Boris Polanco

Mathematical Engineer-M.Sc Statistics

Personal Information

Nationality **Ecuadorian**, *Born January* 11*th* 1989.

Personal Email **boriscout@hotmail.com**.

Education

September 2016- September 2018 **Master of Science in Statistics**, *University of Bern*, Switzerland, I got a master degree in statistics at the Institute of Mathematical Statistics and Actuarial Science at the University of Bern. My master thesis was about Monte Carlo estimators of Value at Ruin and Tail Value at Ruin. This project was performed using the Monte Carlo estimator of two measures of risk, using importance sampling and stochastic simulation techniques to compute the probability of ruin, more precisely the amount of capital required for an insurance company in order to have a small value of ruin probability. Some of the lectures during my master studies were Non Life Insurance Mathematics, Linear Models, Actuarial Mathematics, Probability Theory, Cryptography, Modeling Extremal Events,Survival Data Analysis, Stochastic Models in Finance and Insurance, Stochastic Processes, Actuarial Risk Theory, Multivariate Statistics among others.

$2008 - 2014$ **Mathematical Engineering**, *Escuela Politécnica Nacional*, Quito-Ecuador, I got a bachelor diploma in applied mathematics, that was focused in statistics and operational research. During this time, I have obtained a good theoretical and applied background in statistics. It allowed me to get my first job positions were I learned to the usage of mathematics in different fields. In order to obtain the diploma I worked for half year in a thesis project that is described as follows. .

Thesis Project

Title *A comparative study of late life mortality deceleration in Ecuador*

Director Dr. Luis Horna, Phd

Summary This work we about to obtain by fitting several mortality data to certain survival analysis functions. The methodology used was the non linear least squares method. After some statistical validation process, the best-fitted curve was selected using certain statistical criteria. Two approaches were examinated in order to determine the age at which the mortality deceleration process started. Finally, a comparison between the obtained results was performed. The data used in this research corresponds to population projections obtained from Natonal Institute of Statistics in Ecuador (INEC). All the numerical calculations were derived using the programming language and environment R

http://bibdigital.epn.edu.ec/handle/15000/10515?locale=en

Work Experience

May 2019-February 2020 **Chief of Supervision of Social Security System** , Superintendency of Banks, Quito-Ecuador.

I was managing the supervisory department of the social security system in Ecuador. Part of the activities were plan the supervision scheme for IESS, ISSFA, ISSPOL and also 69 pension funds, review of the actuarial reports of the different social protection funds, control the compliance of regulations for institutions of social security system. I was in charge of 40 people.

December 2018-April 2019 **Actuarial Consultant** , Aseguradora del Sur Insurance Company, Quito-Ecuador.

I worked on this company as a external consultant, I developed risk indicators using R and shiny. Some of them provided measures for quantifying risk of insufficiency of IBNR reserves, concentration risk, deviation claim rate risk, prime insufficiency risk. The proposed indicators were established using quantiles based measures.

December 2018-February 2019 **Professor** , Universidad Técnica del Norte, Ibarra-Ecuador.

I was teaching during one semester two lectures to students of the faculty of biotechnology. I was lecturer of Statistics and Experimental Design.

February 2018-July 2018 **Intern in Statistics**, Lonza- Drug Development Services, Basel-Switzerland.

I was part of the team managed by the Dr. Roman Mathaes. I was involved in two main projects. The first one is about the simulation of the impurity limits for some drugs with data obtained from the MFI technique. All the simulation process was developed in R. This project included several statistical techniques as stochastic simulation and statistical quality control. The other project was about a classification model using machine learning techniques to classify three kinds of agreggated protein particles.

February 2016-August 2016 **Actuary**, Actuarial and Research Office, IESS, Quito-Ecuador.

I was working as actuarial researcher working in the preparation of technical reports and research about the actuarial situation of the different insurance schemes of the institute. In this job, I did most of my activities using R and VBA excel. Some of the statistical techniques used were time series analysis, that was an important asset before attend this lecture during the master studies.

June 2015-January 2016 **Actuarial Consultant**, ACTUARIA CONSULTORES CIA LTDA, Quito-Ecuador, .

My duties included: Worked in the data cleansing of different data sets provided by Ecuadorian Insurance companies. Also, I performed frequency and severity models with mathematical and statistical techniques. Generation of reports of different of non life insurance schemes. I was involved in the data cleansing and generation of the frequency and severity model for AIG insurance, all the computations were performer in R, I acquire strong skills in R especially in GLM models. Also I started working with big data sets.

Mayo 2014-Mayo 2015 **Sampling Desing Assistant**, DINEM, National Institute o Statistics and Census Bureau INEC, Quito-Ecuador.

My tasks were related to the development and implementation of algorithms in order to generate several samples corresponding to the national survey of employment. All the algorithms was developed in SPSS, Excel and R

Julio-Noviembre 2013 **Private Consultant**, FARMAENLACE Quito Ecuador, I worked as an Technical Assistant of professors of my bachelor's program in Quito. I assisted them in the development of a supply chain inventory model using time series models to predict sales of a chain of pharmacies in Ecuador..

Other Courses

October-December 2015 **EDX-The Australian National University**, *Introduction to Actuarial Science*, Lenght: 2 months.

November 2015 **Datacamp**, *Introduction to R. Intermediate Level*, Lenght: 8 hours.

November 2015 **Datacamp**, *Introduction to R. Basic Lever*, Length: 8 horas.

March 2015 **INEC**, *SPSS*, Length: 20 hours.

$7-18$ July 2014 **INEC**, *SPSS to construct survey indicators*, Length: 20 hours.

July-August 2014 **INEC**, *R basic level*, Length: 20 hours.

$6-8, 21-22$ August 2014 **INEC**, *Introduction to mathematical modelling with R*, Length: 20 hours.

February 2012 **Vale dos Vinhedos, Rio Grande do Sul, Brazil February 5-10, 2012**, *Latinoamerican School in Operational Research ELAVIO* 2012, Length: 120 hours, http://www.inf.ufrgs.br/elavio2012/elavio2012/.

Language Skills

Spanish , Mother Tongue.

English , C1.

German , Basic.

References

Dr. Atanas Koulov , *Head Drug Product Analytical Development and Quality Control*, LONZA AG, +41 79 878 51 95.
atanas.koulov@lonza.com

Dr. Roman Mathaes **Head of Pharmaceutical Services**, *LONZA AG*, Tel. : +41 61 316 8355, roman.mathaes@lonza.com.

Prof. Dr Riccardo Gatto , *Lecturer / Program Coordinator Swiss Association of Actuaries,Institute of Mathematical Statistics and Actuarial Science (IMSV)*, University of Bern-Switzerland, + 41 31 6318807.
riccardo.gatto@stat.unibe.ch

Honors and Awards

Mathematical Engineer , CUM LAUDE.

SENESCYT Scholar , I have been awarded the scholarship given by the Ecuadorian Government to the most successful applicants. I have chosen to study at the university of Bern the master program in statistics with this fund..

Computational Skills

- C++
- R advanced (Generation of complex functions, Dynamic reports, Dynamic plots, Shiny, Tensor flow in R)
- Python
- TensorFlow
- Latex Software (Scientific Text Edition)
- Microsoft Office
- SQL Language
- SPSS

Personal Interests

- Mathematical Statistics
- Machine Learning
- Data Science
- Actuarial Mathematics
- Probability
- Risk Theory
- Variance Reduction Methods.
- Financial Mathematics
- Mathematical Modeling
- Data Analysis
- Data Visualization