

# Curriculum Vitae | Elena Castilla González

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## Positions

- 2022 **Assistant Professor (Profesora Ayudante Doctora)**. March 16, 2022 – Present  
Department of Applied Mathematics, Rey Juan Carlos University of Madrid
- 2021 **Assistant Professor (Profesora Ayudante)**. May 1, 2021 – March 15, 2022  
Department of Statistics and Operational Research I, Complutense University of Madrid
- 2017 **Predoctoral Contract - University Teaching Staff Training (FPU)**. October 1, 2017 – April 30, 2021  
Department of Statistics and Operational Research I, Complutense University of Madrid
- 2017 **Predoctoral Contract - UCM Research Staff Training**. February 1, 2017 – September 30, 2017  
Department of Statistics and Operational Research I, Complutense University of Madrid

## Education

- 2021 **PhD in Mathematical Engineering, Statistics, and Operations Research (IMEIO)**  
Complutense University of Madrid (UCM) and Polytechnic University of Madrid (UPM)
- 2016 **Master's in Computational Statistical Data Analysis (TECI)**  
Complutense University of Madrid (45 ECTS) and Polytechnic University of Madrid (15 ECTS)
- 2015 **Bachelor's Degree in Mathematics and Statistics**  
Faculty of Mathematical Sciences, Complutense University of Madrid (240 ECTS)

## Research Stays

- 2019 University of Ioannina, Greece (2 months)
- 2018 McMaster University, Hamilton, Canada (2 months)
- 2016 McMaster University, Hamilton, Canada (1 month)

## Summary

Graduated in Mathematics and Statistics from the Complutense University of Madrid in 2015, with the highest GPA in my class and an extraordinary end-of-degree award. I completed my master's studies in 2016 and my PhD in IMEIO with international distinction and extraordinary doctoral award, also at the Complutense University of Madrid. During my PhD, I undertook three research stays: a total of three months at McMaster University (Canada) and two months at the University of Ioannina (Greece). Since 2022, I have been an Assistant Professor at Rey Juan Carlos University of Madrid (URJC). I have been accredited by ANECA as a "Profesora Contratada Doctora" since 2021 and as a "Profesora Titular" since 2023. I currently have one "Sexenio de Investigación" (2017-2022) and one "Quinquenio docente" (2018-2022).

Over the years, my main research areas have been regression models, reliability models, survival analysis, and statistical information theory. Most of my research can be summarized as the development of robust techniques for diverse statistical models using divergences. I have collaborated with numerous researchers, many from foreign universities. My research has resulted in numerous research articles (28 in JCR-indexed journals, 19 of them with international co-authors) and three book chapters. Recently, I co-authored a book with Professor Balakrishnan, entitled "Statistical Modeling and Robust Inference for One-shot Devices", published by Elsevier, which includes many of the results developed during these years and some new results.

As a result of my work, I have received various recognitions. In 2021, I received the Ramiro Melendreras Award from SEIO (Sociedad Española de Estadística e Investigación Operativa). In 2022, I received the Vicent Caselles Award from RSME

(Real Sociedad Matemática Española) and the BBVA Foundation, and the third Margarita Salas Award in Basic Sciences from the Madrid City Council. Additionally, in 2021, I was selected to represent Spain at the 22nd European Young Statisticians Meeting by the European Regional Committee of the Bernoulli Society for Mathematical Statistics and Probability, and in 2024, I was selected to attend the 11th Heidelberg Laureate Forum, HLF.

During these years, I have also given numerous research seminars and attended scientific conferences. I have also participated in organizing various conferences. In particular, I have been a member of the scientific committee for the last two editions of the SYSORM conference by SEIO and the 23rd European Young Statistician Meeting. From September 2022 to December 2024, I have co-organized the Mathematics Seminars at URJC, which have hosted over 25 speakers from various national and international institutions. I am member of the Expert Panel at the AEI (Agencia Estatal de Investigación) and evaluator for the Foundation for Knowledge Madrimasd since 2021.

