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**AN EXPERIMENTAL STUDY ABOUT
LABOR MARKET DISCRIMINATION:
GENDER, SOCIAL CLASS AND
NEIGHBORHOOD**

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Gender, Social Class And Neighborhood**

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The study consists of sending fictitious Curriculum Vitae for real job vacancies published weekly in the "El Mercurio" newspaper of Santiago. A range of strictly equivalent CVs in terms of qualifications and employment experience of applicants are sent out, only varying in gender, name and surname, and place of residence. The study allows differences in call response rates to be measured for the various demographic groups. Results are obtained for more than 11,000 CVs sent.

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Keywords: Labor Market Discrimination; Experimental Design.



AN EXPERIMENTAL STUDY ABOUT LABOR MARKET DISCRIMINATION: GENDER, SOCIAL CLASS AND NEIGHBORHOOD¹

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I. Introduction

Gender and social discrimination in the labor market are some of the key issues in the discussion on public policies in Latin America. However, empirical evidence and academic research on the matter have been rather scarce until now. This is also the case in Chile.

No matter how much has been done to study labor market discrimination, either racial, ethnic or gender, the issue of detection is still unsettled. In the usual regression analyses there are several problems of unobservable variables that clearly bias the results (Altonji and Blank, 1999; Neal and Johnson, 1996) and, on the other hand, experimental studies have been under discussion for not correctly measuring discrimination (Heckman and Siegelman, 1993; Heckman, 1998).

In Chile, despite the fact that the average years of schooling of Chilean female workers are not statistically different from those of male workers, average wages of male workers are 25% higher². In fact, previous studies³ suggest that gender discrimination is a factor in determining wages in the Chilean labor market. Estimates of the Blinder-Oaxaca decomposition give “residual discrimination” a significant participation in the total wage gap⁴. The evidence also shows stable and systematic differences in the returns to education and to experience by gender along the conditional wage distribution. Additionally, it has been shown that “residual discrimination” is higher for women with more education and experience.

Furthermore, Chilean female labor force participation is particularly low, 38.1% compared to 44.7% in Latin America⁵. This is even lower for married women and in fact, higher participation is found in separated or divorced women (Bravo, 2005). This latter fact may be interpreted as evidence of female preferences for non-market activities⁶.

However, this “residual discrimination” is only a measure of how much of the wage gap is due to unobservable factors. Therefore, these measures of discrimination are biased due to the lack of relevant controls. A recent study on discrimination by social class in Chile (Núñez and Gutiérrez, 2004) uses a dataset which reduces the role of unobserved heterogeneity across individuals, but it has several limitations⁷. Furthermore, there are no attempts at studying discrimination using neither audit studies nor natural experiments.

The objective of this paper is to study the Chilean labor market and determine the presence or absence of gender discrimination. In order to break past the limitations of earlier works, an experimental design is used, the first of its kind in Chile. This study also allows socioeconomic discrimination associated to names and places of residence in the Chilean labor market to be tackled.

² Own calculations using CASEN 2003. Once you correct for human capital differences and occupational choice this gap falls to 19% approximately.

³ Previous studies for Chile are Bravo (2005); Montenegro (1998); Montenegro and Paredes (1999) and Paredes and Riveros (1994).

⁴ Bravo (2005) shows that taking all employed workers and after controlling for years of schooling and occupation, the wage gap was 13.5% in 2000. Using the Blinder-Oaxaca decomposition he concludes that most of this difference was due to “residual discrimination”.

⁵ Source: International Labor Organization (ILO).

⁶ Contreras and Plaza (2004) also found that there are cultural factors, such as sexism, that significantly influence female labor force participation in Chile.

⁷ See Section II for a discussion.

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The following section contains a review of the relevant literature for this study. Meanwhile, Section III contains all the methodological information associated to the implementation of the experiment, which began to be applied in the last week of March 2006. Section IV contains a report of the main results. Lastly, Section V presents the main conclusions and policy lessons.

II. Literature Review

Labor market discrimination is said to arise when two identically productive workers are treated differently on the grounds of the worker's race or gender, when race or gender do not in themselves have an effect on productivity (Altonji and Blank, 1999; Heckman, 1998). However, there are never identical individuals. There are several unobservable factors that determine individual performance in the labor market.

The empirical literature attempts to face these problems by two alternative methodologies: regression analysis and field experiments⁸.

The regression analysis is focused on analyzing the Blinder-Oaxaca decomposition (Oaxaca, 1973; Blinder, 1973) to determine how much of the wage differential between groups of workers, by race or gender, is unexplained. This unexplained part is called discrimination. Developments in Chile have been centered on regression analysis applied to the gender gap. See Paredes and Riveros (1993), Montenegro (1999) and Montenegro and Paredes (1999) as an example. The conclusions from these studies are very limited. They lack several control variables, related to cognitive and non-cognitive abilities and school and family environments. In addition, preferences over non-market activities and experience of Chilean female workers could prove to be a very important unobservable factor. More recently, Núñez and Gutiérrez (2004) study social class discrimination in Chile under the traditional Blinder-Oaxaca decomposition. They use a dataset that allows them to reduce the role of unobservable factors by limiting the population under study and having better measures of productivity.

