ANDRÉ FELIPE MENEZES

B.Sc., M.Sc.

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SUMMARY

I am a Statistician with experience in statistical modeling, more precisely in scRNA-seq data analysis, Bayesian dynamic models, and quantile regression models. I am interested in researching about analysis and development of statistical models to Biology phenomena, computational implementation of statistical models, and development and application of Bayesian dynamic models.

WORK EXPERIENCE

Statistician and Data Scientist

Murabei

June 2020 – July 2022 São Paulo, SP, Brazil

Data analysis and modeling for national and international companies, including the following challenges:

- Forecast models for scrap price.
- Forecast massive number of hierarchical time series.
- Forecast availability of returnable containers in production plants.
- Optimization decision model for minimum-cost flow problem.
- Credit risk score with focus on small companies.
- Predict models for control quality processes.
- Pricing models for credit recovery.

Intern

Bradesco Bank

August 2018 – February 2019 Curitiba, PR, Brazil

- Extract, Transform and Load (ETL) large databases for credit risk studies.
- Creation of automated process using SAS and R for preview risk evaluation.
- Credit Intelligence Academy: short course with focus on credit risk areas of modeling, strategy, and MIS.

PROJECTS

Statistical Methods for scRNA-seq Data Modeling

CNPq/Unicamp

February 2019 – April 2021 Campinas, SP, Brazil

- I studied techniques used for data analysis in scRNA-seq, which include (i) methods for pre-processing raw data, (ii) data processing of counting matrix and (iii) statistical methods for data analysis.
- Real data analysis of cells from bronchoalveolar lavage fluid (BALF) tissue from patients with COVID-19 was performed to characterize groups of cells and comparing the genes expression level of the patients.

EDUCATION

Ph.D. in Data Science

Maynooth University

Sep 2022 – Ongoing

M.Sc. in Statistics

State University of Campinas

Mar 2019 – May 2021

- Thesis theme: Statistical Methods for scRNA-seq Data Modeling

B.Sc. in Statistics

State University of Maringá

Feb 2014 – Feb 2019

- Developed projects:
  - Bias correction methods of maximum likelihood estimators.
  - Probability distributions with bounded support on $(0, 1)$.
  - A review of Geostatistics methodology.

STRENGTHS

Hard-working | Self-taught | Collaboration

Statistical Modeling | scRNA-seq | Time Series | Bayesian Inference | `R` | `python` | `C++` | git | cloud tools | docker | microservices | LaTeX

LANGUAGES

- Portuguese (Native)
- English (Advanced)

Methods of Bias Correction of Maximum Likelihood Estimators

CNPq/UEM

July 2017– July 2018 Maringá, PR, Brazil

- I studied three approaches to obtain bias-corrected maximum likelihood estimates for the parameters of any probability distribution.
- I also introduced the `mle.tools` R package which can be used to computes the expected/observed Fisher information and the bias corrected estimates for the parameters of any probability distribution.

PUBLICATIONS

Software

- **Menezes, A. F. B.**, & Pinheiro, E. G. (2022). *pybats-detection: A python package for outlier and structural changes detection in time series analysis*. python package available at: https://github.com/Murabei-OpenSource-Codes/pybats-detection.
- **Menezes, A. F. B.** (2021). *RBATS: Bayesian Dynamic Models*. R package available at: https://github.com/AndrMenezes/RBATS.
- **Menezes, A. F. B.**, & Mazucheli, J. (2021). *Unitquantreg: Parametric quantile regression models for bounded data*. R package available at: https://github.com/AndrMenezes/unitquantreg. Retrieved from https://andrmenezes.github.io/unitquantreg

Journal Articles

- **Menezes, A. F. B.**, Bourguignon, M., & Mazucheli, J. (2022). Complementary beta regression model for fitting bounded data. *Journal of Statistical Theory and Practice*, *16*(22). doi:10.1007/s42519-022-00256-w
- Mazucheli, J., Alves, B., **Menezes, A. F. B.**, & Leiva, V. (2022). An overview on parametric quantile regression models and their computational implementation with applications to biomedical problems including COVID-19 data. *Computer Methods and Programs in Biomedicine*, *221*, 106816. doi:10.1016/j.cmpb.2022.106816
- **Menezes, A. F. B.**, Mazucheli, J., & Bourguignon, M. (2021). A parametric quantile regression approach for modelling zero-or-one inflated double bounded data. *Biometrical Journal*, *63*, 841–858. doi:10.1002/bimj.202000126
- **Menezes, A. F. B.**, Mazucheli, J., & Chakraborty, S. (2021). A collection of parametric modal regression models for bounded data. *Journal of Biopharmaceutical Statistics*, *31*(4), 490–506. doi:10.1080/10543406.2021.1918141
- **Menezes, A. F. B.**, Mazucheli, J., Oliveira, R. P., & Chakraborty., S. (2021). Improved maximum likelihood estimation of the parameters of the gamma-uniform distribution with bias-corrections. *Communications in Statistics – Simulation and Computation*, 1–13. doi:10.1080/03610918.2021.1951760
- Mazucheli, J., **Menezes, A. F. B.**, Alqallaf, F., & Ghitany, M. E. (2021). Bias-corrected maximum likelihood estimators of the parameters of the unit-Weibull distribution. *Austrian Journal of Statistics*, *50*(3), 41–53. doi:10.17713/ajs.v50i3.1023