Regarding teaching, I have delivered nearly 1000 hours of teaching, supervised one bachelor's thesis, co-supervised two, and co-supervised one master's thesis. I have participated in three teaching innovation projects and published various open educational resources. Lastly, I strive not to neglect the outreach aspect, with some dissemination articles. In December 2024, I was invited by the Prisa agency to speak at the forum "EL PAÍS CON TU FUTURO 2024 X EDITION".

## Publications

### Books

- [1]. Balakrishnan, N. & Castilla, E. (2025). *Statistical Modeling and Robust Inference for One-shot Devices*, Academic Press, Elsevier. ISBN: 9780443141539. [Link](#)

### Research Articles

- [1]. Castilla (2025). Parametric estimation and robust inference for current status data with Lindley lifetimes. *Communications in Statistics-Simulation and Computation*. Accepted.
- [2]. Balakrishnan, N. & Castilla, E. (2025). Robust inference and model selection for data from one-shot devices under cyclic accelerated life-tests with an application to a test of CSP solder joints. *Journal of Risk and Reliability*. Accepted.
- [3]. Castilla, E. (2024). A new robust approach for the polytomous logistic regression model based on Rényi's pseudodistances. *Biometrics*, 80(4). [Link](#)
- [4]. Castilla, E. (2024). A new estimation approach based on phi-divergence measures for one-shot device accelerated life testing. *Quality and Reliability Engineering International*, 40, pp. 2048-2066. [Link](#)
- [5]. Balakrishnan, N. & Castilla, E. (2024). Robust inference for destructive one-shot device test data under Weibull lifetimes and competing risks. *Journal of Computational and Applied Mathematics*, 437, 115452. [Link](#)
- [6]. Balakrishnan, N. & Castilla, E. (2023). Robust estimation based on one-shot device test data under log-normal lifetimes. *Statistics*, 57(5), pp. 1061-1086. [Link](#)
- [7]. Castilla, E. & Ghosh, A. (2023). Robust minimum divergence estimation for the multinomial circular logistic regression model. *Entropy*, 25(10), 1422. [Link](#)
- [8]. Balakrishnan, N., Castilla, E., Jaenada M. & Pardo, L. (2023). Robust inference for non-destructive one-shot device testing under step-stress model with exponential lifetimes. *Quality and Reliability Engineering International*, 39(4), pp. 1192-1222. [Link](#)
- [9]. Balakrishnan, N., Castilla, E., Martín N. & Pardo, L. (2023). Power divergence approach for one-shot device testing under competing risks. *Journal of Computational and Applied Mathematics*, 419, 114676. [Link](#)
- [10]. Castilla, E. (2023). Robust Circular Logistic Regression model and its application to Life and Social Sciences. *Revista Colombiana de Estadística*, 46(1), pp. 45-62. [Link](#)
- [11]. Castilla, E. (2022). Robust estimation of the spherical normal distribution. *Mathematica Applicanda*, 50, pp. 43-63. [Link](#)
- [12]. Castilla, E. & Chocano, P.J. (2022). A new robust approach for multinomial logistic regression with complex design model. *IEEE Transactions on Information Theory*, 68(11), pp. 7379-7395. [Link](#)
- [13]. Castilla, E. & Zografos, K. (2022). On distance-type Gaussian estimation. *Journal of Multivariate Analysis*, 188, 104831. [Link](#)
- [14]. Balakrishnan, N. & Castilla, E. (2022). EM-based likelihood inference for one-shot device test data under log-normal lifetimes and the optimal design of a CSALT plan. *Quality and Reliability Engineering International*, 38(2), pp. 780-799. [Link](#)