The above represent the traditional studies in this area. The present chapter is much more closely related to a different line of research on labor market discrimination:

⁸ See Altonji and Blank (1999) and Blank, Dabady and Citro (2004) for complete surveys on the econometric problems involving detecting discrimination in the labor market using regression analysis and field experiments.

experimental studies⁹. These originated in Europe in the 1960s and 1970s, the ILO in the 1990s and recently experimental techniques have been published in leading economic journals (Bertrand and Mullainathan, 2004).

Experimental approaches can be divided into two types: audit studies and natural experiments. The latter ones take advantage of unexpected changes in policies or events (Levitt, 2004; Antonovics, Arcidiacono and Walsh, 2004, 2005; Goldin and Rouse, 2000, Newmark, Bank and Van Nort, 1996). In Chile, as far as we know, there are no studies using these kinds of variations.

There have been two procedures used to carry out audit studies. First, the personal approach strategy which either sends individuals to job interviews or it does job applications over the telephone. Second, there is the strategy of sending written applications for real job vacancies.

The first procedure is the most subject to criticisms. It has been argued that it is impossible to ensure that false applicants are identical. Also, testers were sometimes warned that they were involved in a discrimination study and their behavior could bias the results.¹⁰

The first experiments that used written applications were unsolicited jobs-applications and posted to “potential employers”; these experiments tested preferential treatment in employer responses and not the hiring decision. Later came the ones that sent curriculum vitae to real solicitudes. Despite the fact that this latter technique overcomes the criticisms of the personal approaches and tests the hiring decision¹¹ it does not overcome a common problem of the audit studies raised by Heckman and Siegelman (1993) and Heckman (1998), which is that audits are crucially dependent on the distribution of unobserved characteristics for each racial group and the audit standardization level. Thus, there may still be unobservable factors, which can be productivity-determining and not discrimination. Riach and Rich (2002) accepted this criticism but pointed out that it is not easy to imagine how firm internal attributes¹² could enhance productivity. They conclude that while Heckman and Siegelman (1993) do not explain what could be behind those gaps the argument has “not been proven”.

The present study mainly follows the line of work developed by Bertrand and Mullainathan (2004). In their study, the authors measured the racial discrimination in the labor market, by means of the posting of fictitious curriculum vitae for job vacancies published in Boston and Chicago newspapers. Half of the CVs were randomly given Afro-American names and the other half received European names. Additionally, the effect of applicant

⁹ Riach and Rich (2002, 2004) and Anderson, Fryer and Holt (2005) have a complete survey of these studies.

¹⁰ See Heckman and Siegelman (1993).

¹¹ It really tests the calling back decision. We do not know what can happen next.

¹² Such as internal promotion or other.



qualification on the racial gap was measured; for this, the CVs were differentiated between High Qualifications and Low Qualifications.

The authors found that the curriculum vitae associated to White names received 50% more calls for interview than those with Afro-American names. They also found that whites were more affected by qualification level than blacks. Additionally, the authors found some evidence that employers were inferring social class based on the applicants' names.

III. Experiment Design

As already indicated, the experiment consists of the sending out of CVs of fictitious individuals for real job vacancies that appear weekly in the newspaper with the highest circulation in Chile.

Each week, the work team selects a total of 60 job vacancies from the "El Mercurio" newspaper of Santiago. A total of 8 CVs, 4 corresponding to men and 4 to women are sent out for each vacancy. The details of the experiment design are presented here below.

III.1. Definition of Demographic Cells

We defined eight relevant demographic cells which determined the categories being studied in the experiment. Thus, eight CVs -that are equivalent as regards employment productivity but differ in the variables in question- were sent out for each vacancy.

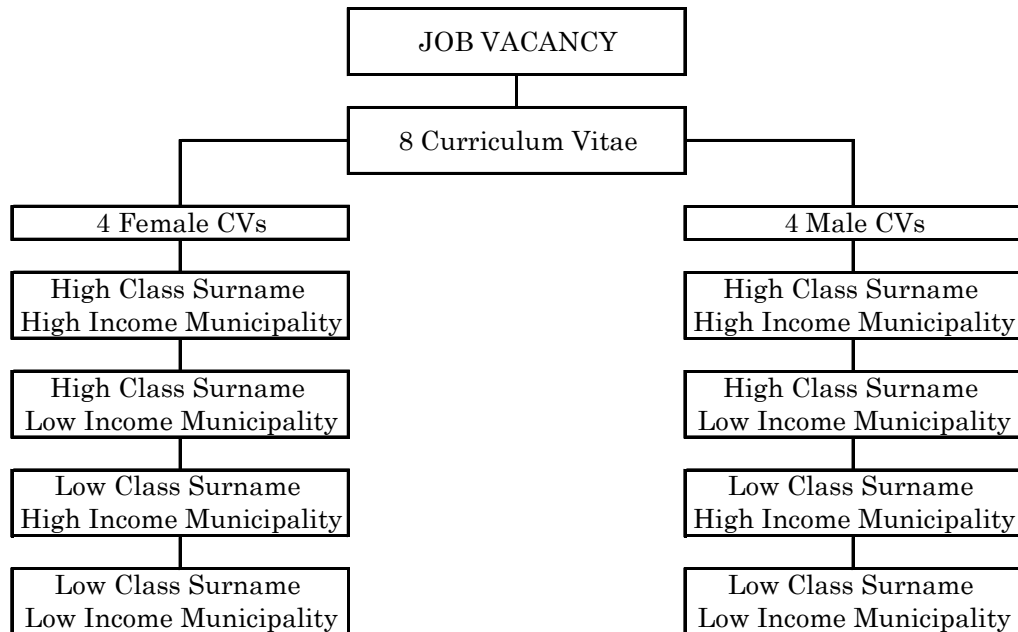
The cells were defined to serve the objectives of the study. Firstly, the study of discrimination by gender requires men and women to be separated. Additionally, socioeconomic discrimination is examined by means of two variables: surnames and municipalities of residence. In order to reduce the number of observations required in each case, these last variables were separated into two groups, the most extreme: socioeconomically rich and poor municipalities; and surnames associated to the Upper Classes and Lower Classes.

