

PABLO VALDES-DONOSO

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www.linkedin.com/in/pvd

Over ten years of experience in applied quantitative research. Expertise in the use of several statistical tools, including machine learning, regression models, network analysis, and system dynamics, to analyze issues that bridge the fields of animal health and economics.

EDUCATION

University of California, Davis – Davis, CA

- PhD in Epidemiology, with an Emphasis in Health and Economics 2017
- MS in Agricultural and Resource Economics 2017
- MS in Preventive Veterinary Medicine 2012

Universidad de Chile – Santiago, Chile

- Doctor of Veterinary Medicine 2007

SKILLS

- Statistical analytical experience: Machine learning, system dynamics, linear optimization, regression models, longitudinal analysis, network analysis, spatial and temporal analyses, time series, observational study design
- Program skills: R (advance), SQL (Basic), Python (Basic), Stata, Stella, ArcGIS
- R packages: stpp, lattice, lme4, nlme, TTR, randomForest, igraph, deSolve, raster, map, rgeos, rgdal, sf, etc.

PROFESSIONAL EXPERIENCE

Postdoctoral Scholar – UC Agricultural Issues Center, Davis, CA 2017-Present

- Pairing data from feed mills, brokers, nutritionists, and crop industries with large, longitudinal datasets on California dairy production costs and returns to evaluate the economic and environmental impacts of using by-products as feed for dairy livestock
- Calculating the capital, operational, and maintenance costs of alternative manure management practices to evaluate the economic effects of greenhouse gas reduction policies in dairy farms of varying size
- Using large, longitudinal datasets collected by the California Department of Food and Agriculture to assess spatial and temporal variation in costs and productivity across dairy farms in California
- Using data from cannabis testing labs, equipment supplier companies, and the state government to specify the cost structure of testing cannabis and to evaluate the economic challenges of testing cannabis imposed by new regulations in California

Graduate Student Researcher – UC Davis, Davis, CA 2014-2017

- Used a disaggregated disease diffusion model to estimate public and private economic optima for the adoption of strategies to control porcine reproductive and respiratory syndrome (PRRS), an endemic swine disease, within a region in the US

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- Used spatial and network data to create a disaggregated disease diffusion model to emulate an outbreak of PRRS between farms in Minnesota
 - Used data from Midwestern sow farms to estimate the economic damage caused by an outbreak of PRRS
 - Used machine learning techniques to predict animal movements between swine facilities located throughout a large region of the US
 - Used time series and regression analyses to evaluate the effect of farmers' enrollment and participation in a voluntary program to control PRRS on the incidence of that disease in Minnesota

Graduate Researcher – UC Davis One Health Institute, Davis, CA 2016-2017

- USAID PREDICT project: gathered data from online repositories to identify the spatial and temporal distribution of and factors associated with Arenavirus infection in South America

Research Specialist – University of Minnesota, St. Paul, MN 2014-2015

- Paired data from swine farms with a long-term dataset collected by the Morrison Swine Health Monitoring Program to evaluate the spatial and temporal patterns of and risk factors related to PRRS
- Taught courses on animal health economics for graduate students

Independent Consultant – Epivet, Santiago, Chile 2012-2015

- Combined datasets on salmon health and production with export data from the Chilean salmon farming industry to estimate the risk of transmitting infectious salmon anemia (ISA) from Chile to export markets
- Evaluated production flows of a commercial live-Nodavirus-vaccine from a laboratory located in Santiago, Chile to calculate the risk of spreading Nodaviruses to salmon farms across Chile
- Used a disease transmission model to evaluate costs and benefits of disinfecting tributaries and effluents of all salmonid hatcheries in Chile

Veterinarian – National Fisheries Service, Valparaiso, Chile 2008-2010

- Used data on farmed salmon health and production to evaluate the effects of new regulations on high-risk disease control
- Led the national control program for sea lice, a high-risk disease affecting Chilean salmon production
- Created an electronic system to collect and analyze information from salmon farms distributed across Chile

Veterinarian – Marine Harvest, Chiloé Island, Chile 2007

- Supervised salmon health, welfare and productive output at sea-water salmon farms
- Designed preventive and control strategies to enhance salmon health and welfare

Veterinary Technician – Fjord Seafood, Puerto Montt, Chile 2006

- Analyzed information from all company farms and delivered bi-monthly reports on animal health and production