- [15]. Balakrishnan, N., Castilla, E. & Ling, M.H. (2022). Optimal designs of Constant-Stress Accelerated Life-Tests for one-shot devices with model misspecification analysis. *Quality and Reliability Engineering International*, 38(2), pp. 989-1012. [Link](#)
- [16]. Castilla, E., Jaenada, M., Martín, N. & Pardo, L. (2022). Robust approach for comparing two dependent normal populations through Wald-type tests based on Rényi's pseudodistance estimators. *Statistics and Computing*, 32:100. [Link](#)
- [17]. Castilla, E., Jaenada, M. & Pardo, L. (2022). Estimation and testing on independent not identically distributed observations based on Rényi's pseudodistances. *IEEE Transactions on Information Theory*, 68(7), pp. 4588-4609. [Link](#)
- [18]. Balakrishnan, N., Castilla, E., Martín N. & Pardo, L. (2021). Divergence-based robust inference under proportional hazards model for one-shot device life-test. *IEEE Transactions on Reliability*, 70(4), pp. 1355-1367. [Link](#)
- [19]. Castilla, E., Martín, N., Pardo, L. & Zografos, K. (2021). Composite likelihood methods: Rao-type tests based on composite minimum density power divergence estimator. *Statistical Papers*, 62, pp. 1003–1041. [Link](#)
- [20]. Castilla, E., Martín, N. & Pardo, L. (2021). Testing linear hypotheses in Logistic Regression Analysis with complex sample survey data based on phi-divergence measures. *Communications in Statistics-Theory and Methods*, 50(22), pp. 5228-5247. [Link](#)
- [21]. Castilla, E., Ghosh, A., Martín, N. & Pardo, L. (2021). Robust semiparametric inference for polytomous logistic regression with complex survey design. *Advances in Data Analysis and Classification*, 15, pp. 701-734. [Link](#)
- [22]. Castilla, E., Martín N., Muñoz S. & Pardo, L. (2020). Robust Wald-type tests based on minimum Rényi pseudodistance estimators for the multiple regression model. *Journal of Statistical Computation and Simulation*, 90(14), pp. 2655-2680. [Link](#)
- [23]. Balakrishnan, N., Castilla, E., Martín N. & Pardo, L. (2020). Robust inference for one-shot device testing data under exponential lifetime model with multiple stresses. *Quality and Reliability Engineering International*, 36, pp. 1916-1930. [Link](#)
- [24]. Castilla, E., Martín, N., Pardo, L. & Zografos, K. (2020). Model Selection in a composite likelihood framework based on density power divergence. *Entropy*, 22(3), 270. [Link](#)
- [25]. Balakrishnan, N., Castilla, E., Martín N. & Pardo, L. (2020). Robust inference for one-shot device testing data under Weibull lifetime model. *IEEE Transactions on Reliability*, 69(3), pp. 937-953. [Link](#)
- [26]. Balakrishnan, N., Castilla, E., Martín N. & Pardo, L. (2019). Robust estimators for one-shot device testing data under gamma lifetime model with an application to a tumor toxicological data. *Metrika*, 82(8), pp. 991–1019. [Link](#)
- [27]. Balakrishnan, N., Castilla, E., Martín N. & Pardo, L. (2019). Robust estimators and test-statistics for one-shot device testing under the exponential distribution. *IEEE Transactions on Information Theory*, 65(5), pp. 3080-3096. [Link](#)
- [28]. Castilla, E., Ghosh, A., Martín, N. & Pardo, L. (2018). New statistical robust procedures for polytomous logistic regression models. *Biometrics*, 74(4), pp 1282-1291. [Link](#)
- [29]. Castilla, E., Martín, N., Pardo, L. & Zografos, K. (2018). Composite likelihood methods based on minimum density power divergence estimator. *Entropy*, 20(1), 18. [Link](#)
- [30]. Castilla, E., Martín, N. & Pardo, L. (2018). Minimum phi-divergence estimator for the multinomial logistic regression model with complex sample design. *AStA Advances in Statistical Analysis*, 102(3), pp 381-411. [Link](#)