Since we have three dichotomous variables, the final number of demographic cells is 8 ($2 \times 2 \times 2$), as the following Table shows:

	Men		Women	
	Upper Class Surname	Lower Class Surname	Upper Class Surname	Lower Class Surname
High Income Municipality				
Low Income Municipality				

From the outset of the field work, in the last week of March 2006, each week approximately 60 job vacancies are chosen. Eight CVs are sent for each job vacancy, in other words, one for each demographic cell. So, each week 480 CVs are sent, 240 to men and 240 to women.

A group of names, surnames and municipalities are established to satisfy the requirements of each cell, with the names and municipalities chosen randomly for each vacancy.



III.2. Description of the source of job vacancies

The main source of job vacancies in Santiago is the “El Mercurio” newspaper, which publishes every Sunday around 150 job vacancies, with a repeat rate of around 30%. The ads are also available in the newspaper webpage, which facilitates access¹³.

To prepare the field work, a prior study was carried out on this source. To this effect, in the month of January and the first three weeks of March 2006, all vacancies published were analyzed in order to design the future mailing strategy. In effect, it was possible to conclude from this study that it was necessary to prepare a CV bank based on three categories: professionals, technicians (skilled workers) and unskilled workers. Other markedly male or female categories were rejected and the approximate number of vacancies for each week was calculated.

III.3. Creation of CV Banks.

As indicated above, job vacancies are grouped into three categories: Professionals, Technicians and Unskilled workers. A person was assigned responsibility for each category, and it was in charge of selecting the weekly vacancies, as well as the production, sending and supervision of the CVs sent.

A data base of fictitious CVs was produced for professionals, technicians and unskilled workers. This task was done by three different and specialized teams using models taken from real CVs available in two public websites¹⁴. In producing the required CVs the instruction was to comply with the profile of the most competitive applicant for the vacancy selected.

Each set of 8 CVs was constructed so that its qualification levels and employment experience were equivalent, in order to ensure that the applicants were equally eligible for the job in question.

The central element in the training of the people in charge of this was to ensure that the 8 CVs sent for each vacancy had to be equivalent in terms of qualifications and human capital. To ensure this, the coordinators of the study were supported by a research assistant that supervised the work over the whole period and, especially, during the first weeks, until ensuring the desired results.

¹³ See: http://empleos.elmercurio.com/buscador/destacados/listado_destacado.asp

¹⁴ See www.laborum.com and www.infoempleo.cl

III.4. Classification of municipalities

In order to facilitate the field work, the study is concentrated in the Metropolitan Urban Region, which is divided into 34 municipalities.

To classify the municipalities in the two extreme segments a socioeconomic classification of households based on the 2002 Census was used (the groups are, ordered from higher to lower level: ABC1, C2, C3, D and E). Using the CASEN 2003 Survey the proportion of the population by socioeconomic level in each municipality was computed.

For high income municipalities, 5 of the 6 with the highest proportion of the population in segment ABC1 were chosen (the sixth was excluded because it is a municipality that also had a higher proportion than the rest in segments D and E). On the other hand, for the low income group municipalities, the 15 municipalities associated to a lower proportion of the population in segment ABC1 and a greater proportion in the segments D and E were chosen. In order to more clearly examine the impact of the municipality of origin, all other municipalities of intermediate socioeconomic groups were left out.

The final list of the municipalities included in each group is presented in the Table below:

Selected Municipalities

HIGH INCOME MUNICIPALITIES	LOW INCOME MUNICIPALITIES
Vitacura	Pedro Aguirre Cerda
	Pudahuel
	Conchalí
Providencia	Quilicura
	San Joaquín
	Lo Prado
La Reina	San Ramón
	Lo Espejo
	Renca
Las Condes	Recoleta
	San Bernardo
	La Granja
Ñuñoa	Cerro Navia
	El Bosque
	La Pintana

III.5. Classification and selection of names and surnames

The names and surnames were classified and selected according to the procedure used by Núñez and Gutiérrez (2004).

Specifically, a sample of names and surnames was taken from the alumni register of the Faculty of Economics and Business of the Universidad de Chile. Subsequently, a group of students was chosen, who classified (based on their personal perception) these names and surnames into: High Social Class, Middle Social Class and Lower Social Class.

For the purposes of the field work, only the names and surnames classified as Upper Class and Lower Class were considered.