PEER-REVIEWED PUBLICATIONS

1. **Valdes-Donoso, P.**, Alvarez, J., Jarvis, L. S., Morrison, R. B. & Perez, A. M. Production Losses From an Endemic Animal Disease: Porcine Reproductive and Respiratory Syndrome

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- (PRRS) in Selected Midwest US Sow Farms. *Frontiers in Veterinary Science* 5, doi:10.3389/fvets.2018.00102 (2018)
2. **Valdes-Donoso, P.**, VanderWaal, K., Jarvis, L. S., Wayne, S. R. & Perez, A. M. Using Machine Learning to Predict Swine Movements within a Regional Program to Improve Control of Infectious Diseases in the US. *Frontiers in Veterinary Science* 4, doi:10.3389/fvets.2017.00002 (2017)
 3. Vilalta, C., Arruda, A.G., Tousignant, S.J.P., **Valdes-Donoso, P.**, Muellner, P., Muellner, U., Alkhamis, M.A., Morrison, R.B., Perez, A.M.. A Review of Quantitative Tools Used to Assess the Epidemiology of Porcine Reproductive and Respiratory Syndrome in U.S. Swine Farms Using Dr. Morrison's Swine Health Monitoring Program Data. *Frontiers in Veterinary Science* 4 (2017)
 4. **Valdes-Donoso, P.**, Jarvis, L. S., Wright, D., Alvarez, J. & Perez, A. M. Measuring Progress on the Control of Porcine Reproductive and Respiratory Syndrome (PRRS) at a Regional Level: The Minnesota N212 Regional Control Project (Rcp) as a Working Example. *PloS one* 11, e0149498, doi:10.1371/journal.pone.0149498 (2016).
 5. Alvarez, J., **Valdes-Donoso, P.**, Tousignant, S., Alkhamis, M., Morrison, R., and Perez, A. Novel analytic tools for the study of porcine reproductive and respiratory syndrome virus (PRRSv) in endemic settings: lessons learned in the U.S. *Porcine Health Management* 2, 1-9, doi:10.1186/s40813-016-0019-0 (2016)
 6. Jarvis, L. S. and **Valdes-Donoso, P.** A Selective Review of the Economic Analysis of Animal Health Management. *Journal of Agricultural Economics*, 1-25, doi:10.1111/1477-9552.12131 (2015)
 7. Perez A., Davies P., Goodell C., Holtkamp D., Mondaca E., Poljak Z., Tousignant S., **Valdes-Donoso P.**, Zimmerman J., Morrison R. Review of literature for epidemiology and control of Porcine Reproductive and Respiratory Syndrome virus (PRRSV) in North America: lessons learned and knowledge gaps. *American Veterinary Medical Association*. 246 (12), 304-1317 (2015)
 8. Jarvis L. S. and **Valdes-Donoso P.** Economic Analysis of Animal Health Issues: A Guide to Critical Thinking. 2013. Conference book. Livestock disease policies: Building bridges between science and economics. OECD OiE. 19-32 (2013)
 9. Mardones FO, Martínez-López B, **Valdes-Donoso P.**, Carpenter TE, Perez AM. The role of fish movements in the spread of infectious salmon anemia in Chile, 2007-2009. *Preventive Veterinary Medicine. GEOVET special issue*: 114 (1), 27-46 (2013)
 10. Mardones FO, Jansen PA, **Valdes-Donoso P.**, Jarpa M, Lyngstad TM, Jimenez D, Carpenter TE, Perez AM. Within-farm spread of infectious salmon anemia virus in salmon farms in Chile. *Disease of Aquatic Organisms*. 106: 7-16 (2013).
 11. **Valdes-Donoso P.**, Mardones FO, Jarpa M, Ulloa M, Carpenter TE, Perez AM. 2013. Co-infection patterns of infectious salmon anaemia and sea lice in farmed Atlantic salmon, *Salmo salar* L., in southern Chile (2007-2009). *Journal of fish diseases* 36, 353-360, doi:10.1111/jfd.12070 (2013)
 12. Mardones FO, Perez AM, **Valdes-Donoso P.**, Carpenter TE. Farm-level reproduction number during an epidemic of infectious salmon anemia virus in southern Chile in 2007-2009. *Preventive Veterinary Medicine* 102(3), 175-184 (2011)
 13. Hamilton-West C, Arriagada G, Yatabe T, **Valdés P.**, Hervé-Claude LP, Urcelay S. Epidemiological description of the sea lice (*Caligus rogercresseyi*) situation in southern Chile in August 2007. *Preventive Veterinary Medicine*. 104(3-4), 341-345 (2011)

