anchorage, AK, USA. June 2013.
- On random network inference using bootstrap. 5th International Conference of the ERCIM Working Group on Computing and Statistics. Oviedo, Spain, Dec 2012.
- Simulación en R de brotes epidémicos en redes sociales. UseR Mex 2012. Mexico City, Mexico, Aug 2012.
- Infectious disease in Networks and its simulations as tool to evaluate control measures during an epidemic outbreak. Dep de Estadística y Ciencias Act. University of Waterloo, Waterloo, Canada, June 2012.
- Probabilistic weather forecasting using the GOP Hierarchical space-time models. The International Conference on Applied Mathematics, Modeling and Computational Science. Wilfried Laurier University, Waterloo, Canada, July 2011.
- Use of GOP and hierarchical space-time models to derive probabilistic weather forecasts. Guelph Biomathematics and Biostatistics (BioM&S) Symposium. Guelph, Canadá, Abril 2011.
- On the infectious diseases in networks and their control. Dep. Math and Statistics. McMaster University, Hamilton, Canada, April 2011.
- Probabilistic weather forecasting using the Geostatistical Output perturbation method on Hierarchical Bayesian space-time models. International Environmetrics Society Meeting. Isla Margarita, Venezuela, June 2010.
- The spread of diseases in networks. Dep. de Matemáticas y Estadística. University of Ottawa. Canada, Oct 2009.
- Dynamics of infectious diseases in networks. The joint Regional Quebec workshop of the Laboratory of Statistics at the Centre de recherches mathématiques (CRM) and the SSC New Investigators Committee, Montreal, Canada, April 2009.

- Sobre modelos estocásticos para brotes epidémicos en poblaciones no homogéneas. CIMAT, Guanajuato, Mexico, June 2007.
- Sobre modelos estocásticos para brotes epidémicos en poblaciones no homogéneas. Universidad de Querétaro, Mexico, June 2007.
- Una propuesta de Análisis Estadístico para estudiar la migración internacional. Colegio de la Frontera Norte (COLEF), Tijuana, Mexico. Dec 2001.
- Inferencia Estadística basada en la función de verosimilitud. Universidad Autónoma de Aguascalientes. Mexico. Sep 2000.

F) CONTRIBUTED PRESENTATIONS

- SIMID: A social network based surveillance and spatio-temporal visualization tool. 59th World Statistics Congress of the International Statistical Institute. Hong Kong, China, Aug 2013.
- Simulation of infectious disease spread as a tool to evaluate control measures during an epidemic outbreak. 40th Annual Meeting of the Statistical Society of Canada. University of Guelph. Guelph, Ontario, Canada, June 2012.
- On the estimation of the degree distribution of random networks. Poster presentado en the Complex Network Transition Workshop, Stats and Applied Math Sci Institute (SAMSI), Research Triangle Park, North Carolina, USA, June 2011.
- On the Estimation of the Degree Distribution of Random Network. Annual Meeting of the Statistical Society of Canada. Acadia University (Wolfville), Nova Scotia, Canada, June 2011.
- Probabilistic weather forecasting using the Geostatistical Output Perturbation Method on Hierarchical Bayesian space-time models. Annual Meeting of the Statistical Society of Canada. Quebec, Canada, May 2010.
- Effectiveness of control measures for diseases that spread in populations with contact network structure. Annual Meeting of the Statistical Society of Canada. Vancouver, Canada, May 2009.
- Outbreaks in Populations with Contact Network Structure”. Joint Meeting of the Statistical Society of Canada and the Société Française de Statistique. Ottawa, Canada, June 2008.
- InfNet: Simulation program for SIR-type epidemic models on contact networks. Poster en 2006 CAIMS-MITACS Annual Conference / 2006 Summer School on Mathematical Modeling of Infectious Diseases. York University, Canadá, June 2006.
- El trabajo interdisciplinario en la investigación educativa. Segundo Congreso Internacional de Metodología de la Ciencia y de la Investigación para la Educación. Instituto Politécnico Nacional (IPN), México, May 2006.