An example of the surnames used in each category is presented in the Table below.

SELECTED SURNAMERS	
UPPER SOCIAL CLASS SURNAMERS	LOWER SOCIAL CLASS SURNAMERS
Rodrigo Recabarren Merino	Valeska Angulo Ortiz
Susan Abumohor Cassis	Pablo Ayulef Muñoz
Javiera Edwards Celis	Rosmary Becerra Fuentes
Pedro Ariztia Larrain	Clinton Benaldo Gonzalez

III.6. Description of the field work

The three people responsible indicated above handled the weekly selection of job vacancies that appeared in "El Mercurio" on Sundays. They then constructed the targeted CVs for each vacancy, with the most competitive CVs, ensuring their equivalence, in order to ensure that the only differentiating elements were the sex of the applicant, the social level, name and surname, and the municipality of residence.

Apart from the people in charge, the team was made up of three other assistants. This entire procedure was supervised directly by a Sociologist and an Economist who randomly reviewed the CVs sent.

The job vacancies selected and the lot of 8 CVs sent for each vacancy were entered weekly into a specially designed web page that allowed all the vacancies to be reviewed, together with their respective sets of CVs. The entry of that information into the web page was handled by an I.T. expert.

A central aspect of this work was receiving the calls for the CVs sent. To receive these calls-responses, there was a fully dedicated man and woman team, ready to take the calls 24 hours a day from Monday to Sunday.



There were 8 mobile telephones, each with a different number, assigned to each of the CVs of the set; this ensured that the recruiters did not encounter repeated telephone numbers. The people in charge of receiving the calls recorded the day, name of the applicant, the vacancy and the phone number of the firm that selected the CV.

Each report was entered into the web page of the project, which allowed for the regular supervision of the calls received.

In parallel, job vacancy responses were also received by e-mail. Some job vacancies requested e-mails. For this, a generic e-mail had been created for each CV. All the e-mails addresses created were checked every three days. As with the phone calls, the e-mails were reported and entered into the web page of the project.

III.7. Identity of the fictitious applicants

Once the names and surnames were classified by categories (Upper Class and Lower Class), they were then mixed so as to not use real names. Additionally, each fictitious applicant had an artificial RUT¹⁵ and an exclusive e-mail address.

To ensure the equivalence of each set of CVs, the age of the applicants was set at between 30 and 35 years of age, married with between one and two children at most.

III.8. Ensuring the equivalence of the fictitious applicants between cells

In order to ensure the equivalence of the 8 fictitious applications sent for each vacancy, the other variables included in the CVs were controlled for similarity. For this, the following decisions were made:

- As regards the educational background of the applicants, those with university education were considered Universidad de Chile graduates and where necessary, they had postgraduate studies from the same University.
- The school of the applicant and the home address were determined by the municipality that they belonged to. A bank of school names of each municipality was used for this. However, to ensure homogeneous schooling the 8 CVs sent must belong to the same category of socioeconomic background of the school¹⁶.

¹⁵ National Identification Number.

¹⁶ This is a discrete variable which describe the level of income of the majority of the school population.

- Additionally, each CV of the set of 8 had a unique telephone number different to the other seven; however, these may repeat themselves among different groups of CVs.
- The employment experience of the applicants was equivalent within each category (professional, technician, unskilled worker) but different among each other. Thus, professionals with greater time spent in the educational system had less years of employment experience, meanwhile, unskilled workers had a longer track record in the labor market. To maintain this equivalence, we also set the number of jobs that each applicant has had in the various categories and their employment history continuity (absence of employment gaps).

Category	Employment Experience	Number of jobs
Professionals	7 to 12 years	2 to 3
Technicians	8 to 13 years	4 to 5
Unskilled workers	12 to 17 years	5 to 7

- Postgraduate studies of applicants were equivalent within the set of 8 CVs that were sent for each vacancy. Within the set of 8 CVs, postgraduate studies must be from the same university (Universidad de Chile) and in very similar areas or even identical areas. Training courses must also be from equivalent institutions (Technical Institutes) and in similar or identical areas.
- As a general rule, high quality CVs were sent for each vacancy. In other words, the variables of employment history, education and training were drawn up to be attractive to firms.
- The pay expectations required, which generally had to be included in job applications, were based on actual remuneration information of professionals and technicians (from the web page www.futurolaboral.cl). The starting point were pay levels required by a good candidate (of percentile 75 of that distribution) but, subsequently, the remuneration was reduced to average levels. Each set of 8 CVs sent for a vacancy had the same reference pay level and varied only slightly (in some cases it was given as a range and in others as a specific reference).

IV. Findings

The CV mailing process started in the last week of March. As we can note from Table 1, on average, 69 vacancies had been applied for weekly, with a total of 11,016 CVs sent during the 20 weeks of the project, and a response rate of 14.65%. This rate was higher than that obtained by Bertrand and Mullainathan (2004).