PEER-REVIEWED PUBLICATIONS IN PROGRESS

1. **Pablo Valdes-Donoso**, Daniel A. Sumner. Implication of greenhouse gas reduction mandates for size distributions of dairy farms in California. *Submitted and under revision in the 2019 Agricultural and Applied Economics Association Meeting*
2. **Pablo Valdes-Donoso**, Lovell (Tu) Jarvis. Private and Collective Strategies to Reduce Economic Damages from Porcine Reproductive and Respiratory Syndrome (PRRS), an Endemic Swine Disease in the US
3. **Pablo Valdes-Donoso**, Lovell (Tu) Jarvis, and Andres Perez. Individual and targeted control strategies for porcine reproductive and respiratory syndrome (PRRS) in the US
4. **Pablo Valdes-Donoso**, Daniel A. Sumner, Robin S. Goldstein. Mandatory Cannabis Testing in California. *Accepted under revision in the California Agriculture Journal*
5. **Pablo Valdes-Donoso**, Daniel A. Sumner, Robin S. Goldstein. What are the costs of mandatory cannabis testing? Evaluating the impact of (pesticide and other) testing regulations in the California cannabis market
6. **Pablo Valdes-Donoso**, Daniel A. Sumner, Robin S. Goldstein. Economics of mandatory cannabis testing regulations: Impact on marginal costs in California. *Submitted and under revision in the 2019 Agricultural and Applied Economics Association Meeting*

OUTREACH

1. **Valdes-Donoso, P.**, Alvarez, J., Jarvis, L. S., Morrison, R. B. & Perez, A. M. Pérdidas de producción asociadas a PRRS en un grupo de granjas de madres de Estados Unidos. *Suis Magazine – Spain*. No. 154 (<http://www.suis.grupoasis.com/mesfra.htm>), February **2019**
2. **Pablo Valdes-Donoso** and Andres Perez. PRRS has lingering negative impact. *National Hog Farmer Magazine* (<http://www.nationalhogfarmer.com/animal-health/study-shows-prrs-has-lingering-negative-impact>) January 16th, **2017**
3. **Pablo Valdes-Donoso** and Andres Perez. How much do porcine reproductive and respiratory syndrome (PRRS) cost to US? *Dr. Morrison Swine Health Monitoring Project. University of Minnesota* (https://www.vetmed.umn.edu/sites/vetmed.umn.edu/files/shmp_2016117.29_cost_of_prrs_to_the_us_sciencepage.pdf) January 13th, **2017**
4. **Valdes-Donoso P.** and Jarvis, L.S. Análisis económico en la gestión de salud de los peces (Economic analysis on fish health management). *Salmonexpert Magazine – Chile* (<https://www.salmonexpert.cl/noticias/analisis-economico-en-la-gestion-de-salud-de-los-peces/>) November 25th, **2015**
5. **Pablo Valdes-Donoso** and Robert Morrison. Spatial distribution of sow sites enrolled in the Swine Health Monitoring Program (SHMP) *Morrison Swine Health Monitoring Project. University of Minnesota* (https://www.vetmed.umn.edu/sites/vetmed.umn.edu/files/shmp_2014.40_shmp_spatial_distribution_of_sites-science_page.pdf) April 3rd, **2015**

THESES AND DISSERTATION

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1. **Pablo Valdes-Donoso.** Collective Strategies to Control PRRS, a Non-Reportable, Endemic Swine Disease. *MS thesis in Agricultural and Resource Economics. UC Davis (December, 2017)*

I used a disaggregated diffusion model, which included distance and animal movements between swine farms, to analyze public and private benefits of investing in vaccination and/or installing bio-filters in breeding farms to mitigate PRRS through a Regional Control Program.