FUNDING

- **Pending Support:** Member of Advisory Board for the National Science Foundation (NSF) ADVANCE grant ”Women Impacting Statistics (WISt)”. *National Science Foundation (NSF)*.
- **2014-2019.** Project: ”Modeling Evolution of Digital Social Networks”. The Social Sciences and Humanities Research Council of Canada (SSHRC). Role: col-laborator. \$240,150 USD (direct costs).

- **Jan 2014-Dec 2016.** SNI Fellowship. \$16,600 USD.
- **May 2011.** Travel Award, SAMSI Workshop “Complex Network Transition”, Research Triangle Park, North Carolina, EUA.
- **Mar 2010-July 2011.** MITACS Accelerate Internship. \$45,000 CAN.
- **Sep 2009-Feb 2010.** UW-Fields Postdoctoral Fellowship. \$25,000 CAN (4 months)
- **Jan 2009-Aug 2009.** MITACS Accelerate Internship. \$15,000 CAN.
- **Sep 2003-Aug 2007.** National Council for Science and Technology (CONACyT) grant for Ph.D. Program in foreign Universities. \$93,000 USD.
- **Sep 1997-Aug 1999.** CONACyT grant for Master Program of Excellence in Science and Technology. \$7,000 USD.

CONSULTING

- **Since Sep 2014.** Consultant for the Research Grant Council of Hong Kong (a collaborative project with the City University of Hong Kong).
- **Jan-June 2013.** Consultant for the Mexican Association of Insurance Institutions (AMIS). Mexico.
- **Nov 2012-Oct 2013.** Consultant for the 2013-2014 United Nations Development Programme (UNDP) Regional Human Development Report: Citizen Security with Human Face Annual: Evidence and Proposals for Latin America. UNDP Panama.

TEACHING

A) STUDENT SUPERVISED (*Act.=Actuarial Sciences, App. Math.= Applied Mathematics*)

(a) UNDERGRADUATE STUDENTS

- Ortiz-Orendain, Sergio. Act. ITAM, April 2014-.
- Athié-Meza, José Manuel. Act. ITAM, Mar 2014-.
- Thompson, Patrick. Computer Sci. University of Texas at Dallas, Feb-Aug 2014.
- Castillo-Rivera-Cambas, Lizette. Act. ITAM, Nov 2012- Dec 2013.
- Fernández-Cedillo, Mariana. Act. ITAM, Jan-Oct 2013.
- Huang, Ziming. Actuarial Sci. University of Waterloo, Jan 2010-Aug 2011.

(b) MEMBER OF THESIS COMMITTEES

- Del Villar-Navarro, Rodrigo. App Math. ITAM, Nov 2014
- Caballero-Souza, Gerardo A. App. Math. ITAM, Nov 2014
- López Cortés, Porfirio. Act. ITAM, Oct 2014
- Pérez-Vargas, Julio C. Act. ITAM, Agos 2014
- Turati-López, Carlos. App. Math. ITAM, June 2014
- García-Larracilla, Marcel M. Act. ITAM, June 2014
- Mendizabal-Claustro, Sonia G. Act. ITAM, June 2014