Table 1:
Distribution of Responses by Week

Week	Total Number of Ads	Curriculums Sent	Total Number of Calls	General Response Rate
1 24 to 31 March	56	448	60	13.39%
2 3 to 9 April	63	504	71	14.09%
3 10 to 16 April	65	520	32	6.15%
4 17 to 23 April	61	488	60	12.30%
5 24 to 30 April	61	488	92	18.85%
6 1 to 7 May	67	536	132	24.63%
7 8 to 14 May	73	584	116	19.86%
8 15 to 21 May	72	576	75	13.02%
9 22 to 28 May	74	592	98	16.55%
10 29 May to 4 June	74	592	83	14.02%
11 5 to 11 June	72	576	135	23.44%
12 12 to 18 June	78	624	87	13.94%
13 19 to 25 June	73	584	90	15.41%
14 26 June to 02 July	76	608	77	12.66%
15 03 to 09 July	73	584	63	10.79%
16 10 to 16 July	69	552	84	15.22%
17 17 to 23 July	68	544	101	18.57%
18 24 to 30 July	75	600	93	15.50%
19 31 July to 6 August	66	528	45	8.52%
20 7 to 13 August	61	488	30	6.15%
Average	69	551	81	14.65%
Total	1377	11016	1624	

The response rate varied from week to week. For example, the third week from 10th to 16th April, the response rate was only 6.15% while the sixth week from 1st to 7th

May the response rate reached 24.63%. We believe there are several reasons behind this variation. First, the response rate could be directly correlated to the overall quality of the CVs sent; thus, it may be the case that for those weeks with low response rate, the quality of the CVs had not been as good as the CVs sent by real people. As we noticed before, we can ensure that even if this happened, it affected the complete set of 8 CVs sent. Second, national holidays during these weeks could have had influence in the behavior of firms. For example, this could have affected the low response rate in April 10-16th (a religious catholic holiday, Holy Week). Finally, this heterogeneity could be explained by the labor market conditions. It is worth to mention that Bertrand and Mullainathan (2004) reported similar variations in their response rates, apparently associated to different labor market conditions.

Curriculums were sent to different job categories: professionals, technicians and unskilled workers. In the appendix we present a list of types of qualifications within the different job categories. The average response rate by type of employment in Table 2 shows the same evolution as the response rate. We can also note that unskilled and technicians had a higher response rate than professionals. Professionals showed a response rate of 12.1% compared to 14.2% for unskilled job announcements and 18.1% for technicians.

Table 2:
Number of CVs sent, Number of calls and Response rate by week and type of employment

Week	Number of Curriculums Sent			Number of Calls received			Response Rate		
	Professionals	Technicians	Unskilled	Professionals	Technicians	Unskilled	Professionals	Technicians	Unskilled
1 24 to 31 March	120	136	192	8	11	41	6.7%	8.1%	21.4%
2 3 to 9 April	176	168	160	7	18	46	4.0%	10.7%	28.8%
3 10 to 16 April	184	176	160	8	14	10	4.3%	8.0%	6.3%
4 17 to 23 April	168	160	160	2	21	37	1.2%	13.1%	23.1%
5 24 to 30 April	168	160	160	27	24	41	16.1%	15.0%	25.6%
6 1 to 7 May	200	176	160	34	63	35	17.0%	35.8%	21.9%
7 8 to 14 May	208	192	184	34	45	37	16.3%	23.4%	20.1%
8 15 to 21 May	192	200	184	22	32	21	11.5%	16.0%	11.4%
9 22 to 28 May	208	200	184	43	36	19	20.7%	18.0%	10.3%
10 29 May to 4 June	192	200	200	15	52	16	7.8%	26.0%	8.0%
11 5 to 11 June	176	192	208	64	34	37	36.4%	17.7%	17.8%
12 12 to 18 June	208	200	216	24	51	12	11.5%	25.5%	5.6%
13 19 to 25 June	192	192	200	19	43	28	9.9%	22.4%	14.0%
14 26 June to 02 July	216	192	200	35	34	8	16.2%	17.7%	4.0%
15 03 to 09 July	200	184	200	37	9	17	18.5%	4.9%	8.5%
16 10 to 16 July	168	184	200	23	39	22	13.7%	21.2%	11.0%
17 17 to 23 July	176	184	184	26	35	40	14.8%	19.0%	21.7%
18 24 to 30 July	208	192	200	19	52	22	9.1%	27.1%	11.0%
19 31 July to 6 August	192	136	200	5	16	24	2.6%	11.8%	12.0%
20 7 to 13 August	176	112	200		11	19	0.0%	9.8%	9.5%
Total	3728	3536	3752	452	640	532	12.1%	18.1%	14.2%

Calls were received after different number of days. However, the following graph shows that more than 60% were received before day 10. This graph was done based on a Table shown in the Appendix. The average number of days in answering was 12

days approximately; for professionals and unskilled was 14 days and for technicians was 8 days (see Table 3).