## Book Chapters

- [1]. Castilla, E. & Chocano, P.J. (2023). *On the choice of the optimal tuning parameter in robust one-shot device testing analysis*. (Eds. N. Balakrishnan et al.) Trends in Mathematical, Information and Data Sciences. Studies in Systems, Decision and Control, vol 445. Springer, Cham, pp. 169-180. [Link](#)
- [2]. Balakrishnan, N., Castilla, E. & Pardo, L. (2021). *Robust statistical inference for one-shot devices based on density power divergences: An overview*. (Eds. B. C. Arnold et al.) Methodology and Applications of Statistics, A Volume in Honor of C.R. Rao on the Occasion of his 100th Birthday, Contributions to Statistics. Springer, NY, pp. 3-42. [Link](#)
- [3]. Castilla, E., Martín, N. & Pardo, L. (2018). *A Logistic Regression Analysis approach for sample survey data based on phi-divergence measures*. (Eds. E. Gil et al.) The Mathematics of the Uncertain. Studies in Systems, Decision and Control, vol 142. Springer, Cham, pp. 465-474. [Link](#)

## Other Articles

- [1]. Castilla, E. & Chocano, P.J. (2023). *Una breve introducción al método de Monte Carlo*. Gaceta de la Real Sociedad Matemática Española. 26(1), pp. 87-108. [Link](#)
- [2]. Castilla, E. (2022). Thesis Abstract: *Robust statistical inference for one-shot devices based on divergences*. Journal & Proceedings of the Royal Society of NSW, 155(1), pp 114-115. [Link](#)
- [3]. Castilla, E. (2022). Thesis Abstract: *Inferencia estadística robusta para dispositivos de un solo uso*. Boletín de Estadística e Investigación Operativa, 38(1). [Link](#)
- [4]. Chocano, P.J. & Castilla, E. (2021). *Estadística multivariante aplicada al análisis y predicción de partidos de fútbol en las principales ligas europeas*. Pensamiento Matemático. 11(2), pp. 021–030. [Link](#)
- [5]. Castilla, E. & Chocano, P.J. (2021). *Enseñanza del Software Estadístico R a alumnos de Matemáticas*. Pensamiento Matemático. 11(1), pp. 057-068. [Link](#)

**Referee in:** Applied mathematical modelling, Biometrics, Communications in Statistics-Theory and Methods, Communications in Statistics-Simulation and Computation, Computational Statistics, Dynamical Systems, Engineering & System Safety, IEEE trans. on Reliability, Journal of Electronic Testing, Journal of Statistical Computation and Simulation, Journal of Statistical Planning and Inference, Journal of Statistical Theory and Applications, Journal of Risk and Reliability, Statistics, TEST.

