MASc Thesis

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# Abstract

# Acknowledgements

# Introduction

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# An overview of Bayesian inference

## The Bayesian paradigm: Frequentist vs. Bayesian

## The Bayesian thinking

## The basics of Bayesian inference

## Applying the Bayes theorem: Markov Chain Monte Carlo sampling (MCMC)

## Probabilistic programming: A framework to perform MCMC

# Data sources

## Survey of Labour and Income Dynamics - SLID

## Hierarchical structure: Industry and Occupation

## Exploratory Data Analysis

# Salary model estimation

## Data structure: from single to multilevel structure

## Model variables

## Model specification

## Model interpretability

## Sensitivity analysis

## Longitudinal analysis of the estimated parameters

## Model validation

# Model integration

## Integration with the existing implementation

## Model comparison: proposed vs. existent

# Computational cost of Bayesian inference

# Conclusions

# Future work