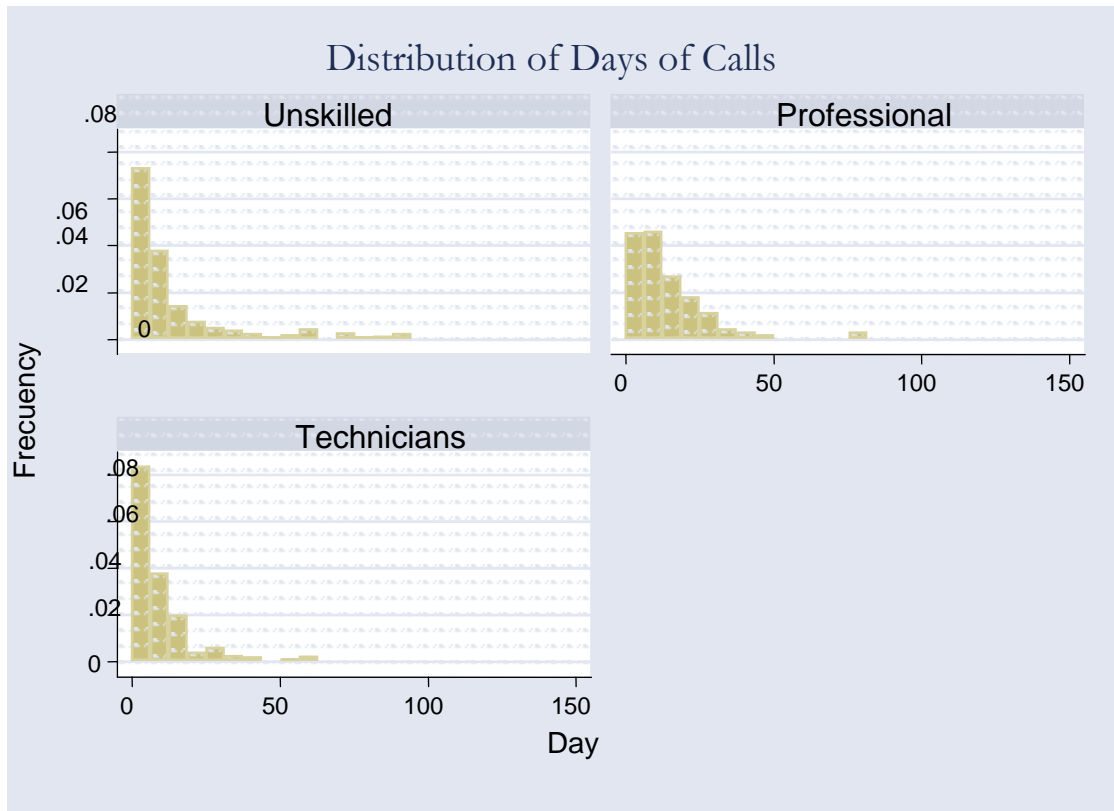


Table 3

Number of Days they lasted in calling back				
Type of job				
Days	Professionals	Technicians	Unskilled	Total
Average Day	14,02	8,69	14,81	12,18
Total Calls Back	452	640	532	1624
Total CVs Sent	3728	3536	3752	11016
Response Rate	12,12%	18,10%	14,18%	14,74%

The resumes were sent by physical mail, email and fax. Table 4 shows the average number of days they lasted in making a call back by type of sending. We can see that CVs that were sent by physical mail received a call back in 18 days

approximately and the ones sent by email received a call back in 8 days. The response to the fictitious candidates could have been done by telephone or by email.

Table 4

Days	Number of Days they lasted in calling back			Total
	Way of sending them			
	Physical Mail	Email	Fax	
Average	18,70	8,12	17,00	12,18
Total Calls Back	621	1001	2	1624
Total CVs Sent	3941	7059	16	11016
Response Rate	15,76%	14,18%	12,50%	14,74%

We will look at the average response rate by the three dimensions considered in this paper.

IV.1. Gender Effects

If we take a look at the gender based information, the response rates show very similar levels: 14.9% for men and 14.6% for women. This difference is small and not statistically significant (applying a test where the null hypothesis is the equality of the two proportions). In other words, men and women seem to have the same probability of getting called to interview.

If the gender based difference is looked at in the response rates within the High Class group (by surnames), a slightly higher rate was obtained for women (15.3% vs 15.1%), in contrast to the situation with surnames in the Lower Classes where the response rates were higher for men (14.7% vs 14%). However, the differences were not statistically significant.

Table 5
Callbacks by Gender

	CVs Sent	Men		Women		Differences		Z	P-value
		Calls	Rate	Calls	Rate	Diff Calls	Diff Rate		
<i>General</i>									
All	5508	819	14.9%	805	14.6%	-14	-0.3%	0.376	0.707
Professionals	1864	232	12.4%	220	11.8%	-12	-0.6%	0.602	0.547
Technicians	1768	302	17.1%	338	19.1%	36	2.0%	-1.572	0.116
Unskilled	1876	285	15.2%	247	13.2%	-38	-2.0%	1.778	0.075
<i>High Social Class</i>									
All	2754	415	15.1%	420	15.3%	5	0.2%	-0.188	0.851
Professionals	932	115	12.3%	120	12.9%	5	0.5%	-0.349	0.727
Technicians	884	151	17.1%	166	18.8%	15	1.7%	-0.930	0.352
Unskilled	938	149	15.9%	134	14.3%	-15	-1.6%	0.968	0.333
<i>Low Social Class</i>									
All	2754	404	14.7%	385	14.0%	-19	-0.7%	0.731	0.465
Professionals	932	117	12.6%	100	10.7%	-17	-1.8%	1.228	0.219
Technicians	884	151	17.1%	172	19.5%	21	2.4%	-1.292	0.196
Unskilled	938	136	14.5%	113	12.0%	-23	-2.5%	1.565	0.118
<i>High Income Mun.</i>									
All	2754	421	15.3%	410	14.9%	-11	-0.4%	0.414	0.679
Professionals	932	116	12.4%	116	12.4%	0	0.0%	0.000	1.000
Technicians	884	159	18.0%	167	18.9%	8	0.9%	-0.491	0.623
Unskilled	938	146	15.6%	127	13.5%	-19	-2.0%	1.244	0.213
<i>Low Income Mun.</i>									
All	2754	398	14.5%	395	14.3%	-3	-0.1%	0.115	0.908
Professionals	932	116	12.4%	104	11.2%	-12	-1.3%	0.861	0.389
Technicians	884	143	16.2%	171	19.3%	28	3.2%	-1.742	0.082
Unskilled	938	139	14.8%	120	12.8%	-19	-2.0%	1.272	0.203