2. **Pablo Valdes-Donoso.** Epidemiological investigation of a non-reportable endemic disease: Porcine reproductive and respiratory syndrome (PRRS) in the US. *PhD dissertation in Epidemiology. UC Davis (June, 2017)*

I used a variety of methods, including regression models, spatio-temporal analyses, machine learning, network analysis, and system dynamics, to study important aspects of PRRS dynamics, including risk factors, effects of the disease on production, and strategies adopted to control PRRS.

3. **Pablo Valdes-Donoso.** Co-infection patterns of two high-risk diseases affecting farmed Atlantic salmon in southern Chile (2007- 2009). *MS thesis in Preventive Veterinary Medicine (MPVM). UC Davis (June, 2012)*

I used surveillance data collected by the fish health authority to investigate spatial and temporal co-infection patterns and risk factors of two high-risk diseases affecting salmon production in Chile.

4. **Pablo Valdes-Donoso.** Evaluation of the efficacy of two different vaccines against the salmonid rickettsial septicemia (SRS) in salmon farms in Chile. *DVM thesis. Universidad de Chile (September, 2007)*

I used an observational cohort study to evaluate and compare the efficacy of two commercial vaccines against salmonid rickettsial septicemia (SRS), a highly prevalent disease in salmon sea farms in Chile.

TEACHING EXPERIENCE

University of California, Davis – Davis, CA

2014- 2017

- Teaching Assistant. Intermediate Microeconomics -100B
- Teaching Assistant. Emerging Issues at the Interphase of Ecosystem, Animal and Human Health -MPM201 (Lecture on Climate Change)
- Teaching Assistant. Statistics -MPM203
- Teaching Assistant. Biological Sciences -BIS2C
- Facilitator. Disease Investigation in Populations -VET401, School of Veterinary Medicine

University of Minnesota – St. Paul, MN

2014- 2015

- Associate Instructor. Quantitative Methods for Analysis of Food Animal Disease Data - VMED 5442 (Lecture on Economic Tools on Animal Health Issues: Benefit Cost Analysis and Decision Trees)
- Associate Instructor. Workshop From Geeks to Geeks: Spatial Analysis. Lemna Conference 2014 (Lecture on Integrated Epidemiological and Economic Models to Assess Control and Eradication of Endemic Diseases in Highly Intensive Production Systems in the US)

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- Mentor of veterinarian visiting students from Brazil. Project Title: Economic Analysis of the Tilapia's Production in Brazil

Centech – Puerto Varas, Chile

2014

- Associate Instructor Workshop: Farmed Salmon Health Economics (Lecture on Epidemiology in Aquaculture: Principles and Applications, and Data Management to Generate Information: Applications on Farmed Salmon Health Economics)

Universidad de Chile – Santiago, Chile

2014

- Associate Instructor. Diploma in Applied Epidemiology for the Veterinary Medicine (Lecture on Surveillance and Control of Sea Lice in Chile, Estimation of Sample Size of a Bimonthly Monitoring)

GRANTS AND AWARDS

1. Grant California Dairy Research Foundation (\$101,355). Project title: Economic and related impacts of using by-products as dairy feeds. January 2019
2. International Affair Grant, UC Davis (\$5,000). Project title: An interdisciplinary research framework for a sustainable aquaculture: the case of infectious diseases, control strategies and environmental impacts in farmed fish. March 2018
3. Agricultural and Resource Economics Department's Best MS Thesis of 2017. University of California, Davis. Davis, CA, US. January 2018
4. 2018 MSD High-Quality Pork Runner-up Award. Merck Sharp & Dohme (MSD), Merck Animal Health, US. January 2018
5. Epidemiology Graduate Group Fellowship 2016 (\$16,000), University of California, Davis. Davis, CA. September 2016
6. David A. Benfield Travel Fellowship (\$500). North American PRRS Symposium 2016. Kansas State University, Manhattan KS, US. 2016
7. David A. Benfield Travel Fellowship (\$500). North American PRRS Symposium 2015. Kansas State University, Manhattan KS, US. 2015
8. MnDrive program of the University of Minnesota, and Boehringer Ingelheim Ph.D. fellowship (\$10,000), 2014
9. David A. Benfield Travel Fellowship (\$500). North American PRRS Symposium 2014. Kansas State University, Manhattan KS, US. 2014
10. Hemispheric Institute on the Americas (HIA) field research grants 2013 (\$1,000). University of California, Davis. Davis, CA, US. 2013
11. Pre-selection University of California Pacific Rim Program 2013. University of California, Davis. Davis, CA, US. 2013
12. Becas Chile for Doctoral Studies. Comisión Nacional de Ciencia y Tecnología (CONICYT), Chile 2012
13. UC Davis Internship for The Washington State University Public Policy at Federal Level, DC. The Washington State University. Davis, CA, US. 2011
14. UC Davis Internship for The Washington State University Public Policy at State Level, Columbus-Ohio. Davis, CA, US. 2010
15. Becas Chile for Master Studies. Comisión Nacional de Ciencia y Tecnología (CONICYT), Chile 2009

