# ANDRÉ FELIPE MENEZES

**B.Sc., M.Sc.**

andrefelipemaringa@email.com +55 44 99807 0397 andrmenezes.github.io
AndrMenezes 0000-0002-3320-9834

## 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 have published 26 papers in peer-reviewed journals, created two R packages and one python package. I am interested in researching about analysis and development of statistical models to Biology, 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.