TEACHING EXPERIENCE

2020 **Undergraduate Tutor**
Descriptive Statistics
State University of Campinas

2019 **Undergraduate Tutor**
Database for statistics
State University of Campinas

2016 **Undergraduate Tutor**
Statistics for engineering
State University of Maringá

2015 **Undergraduate Tutor**
Probability and Statistics
State University of Maringá

SHORT COURSES

2018 **Joint Models in Biostatistics**
State University of Maringá, 6h

2017 **Elements of Computational Statistics**
University of São Paulo, 6h

2016 **Graphical Optimization in the R Environment**
State University of Maringá, 9h

2016 **Introduction to R**
UDEMY, 15h

2016 **Big Data and data visualization in R**
Graduate Program of Biostatistics, 6h

2016 **My first R package**
Graduate Program of Biostatistics, 2h

2016 **Production of dynamic reports using knitr and Rmarkdown**
Graduate Program of Biostatistics, 2h

2015 **Aplied geostatistics**
Federal Technological University of Paraná, 8h

2015 **Survival analysis**
State University of Maringá, 8h

2015 **Demystifying LaTeX**
State University of Maringá, 8h

2014 **Inductive inference: A genuinely Bayesian view**
State University of Maringá, 6h

2014 **Introduction to R**
State University of Maringá, 16h

2014 **Introduction to SAS, LaTeX, and Sweave**
State University of Maringá, 48h

2013 **Excel: Basic resources**
SENAC, 21h

CONFERENCE TALKS

- Mazucheli, J., Leiva, V., Alves, B., & **Menezes, A. F. B.** (2021). A new quantile regression for modeling bounded data under a unit Birnbaum-Saunders distribution with applications in medicine and politics. *Symmetry*, *13*(4), 1–21. doi:10.3390/sym13040682
- **Menezes, A. F. B.**, & Mazucheli, J. (2020). Improved maximum likelihood estimators for the parameters of the Johnson SB distribution. *Communications in Statistics - Simulation and Computation*, *49*(6), 1511–1526. doi:10.1080/03610918.2018.1498892
- **Menezes, A. F. B.**, Mazucheli, J., Cardoso, J., & Chakraborty, S. (2020). The Transmuted Half-Normal distribution with application to precipitation data. *Pesquisa Operacional*, *40*(e216792), 1–30. doi:0.1590/0101-7438.2020.040.00216792
- Mazucheli, J., **Menezes, A. F. B.**, Dey, S., & Nadarajah, S. (2020). Improved parameter estimation of the Chaudhry and Ahmad distribution with climate applications. *Chilean Journal of Statistics*, *11*(2), 137–150.
- Mazucheli, J., **Menezes, A. F. B.**, Fernandes, L. B., Oliveira, R. P., & Ghitany, M. E. (2020). The unit-weibull distribution as an alternative to the kumaraswamy distribution for the modeling of quantiles conditional on covariates. *Journal of Applied Statistics*, *47*(6), 954–974. doi:10.1080/02664763.2019.1657813
- Mazucheli, J., Bapat, S. R., & **Menezes, A. F. B.** (2020). A new one-parameter unit-Lindley distribution. *Chilean Journal of Statistics*, *11*(1), 53–67.
- Mazucheli, J., Bertoli, W., Oliveira, R. P., & **Menezes, A. F. B.** (2020). On the discrete quasi xgamma distribution. *Methodology and Computing in Applied Probability*, *22*, 747–775. doi:10.1007/s11009-019-09731-7
- **Menezes, A. F. B.**, & Furriel, W. O. (2019). Beta and simplex regression models in the analysis of the municipal human development index 2010. *Revista Brasileira de Biometria*, *37*(3), 394–408. doi:10.28951/rbb.v37i3.408
- Dey, S., **Menezes, A. F. B.**, & Mazucheli, J. (2019). Comparison of estimation methods for unit-Gamma distribution. *Journal of Data Science*, *17*(4), 768–801. doi:10.6339/JDS.201910_17(4).0009
- Ghitany, M. E., Mazucheli, J., **Menezes, A. F. B.**, & Alqallaf, F. (2019). The unit-inverse Gaussian distribution: A new alternative to two-parameter distributions on the unit interval. *Communications in Statistics - Theory and Methods*, *48*(14), 3423–3438. doi:10.1080/03610926.2018.1476717
- Mazucheli, J., & **Menezes, A. F. B.** (2019). L-Moments and maximum likelihood estimation for the Complementary Beta distribution with applications on temperature extremes. *Journal of Data Science*, *17*(2), 391–406. doi:10.6339/JDS.201904_17(2).0009
- Mazucheli, J., **Menezes, A. F. B.**, & Dey, S. (2019a). Bias-corrected maximum likelihood estimators of the parameters of the inverse Weibull distribution. *Communications in Statistics - Simulation and Computation*, *48*(7), 2046–2055. doi:10.1080/03610918.2018.1433838
- Mazucheli, J., **Menezes, A. F. B.**, & Dey, S. (2019b). Unit-Gompertz distribution with applications. *Statistica*, *79*(1), 25–43. doi:10.6092/issn.1973-2201/8497
- Mazucheli, J., & **Menezes, A. F. B.**and Chakraborty, S. (2019). On the one parameter unit-Lindley distribution and its associated regression model for proportion data. *Journal of Applied Statistics*, *46*(4), 700–714. doi:10.1080/02664763.2018.1511774
- Oliveira, R. P., **Menezes, A. F. B.**, Mazucheli, J., & Achcar, J. A. (2019). Mixture and nonmixture cure fraction models assuming discrete lifetimes: Application to a pelvic sarcoma dataset. *Bio-*