IV.2. Neighborhood Effects

If we turn to the municipal dimension, the response rate of applicants from high income municipalities is 15.1%, compared to a rate of 14.4% for applicants from low income municipalities. These differences between municipalities, both on a general and on a cell level, are on average higher than that observed in the case of gender. However, this difference is not statistically significant at the 90% level.

Table 6
Callbacks by Municipality

	CVs Sent	High Income Municipality		Low Income Municipality		Differences		Z	P-value
		Calls	Rate	Calls	Rate	Diff Calls	Diff Rate		
<i>General</i>									
All	5508	831	15.1%	793	14.4%	-38	-0.7%	1.021	0.307
Professionals	1864	232	12.4%	220	11.8%	-12	-0.6%	0.602	0.547
Technicians	1768	326	18.4%	314	17.8%	-12	-0.7%	0.524	0.600
Unskilled	1876	273	14.6%	259	13.8%	-14	-0.7%	0.655	0.512
<i>High Social Class</i>									
All	2754	430	15.6%	401	14.6%	-29	-1.1%	1.092	0.275
Professionals	932	117	12.6%	118	12.7%	1	0.1%	-0.070	0.944
Technicians	884	163	18.4%	154	17.4%	-9	-1.0%	0.558	0.577
Unskilled	938	150	16.0%	133	14.2%	-17	-1.8%	1.097	0.273
<i>Low Social Class</i>									
All	2754	405	14.7%	388	14.1%	-17	-0.6%	0.652	0.514
Professionals	932	115	12.3%	102	10.9%	-13	-1.4%	0.939	0.348
Technicians	884	163	18.4%	160	18.1%	-3	-0.3%	0.185	0.853
Unskilled	938	123	13.1%	126	13.4%	3	0.3%	-0.204	0.838
<i>Men</i>									
All	2754	421	15.3%	398	14.5%	-23	-0.8%	0.871	0.384
Professionals	932	116	12.4%	116	12.4%	0	0.0%	0.000	1.000
Technicians	884	159	18.0%	167	18.9%	8	0.9%	-0.491	0.623
Unskilled	938	146	15.6%	127	13.5%	-19	-2.0%	1.244	0.213
<i>Women</i>									
All	2754	410	14.9%	395	14.3%	-15	-0.5%	0.572	0.567
Professionals	932	116	12.4%	104	11.2%	-12	-1.3%	0.861	0.389
Technicians	884	143	16.2%	171	19.3%	28	3.2%	-1.742	0.082
Unskilled	938	139	14.8%	120	12.8%	-19	-2.0%	1.272	0.203

IV.3 Social Class Effect

A similar situation to the above may be observed when the response rates of fictitious candidates with Upper Class surnames (15.2%) are compared with those with Lower Class surnames (14.3%). Once again, the differences were not statistically significant. The largest differences occur within the group of women and also within the high income municipalities category.

A similar situation to the above may be observed when the response rates of fictitious candidates with Upper Class surnames (15.2%) are compared with those with Lower Class surnames (14.3%). Once again, the differences were not statistically significant. The largest differences occur within the group of women and also within the high income municipalities category.

Table 7
Callbacks by Surname

	CVs Sent	High Social Class		Low Social Class		Differences		Test	
		Calls	Rate	Calls	Rate	Diff Calls	Diff Rate	Z	P-value
<i>General</i>									
All	5508	835	15.2%	789	14.3%	-46	-0.8%	1.236	0.216
Professionals	1864	235	12.6%	217	11.6%	-18	-1.0%	0.903	0.367
Technicians	1768	317	17.9%	323	18.3%	6	0.3%	-0.262	0.793
Unskilled	1876	283	15.1%	249	13.3%	-34	-1.8%	1.591	0.112
<i>High Income Mun.</i>									
All	2754	430	15.6%	405	14.7%	-25	-0.9%	0.939	0.348
Professionals	932	117	12.6%	118	12.7%	1	0.1%	-0.070	0.944
Technicians	884	163	18.4%	154	17.4%	-9	-1.0%	0.558	0.577
Unskilled	938	150	16.0%	133	14.2%	-17	-1.8%	1.097	0.273
<i>Low Income Mun.</i>									
All	2754	401	14.6%	388	14.1%	-13	-0.5%	0.500	0.617
Professionals	932	115	12.3%	102	10.9%	-13	-1.4%	0.939	0.348
Technicians	884	163	18.4%	160	18.1%	-3	-0.3%	0.185	0.853
Unskilled	938	123	13.1%	126	13.4%	3	0.3%	-0.204	0.838
<i>Men</i>									
All	2754	415	15.1%	404	14.7%	-11	-0.4%	0.417	0.677
Professionals	932	115	12.3%	117	12.6%	2	0.2%	-0.140	0.889
Technicians	884	151	17.1%	151	17.1%	0	0.0%	0.000	1.000
Unskilled	938	149	15.9%	136	14.5%	-13	-1.4%	0.836	0.403
<i>Women</i>									
All	2754	420	15.3%	385	14.0%	-35	-1.3%	1.335	0.182
Professionals	932	120	12.9%	100	10.7%	-20	-2.1%	1.436	0.151
Technicians	884	166	18.8%	172	19.5%	6	0.7%	-0.363	0.717
Unskilled	938	134	14.3%	113	12.0%	-21	-2.2%	1.434	0.152