CONFERENCE PRESENTATIONS AND INVITED SEMINARS

1. “Dairy Manure Regulations and Economic Implications for Dairy Farms in California”. One Health for Food Safety and Security Seminar –UC Davis Western Institute for Food Safety and Security (WIFSS). Davis CA, US. January and February 2019
2. “Regional Strategies to Control Porcine Reproductive and Respiratory Syndrome (PRRS), a Non-Reportable, Endemic Swine Disease in the US”. MSD High-Quality Pork Congress EU. Baveno, Italy. October 2018
3. “Economics and farmed fish health management”. Salmon Disease Ecology Workshop, University of California, Davis. Davis, US. March 2018
4. “Epidemiological investigation of a non-reportable endemic disease: Porcine reproductive and respiratory syndrome (PRRS) in the US”. Swine Seminars, School of Veterinary Medicine, University of Minnesota, St. Paul MN, US. June 2017
5. “Using machine learning to predict swine movements within a regional program to improve control of infectious diseases in the US” and “Production losses associated with porcine reproductive and respiratory syndrome (PRRS) in US sow farms”. 2016 North American PRRS Symposium. Chicago IL, US. December 2016
6. “Measuring progress on porcine reproductive and respiratory syndrome (PRRS) control at a regional level: the Minnesota N212 regional control project (RCP) as a working example”. 14th International Society of Veterinary Epidemiology and Economics (ISVEE14). Merida, Mexico. November 2015
7. “Animal health issues from an integrated view: some tools from the epidemiology and socio-economics”. Seminar University of Miyazaki. Miyazaki, Japan. July 2015
8. “Measuring Progress on the Control of Porcine Reproductive and Respiratory Syndrome (PRRS) at a Regional Level: The Minnesota N212 Regional Control Project (RCP) as a Working Example”. 2015 North American PRRS Symposium. Chicago IL, US. December 2015
9. “Spatial and temporal dynamics of porcine reproductive respiratory syndrome (PRRS) in a voluntary regional project (N212)”. 2014 North American PRRS Symposium. Chicago IL, US. December 2014
10. “Challenges to the official surveillance system: a scientific overview” and “Integral approach of ISA in Chile: evidences in its spread and control”. Salmon Research Symposium: Science for a Better Industry. Puerto Varas, Chile. April 2013
11. “Co-infection patterns of two high-risk diseases affecting farmed Atlantic salmon in southern Chile (2007- 2009)”. 13th International Society for Veterinary Epidemiology and Economics (ISVEE13) Maastricht, The Netherlands. August 2012
12. “Surveillance and control sanitary programs in the national aquaculture”. Seminars of bioethics and biosecurity in experimental animals. The Catholic University of Valparaíso. Valparaíso, Chile. April 2010

REFEREE SERVICE

Preventive Veterinary Medicine, Livestock Science, Frontiers in Vet Science.

MEMBERSHIP IN ASSOCIATIONS

- Agricultural and Applied Economics Association (AAEA)

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- International Society for Aquatic Animal Epidemiology

EXTRACURRICULAR ACTIVITIES

Davis Bike Club Race Team Member 2018. Organization Staff at Chile-California Conference (C3 <http://calcubo.org>). October 2012. Vice-President and Co-founder of the Chilean Students Organization at the University of California, Davis (Chile-UCD <http://www.chileucd.com>). September 2011 - January 2013. Executive Secretary of the Veterinary Students Association, University of Chile. 2003-2004. Organization Staff of Volunteer Veterinary Works (TVV), Lonquimay, Chile. University of Chile. 2002.

LANGUAGE SKILLS

- **Spanish:** Native or bilingual proficiency
- **English:** Full professional proficiency