## Congress and Seminars

### Congress

- 2023 Inference for one-shot devices under competing risks model (E. Castilla). *XII Conference on Mathematical Methods in Reliability, Murcia*
- 2022 Robust statistical inference for one-shot devices (E. Castilla). *5th International Conference on Econometrics and Statistics: EcoSta 2022, Japan (Online)*
- 2021 Inference for one-shot device test analysis under log-normal lifetimes (N. Balakrishnan, E. Castilla) *22<sup>nd</sup> European Young Statistician Meeting, Atenas, Greece (Online)*
- 2021 Inference for one-shot device test data under log-normal lifetimes (N. Balakrishnan, E. Castilla) *Jornadas SEIO 2021, Granada (Online)*  
Ramiro Melendreras Award
- 2021 Minimum RP estimators for independent but not identically distributed observations (E. Castilla, M. Jaenada & L.Pardo). *19th Conference of the Applied Stochastic Models and Data Analysis International Society (ASMDA2021), Athens, Greece (Online)*.
- 2021 A robust approach for multinomial logistic regression model. Application to mammography experience data (E. Castilla, P. J. Chocano). *LMS Women in Mathematics Day*. University of Plymouth, **England (Online)**. Poster
- 2020 Diseño óptimo de tests de vida acelerados para dispositivos de un solo uso (E. Castilla). *IMEIO-DecData: Decisión Optimización y Ciencia de Datos, UCM, Madrid*
- 2019 Robust inference for one-shot device testing under the Weibull distribution with multiple stress factors (E. Castilla). *Symposium on Information Theory with Applications to Statistical Inference, UCM, Madrid*
- 2019 Robust tests based on Minimum Rényi Pseudodistance Estimators for the MRM (E. Castilla, N. Martin, S. Muñoz, L. Pardo). *2nd young statisticians and operational research meeting, El Escorial, Madrid*
- 2019 A new approach to polytomous regression models (E.Castilla) *32 Panhellenic Statistics Conference, University of Ioannina, Greece*
- 2019 One shot device testing under exponential distribution: a new robust approach (E. Castilla), *IV International Workshop on Proximity Data, Multivariate Analysis and Classification, Salamanca*
- 2018 MPDE for one-shot device testing under the exponential distribution (E.Castilla) *II Edición Simposio "Cuéntanos tu Tesis"*. Universidad Politécnica de Madrid, **Madrid**, 14-16 Marzo 2018. (Poster)
- 2017 Minimum density power divergence estimators for one-shot device model (E.Castilla) *1<sup>st</sup> Spanish Young Statisticians and Operational Researchers Meeting, SYSORM*. Universidad de Granada, **Granada**
- 2017 Minimum density power divergence estimators for polytomous logistic models (E.Castilla) *III International Workshop on Proximity Data, Multivariate Analysis and Classification. Valladolid*
- 2017 New statistical procedures for polytomous logistic models (E.Castilla) *XI Workshop of Young Researches in Mathematics*. Universidad Complutense de Madrid, **Madrid**

- 2017 New robust estimators for one-shot device testing under the exponential distribution (E. Castilla) *Young Statisticians' Meeting 2017*, Keele University (**England**)
- 2017 Option management with discontinuities in the payoff: distribution of probability of losses (**Banco Popular**) *XI UCM Modelling Week, Master in Mathematical Engineering*. Universidad Complutense de Madrid, Madrid
- 2016 New estimators for multinomial logistic regression using complex survey data. A comparison to pseudo maximum likelihood estimator (E.Castilla) *X Workshop of Young Researches in Mathematics*. Universidad Complutense de Madrid, **Madrid**
- 2016 Estimadores basados en distancias de Regresión Logística Multinomial con muestreo estratificado por conglomerados. (E.Castilla, N.Martín, L.Pardo) *XXXVI Congreso Nacional de Estadística e Investigación Operativa*. Universidad de Castilla-La Mancha, **Toledo**
- 2016 The asymptotic behavior of the minimum phi-divergence estimator for multinomial logistic regression models using complex survey data Designs (E.Castilla, N.Martín, L.Pardo). *Ordered Data and their Applications in Reliability and Survival Analysis*. McMaster University, Hamilton (**Canada**)
- 2016 Visual object detection in live video stream (**APICAL LTD**, United Kingdom). *X UCM Modelling Week, Master in Mathematical Engineering*. Universidad Complutense de Madrid, Madrid

## Seminars

- 2024 *A robust approach for the polytomous logistic regression model based on divergence measures* (E. Castilla). Monthly Seminar of the Statistics Department, Vali-e-Asr University of Rafsanjan, **Iran** (Online)
- 2024 *Modelización de los tiempos de vida en dispositivos de un solo uso: un enfoque robusto* (E. Castilla). Seminario del Departamento de Matemática Aplicada I, ETSI Industriales, UNED, **Madrid**
- 2022 *Modelización de los tiempos de vida en dispositivos de un solo uso* (E. Castilla). Ateneo imUVA, **Valladolid**
- 2022 *Dispositivos de un sólo uso: retos y dificultades* (E. Castilla). Seminario de investigación del departamento de Matemática Aplicada de la Uinversidad Rey Juan Carlos, **Móstoles**
- 2021 *Dispositivos de un sólo uso: tratamiento de datos con censura interválica extrema* (E. Castilla). Ciclo de Conferencias del IMI-DSC: Decisión, Optimización y Ciencia de Datos IMI-DSC, **Madrid**
- 2019 *Distance-based Inference for one-shot devices* (E. Castilla). Seminar on Department of Mathematics, Ioannina University, **Greece**
- 2019 *Inferencia Robusta para dispositivos de un solo uso* (E. Castilla). Seminario Doctorandos, Facultad Ciencias Matemáticas Universidad Complutense de Madrid, **Madrid**

