

Bayesian Analysis Project

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1 Abstract

2 Introduction

3 Dataset

The dataset comes from the *Institut National de la Statistique et des Etudes Economiques* or INSEE in France. It is the statistical institute of France. The dataset contains 33 sectors of activity that are identified by the *id* variable. The classification can be found in table ??.

The variables reported in this study are listed below:

- Time is an indicator which takes value 1 for a full-time work and 0 for a part-time work. *time*
- Sexe is a binary variable with value 1 for male and 0 for female. *sexe*
- Socio-Professional Category: it takes values between 1 and 5. Table ?? shows the classification. *spc*
- Salary: it is the response variable. *salary*

The salary is the average gross income for an hour. For instance it can be the average income of female employees working full-time in the extractive industry.

4 Descriptive analysis

We can explore the dataset through a descriptive analysis.

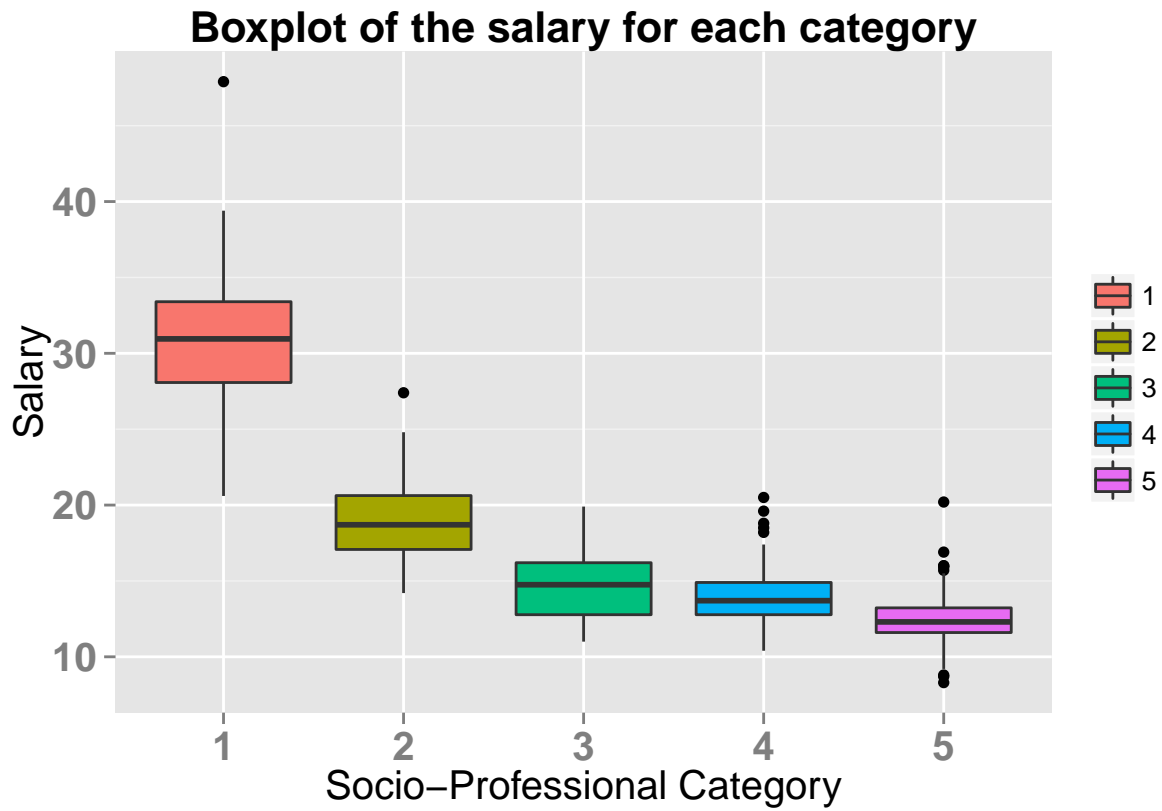


Figure 1: Boxplot of the salary for each category

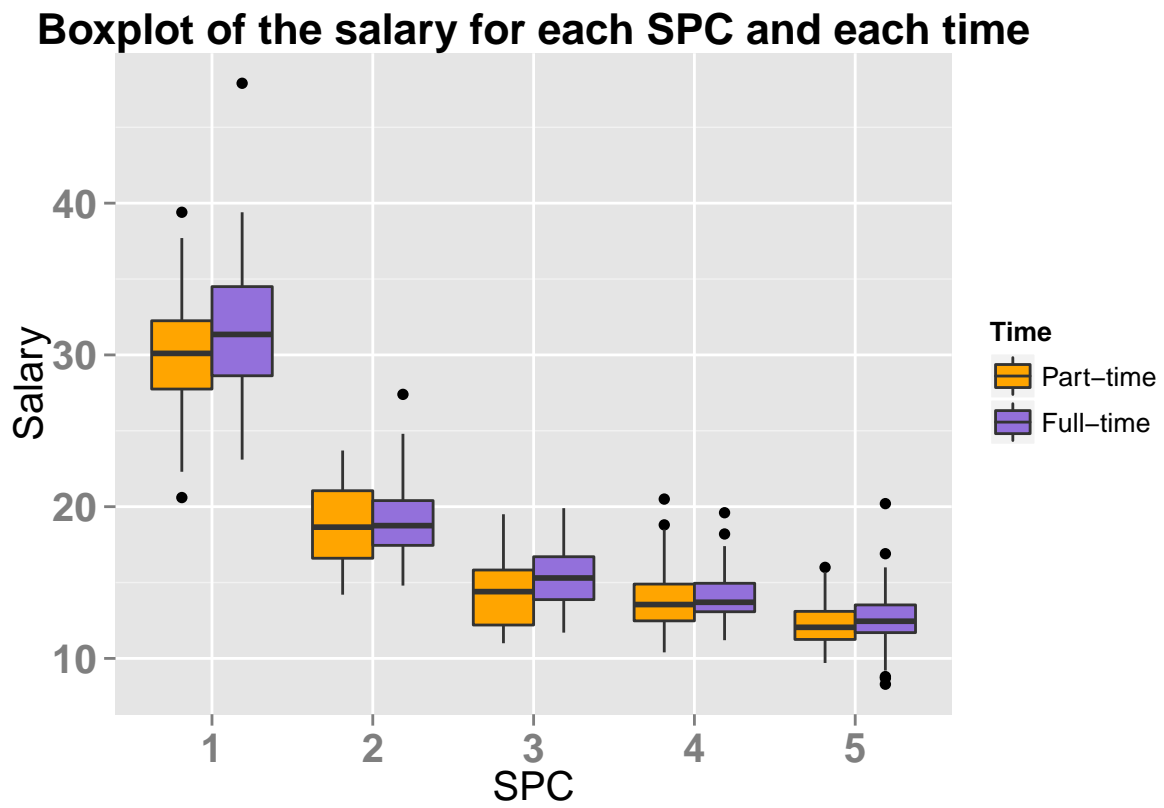