- Gómez-de-la-Fuente, Roberto C. Act. ITAM, June 2014
- Jurado-Salazar, Mariana F. Act. ITAM, Dec 2013
- Sánchez-Esquivel, Edgar. Act. and App. Math. ITAM, Dec 2013
- Muniz-Martinez, José A. Act. ITAM, Dec 2013
- Ramírez-Amilpas, Raúl Act. ITAM, Nov 2013
- Hernández-Hernández, Rodrigo A. Act. ITAM, Sep 2013
- Magaña-Saenz, Maria E. Act. ITAM, May 2013
- Gabutti-Correa, Fernanda E. Act. ITAM, May 2013
- Carrera-Ruvalcaba, Claudia. App. Math. ITAM, May 2013
- Aguilar-Zaragoza, Miguel. Act. ITAM, Mar 2013
- Coronel-Silva, Ana B. Act. ITAM, Dec 2012
- Muñoz-Jimenez, N.H. Act. ITAM, Nov 2012
- Pérez-Camarillo, Yessica E. Act. ITAM, Nov 2012
- González-Montes-de-Oca, Eduardo. App. Math. ITAM, Nov 2012
- Ducoing-Ponce, Carmen P. Act. ITAM, Sep 2012
- Zamorano-Zavala, Gabriela M. Act. ITAM, Sep 2012
- Espinosa-Urrutia, Mariana. App. Math. ITAM, Aug 2012
- Pérez-Rios, Ricardo. Act. ITAM May 2012
- Ortiz-Mancera, Maria T. App. Math. ITAM, Apr 2012
- Monroy-Totah, S. Act. ITAM, Apr 2012
- Uruñuela-López, Javier. Act. ITAM, Jan 2012.
- Salas-Benito, Jorge A. Act. ITAM, Jan 2012.
- Salum-Greco, Yadira. Act. ITAM, Dec 2011.

B) CLASSROOM TEACHING (*Sm=Semester, Tr=4 months term, Enrollment numbers are in parentheses*)

(a) GRADUATE COURSES

LECTURER

- Estadística para Negocios, ITAM, SmII 2011(18)
- Fundamentos de Inferencia Estadística, ITAM, SmII 2013(9), SmII 2014 (14)
- Métodos Estadísticos Bayesianos, ITAM. SmI 2014(22), SmI 2015 (14)

TEACHING ASSISTANT

- Inferencia Estadística III (Inferencia Estadística en las Ciencias). CIMAT. SmI, 2003.

(b) UNDERGRADUATE COURSES

LECTURER

- Estadística Aplicada I (temas: Introducción a la Inferencia Estadística y Muestreo en poblaciones Finitas), ITAM. SmII 2014(30).
- Estadística Aplicada a la Actuaría (temas: Introducción al Estadística Bayesiana y algunas de sus aplicaciones para estimar reservas de aseguradoras), ITAM. SmI 2012(33), SmII 2012(27), SmI 2013(45), SmI 2014(13), SmI 2015 (36)
- Cálculo Actuarial III (temas: Análisis y de Supervivencia y algunas aplicaciones a finanzas y seguros), ITAM. SmII 2011(24), SmI 2012(24), SmII 2012(28), SmI 2013(31)

- Stat 230 (Probabilidad), University of Waterloo. Winter Tr 2006(64).
- Stat 202/204 (Estadística Elemental para Biólogos / Estadística para las Ciencias Físicas 1), University of Waterloo. Winter Tr 2004(137).

TEACHING ASSISTANT

- Stat 333. University of Waterloo. Spring Tr 2008.
- Stat 371. University of Waterloo. Winter Tr 2007.
- Stat 230. University of Waterloo. Winter Tr 2006.
- Math 118. University of Waterloo. Spring Tr 2005, Spring Tr 2006.
- Stat 231. University of Waterloo. Fall Tr 2005.
- Stat 331. University of Waterloo. Fall Tr 2004.
- Stat 206. University of Waterloo. Fall Tr 2003.
- Elementos de Estadística y Probabilidad. Universidad de Guanajuato. SmII 1998 y SmI 2000.
- Probabilidad II. UNAM. SmI 1997.

PROFESSIONAL SERVICE

A) EDITORIAL SERVICE

- **Since Jan 2014.** Associate Editor for the *Environmetrics Journal*.
- **Desde 2011.** Reviewer in journals:
 - Applied Stochastic Models in Business and Industry. Wiley.
 - Environmetrics, the Int. Env. Soc., Wiley.
 - Realidad, datos y espacio, INEGI.
 - Int. J. of Geo-Information, Int. Soc. for Photogrammetry and Remote Sensing (ISPRS).
- **2011.** Reviewer for: Reyes Cervantes, H.J., Ibarra Contreras, M. and Loya Monares, N.I., Eds (2011). *Matemáticas, Estadística y Medio Ambiente*. Benemérita Univ. Autónoma de Puebla.