## Other Activities

- 2024 Speaker at EL PAIS CON TU FUTURO, X Edition, in the Science and Technology room.

## Committees

Co-organizer of the Mathematics Seminar, Department of Applied Mathematics, Rey Juan Carlos University, Madrid, September 2022 – December 2024

- 2024 4<sup>rd</sup> young statisticians and operational research meeting (SYSORM), Santiago de Compostela (Scientific Committee)
- 2023 23<sup>rd</sup> European Young Statistician Meeting, Slovenia, 11-15 September (Scientific Committee)
- 2023 Día de Pi. Universidad Rey Juan Carlos, Móstoles (Organizing Committee)
- 2022 3<sup>rd</sup> young statisticians and operational research meeting (SYSORM), Elche (Scientific Committee)
- 2019 2<sup>nd</sup> young statisticians and operational research meeting (SYSORM), El Escorial (Organizing Committee)
- 2018 XII Workshop of Young Researchers in Mathematics. Universidad Complutense de Madrid, Madrid (Organizing Committee)

## Research Projects

- PGC2018-095194-B-I00 (2019-2022). *Estimación y contrastes de hipótesis robustos para datos de alta dimensión*. Ministerio de Ciencia, Innovación y Universidades (Working Team)
- MTM2015-67057-P (2016-2019): *Estimación y Contrastes basados en Medidas de divergencia para la modelización de dispositivos de un solo uso*. Ministerio de Economía y Competitividad (Working Team)

## Miscellaneous

### Awards and Distinctions

- 2022 3rd Prize Margarita Salas Research Award, Basic Sciences Category, City of Madrid
- 2022 Vicent Caselles Award, Royal Spanish Mathematical Society and BBVA Foundation
- 2021 Ramiro Melendreras Award, Spanish Society of Statistics and Operations Research (SEIO)
- 2021 Extraordinary Doctorate Award for the 2020-2021 Cohort, Complutense University of Madrid
- 2015 Extraordinary Final Degree Award for the 2014-2015 Cohort, Bachelor's Degree in Mathematics and Statistics, Complutense University of Madrid
- 2015 Best Academic Record Award for the 2014-2015 Cohort, Bachelor's Degree in Mathematics and Statistics, Complutense University of Madrid

### Grants

- 2019 FPU short stay scholarship, Ministry of Education, Culture, and Sports
- 2018 FPU short stay scholarship, Ministry of Education, Culture, and Sports
- 2017 FPU scholarship, Ministry of Education, Culture, and Sports
- 2016 Scholarship from Complutense University for predoctoral research contracts for training researchers
- 2015 Master's study aid from the Faculty of Mathematical Sciences, UCM
- 2015 Collaboration scholarship 2015-2016, State Secretariat for Education, Vocational Training, and Universities. Department of Statistics and Operations Research I, UCM
- 2015 Excellence Scholarship, Community of Madrid

### Other Merits

- 2024 Selected to attend the 11th Heidelberg Laureate Forum, HLF
- 2023 Accredited by ANECA as a "Profesora Titular"
- 2021 Seleccionada para representar a España en el 22nd European Young Statisticians Meeting, European Regional Committee of the Bernoulli Society for Mathematical Statistics and Probability (2021)
- 2021 Accredited by ANECA as a "Profesora Ayudante Doctora" and "Profesora Contratada Doctora"