Figure 2: Boxplot of the salary for each SPC and each time

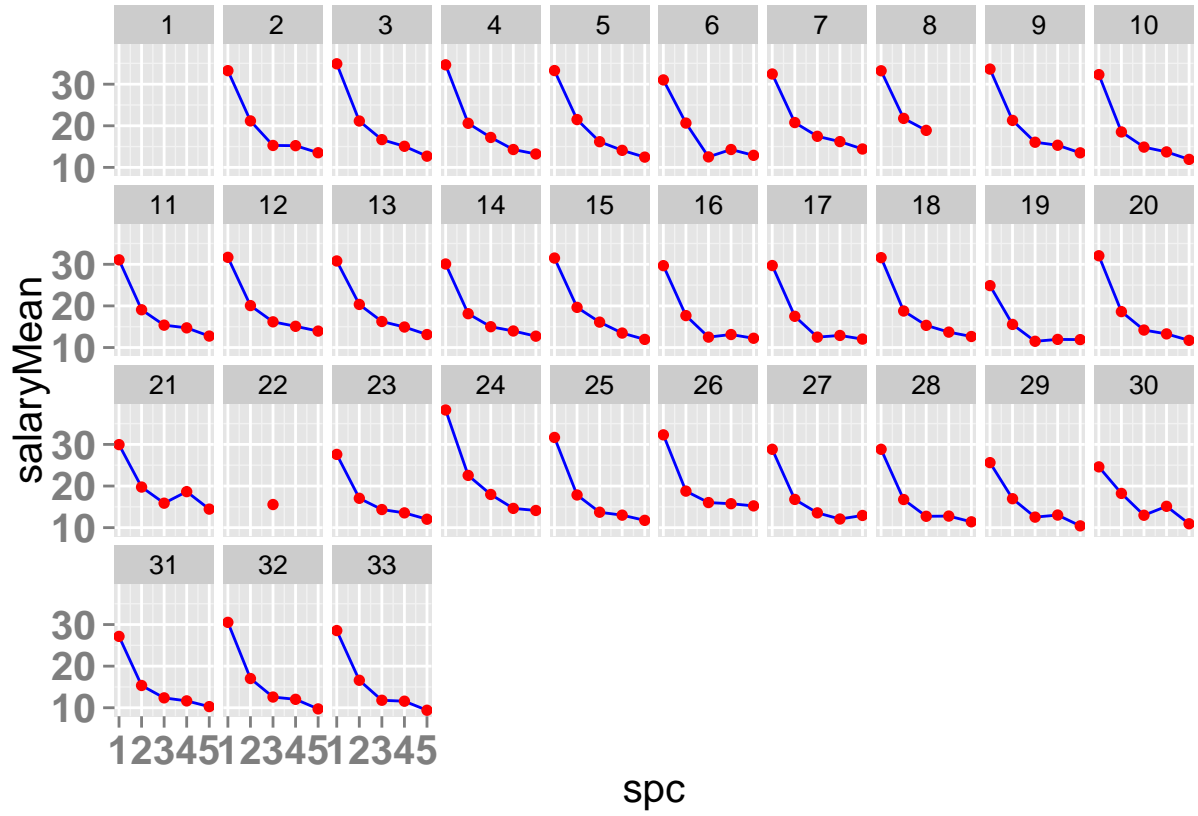


Figure 3: Evolution of the salary for each SPC by id

5 Statistical methods

6 Bayesian model

7 Bayesian model with random effects

8 COncclusion

9 Bibliographie

10 Appendix

10.1 Classification tables

Here are presented the classification tables for the Socio-Professional Categories (Table 1) and for the Sectors (Table 2).

	Category
1	Higher managerial and professional positions
2	Intermediate occupations
3	Employee
4	Skilled worker
5	Unskilled worker

Table 1: Classification table of the Socio-Professional Categories.

	Sector
1	Agriculture, silviculture and fishing
2	Shaper industry, extractive industry
3	Extractive industry, energy, water, trash management and remediation
4	Extractive industry
5	Water production and distribution, remediation, trash management
6	Manufacture of food, drink and tabacoo based products
7	Electric, electronic and informatic components manufacture
8	Transportation equipment manufacture
9	Other industrial products manufacture
10	Textile, clothing industry, leather and shoe industry
11	Wood working, paper and printing industry
12	Manufacture of rubber and plastic materials and other non metallic products
13	Metalworking industry and production of metallic products except machine and equipments
14	Other manufacture industry, repair and installation of machines and equipments
15	Construction
16	Wholesale trade and retailing, transport, accomodation and restoration
17	Trade, automobile and motorcycle repairs
18	Transportation and stocking
19	Accomodation and food service industry
20	Diverse services
21	Information and communication
22	Pubishing, audiovisual media and airing
23	Computer activities and information services
24	Financial and insurance activities
25	Scientific and tecnical activites, administrative and support services
26	Legal, accounting, management, architecture, control and technical analysis activities
27	Other specialized activities, scientific and technical
28	Administrative services and support activities
29	Other service activities
30	Arts and entertainment
31	Other service activities
32	Public administration, teaching, health and social action
33	Medico-social accomodation, social, and social action without accomodation

Table 2: Classification table of the Sectors.

Reurn to section [Dataset](#).