B) CONFERENCE AND SESSION ORGANIZER

- **Resultado Pendiente.** Organizing committee member for the workshop “Big Data Tsunami at the Interface of Statistics and Environmental Sciences”. Proposed to the Banff International Research Station for Mathematical Innovation and Discovery during Apr 11-15, July 18-22 or Nov 7-11, 2016.
- **2014.** Organizing committee member for the 24th Annual Conference of The International Environmetrics Society (TIES 2014), Guangzhou, China.
- **2013.** Organizer of Invited Session: “Spatio-temporal Modeling of Infectious Diseases”. The 23rd Annual TIES Conference. Anchorage, AK, USA.
- **May 2000.** Volunteer Assistant during the 5th World Congress of the Bernoulli Society for Probability and Mathematical Statistics and 63th Annual Meeting of the Institute of Mathematical Statistics. Guanajuato, Mexico.

C) CHARING SESSIONS

- **Aug 2014.** Joint Statistical Meetings (JSM), Boston, Massachusetts, EUA.

- **Aug 2013.** The 59th World Statistics Congress of the International Statistical Institute. H.K, China.
- **June 2013.** The 23rd Annual TIES Conference. Anchorage, AK, USA.
- **April 2009.** The joint Regional Quebec workshop of the Laboratory of Statistics at the Centre de recherches mathématiques (CRM) and the SSC New Investigators Committee, Montreal, Canada.

D) OTHER PROFESSIONAL SERVICE

- **Since Nov 2013.** Country Representative (Mexico) for the ISI Committee "Women in Statistics".
- **Since Oct 2013.** Webmaster for "The International Environmetrics Society" (TIES) webpage.

E) UNIVERSITY AND DEPARTMENTAL SERVICE

- Seminar session organizer and charing. ITAM. Nov 2012 (3 talks), Feb 2014 (2 talks)
- Admission Committee Member for the Master in Data Sciences. ITAM. 2013.
- Elaboration two Act. Sci. undergraduate qualifying exams in the area of Bayesian Statistics in Insurance. 2013.
- Committee Member to evaluate the courses content for the new master program in Data Analytics (Ciencia de Datos). ITAM. 2012.
- Elected Graduate Student Representative in the department of Statistics and Actuarial Science. University of Waterloo. Canada. 2006-2007.
- Undergraduate assistant in the project: Development of periodicity criteria in 2D billiards and a program algorithm to visualize the ball trajectory in polygonal billiards. Lab. of Math. Objects Visualization. Department on Mathematics. UNAM. Mexico. Apr-Oct 1996.

F) REFEREEING

- **2014.** Award for Research in Insurance and Finance. Comisión Nacional de Seguros y Fianzas. Mexico
- **2012, 2013 and 2014.** Annual awards for best undergraduate thesis (Premio de investigación ex ITAM). ITAM.
- **2011.** National contest for young statisticians. Mexican Statistical Association (AME) and Statistical Analysis Software (SAS). Mexico.
- **2011.** Posters in the Annual Graduate Students' Conference. University of Waterloo.

ADDITIONAL INFORMATION

- **LANGUAGES:** Spanish (first language), English (fluent), French (lecture)
- **CITIZENSHIP:** Mexican
- **CONTINUING EDUCATION:**
 - First Seminar on Teaching Strategies. ITAM, June 2014.

- Workshops: a) Get the things done! b) Business Conduct Excellence: Enhance Your Career Success! c) Effective Networking, d) Practice your presentation skills! MITACS Skills Enhancement Program. Ontario, Canada. May 28, Sep 17 and 18, 2009.
- Course of Introduction to Programming Techniques and C Programming Language in the Academic Computing Centre, UNAM (DGSCA). Nov 1994 - Oct 1995

- **SOFTWARE:** UNIX, Windows, Office, Latex, html/CSS, ArcGIS, R, SAS, SPSS, C, Bugs/JAGS.