2017 **The use of discrete cure fraction model in the analysis of oncological outcomes in the treatment of pelvic sarcomas**. I Statistical Modeling Meeting, Maringá.

2017 **Regression models for proportions: Beta and Simplex with applications to MHDI 2010**. I Statistical Modeling Meeting, Maringá.

2017 **Monte Carlo study of multiple comparisons corrections in t-test.** 5th Workshop on Probabilistic and Statistical Methods, Federal University of São Carlos, São Carlos.

2016 **Likelihood ratio, Wald, and Score statistics in small samples for Beta distribution.** I Biostatistics Workshop, Maringá.

metrical Journal, *61*(4), 813–826. doi:10.1002/bimj.201800030

- **Menezes, A. F. B.**, Mazucheli, J., & Barco, K. V. P. (2018). The power inverse Lindley distribution: Different methods of estimation. *Ciência e Natura*, *40*(e24), 1–12. doi:10.5902/2179460X27500
- **Menezes, A. F. B.**, Mazucheli, J., & Dey, S. (2018). The unit-logistic distribution: Different methods of estimation. *Pesquisa Operacional*, *38*, 555–578. doi:10.1590/0101-7438.2018.038.03.0555
- Félix, V. B., & **Menezes, A. F. B.** (2018). Comparisons of ten corrections methods for t-test in multiple comparisons via monte carlo study. *Electronic Journal of Applied Statistical Analysis*, *11*(1), 74–91. doi:10.1285/i20705948v11n1p74
- Mazucheli, J., **Menezes, A. F. B.**, & Dey, S. (2018a). Improved maximum-likelihood estimators for the parameters of the unit-gamma distribution. *Communications in Statistics - Theory and Methods*, *47*(15), 3767–3778. doi:10.1080/03610926.2017.1361993
- Mazucheli, J., **Menezes, A. F. B.**, & Dey, S. (2018b). The unit-Birnbaum-Saunders distribution with applications. *Chilean Journal of Statistics*, *9*(1), 47–57.
- Mazucheli, J., **Menezes, A. F. B.**, & Ghitany, M. E. (2018). The unit-weibull distribution and associated inference. *Journal of Applied Probability and Statistics*, *13*, 1–22.
- Mazucheli, J., **Menezes, A. F. B.**, & Nadarajah, S. (2017). mle.tools: An R Package for Maximum Likelihood Bias Correction. *The R Journal*, *9*(2), 268–290. doi:10.32614/RJ-2017-055

POSTER PRESENTATIONS

2016 **Monte Carlo simulation study for post hoc tests**, XIII Statistics Research Week, State University of Maringá.

2016 **Probabilistic distribution for proportions: A baseball application.**, XIII Statistics Research Week, State University of Maringá.

2015 **Cluster analysis for time series of hospitalizations for bronchiolitis in the Regional Health Departments of Paraná**. XII Statistics Research Week, State University of Maringá.

2015 **Proposal for a Semivariance Estimator for Big Data**. XII Statistics Research Week, State University of Maringá.