In conclusion, surprisingly, relevant gender differences are not found. In addition, the differences in response rates by municipalities or surnames are lower than the gender differences, in fact they are not statistically significant.

The analysis of the response rates for professionals confirms in general the aspects found above. There are no significant differences by gender, municipality or by surname.

IV.4. Regression Analysis

Table 8 runs some complementary analysis using regression. As it can be seen, in none of the specifications there is a change in the main conclusions. The dummy variables associated to gender, municipality or surname are not statistically significant.

Table 8
Regressions for the probability of receiving a callback
(Dependent Variable: Dummy=1 if a callback is received)

Variable	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
Dummy High Income Municipality=1	0.0069	0.304	0.0070	0.301	0.0074	0.392	0.0048	0.736
Dummy Men=1	0.0026	0.706	0.0029	0.670	0.0020	0.770	-0.0106	0.389
Dummy High Class Surname=1	0.0082	0.222	0.0084	0.210	0.0082	0.226	-0.002	0.863
Dummy Professional Job ad=1			-0.0217	0.009	-0.0262	0.003	-0.0249	0.004
Dummy Technician Job ad=1			0.0380	0.000	0.0369	0.000	0.0370	0.000
Dummy Studied at Private School=1					-0.0030	0.780	-0.0114	0.741
Dummy Studied at Municipal School=1					-0.0173	0.038	0.0061	0.668
Controls for type of mail sent	No		No		Yes		Yes	
Including interactions	No		No		No		Yes	
Pseudo R2	0.0003		0.006		0.0189		0.009	
Number of observations	11016		11016		11016		11016	

Note: Probit Regressions. Coefficients are expressed in probability points for discrete changes of dummy variables from 0 to 1 (evaluated at means).

IV.5. Timing of the callbacks

The results shown until now allow us to say that there are no differences in callback rates across groups. However, it could be possible to hypothesize differences favoring some groups in the timing of the callbacks. Since we sent 8 CVs to each job announcement it may be that employers first called male applicants, and after they did not show up they called female applicants.

This is not the case, however, as it is shown in Table 9. This table shows the mean of the days it took for the applicants to receive a call back after the CV was sent. We can note that all the differences reported in the number of days to receive a callback across groups are not statistically significant.

As further research we will leave the estimation of a duration model in which the day the person received a call back is explained by the dimension we are looking

discrimination and other controls. This latter regression will give us a more conclusive evidence of whether people who are actually discriminated are called later.

Table 9
Number of days to receive a callback

	Mean	Median
Gender:		
Men	12.8	8
Women	11.6	7
Difference	1.2	1
Municipality:		
High Income	11.8	7
Low Income	12.5	7
Difference	-0.7	0
Surname:		
High Class	12.3	7
Low Class	12.1	7
Difference	0.2	0

IV.6. Discussion

The findings presented above are certainly surprising. Latinobarometro data on discriminatory perception shows that Chileans do perceive we live in a discriminatory society. In this section, we present a brief discussion of the possible issues behind these findings.

First, as we explained before, the findings here are only valid for call backs. This is only the first step in the search for a job. We did not see either interviews or the real assignation of jobs or wages. So, we cannot rule out the possibility of some kind of discrimination at those stages.

On the other hand, sending CVs to job announcements in “El Mercurio” is not the only way to find a job in Chile. In addition, there are web pages that administrate banks of CVs. On the other hand, there is also anecdotic evidence that professionals in Chile search for jobs by using their own social networks. Finally, there are “job hunters” or specialized firms that look for people with special characteristics. There is also non documented evidence than job hunters usually look for people with given

surnames, who studied in private exclusive schools and have exclusive friends. Thus, we may be just looking a part of the labor market, the part that is not discriminating.

Additionally, we use a different experimental design than Bertrand and Mullainathan (2004). We argue that our methodology is more robust. We constructed equally qualified CVs and then assigned names, while they took samples of CVs from the real world and assigned them different name using the same share of population groups than in the real world. On the one hand, we created a world that does not exist and this fact helps us to have a real exogenous variation. On the other hand, we construct such a different world that employers could have applied a kind of positive discrimination. They could have thought “if this person, under these circumstances, reaches such level of education and experience, she or he must be good applicant”.

Finally, it is still surprising that although Bertrand and Mullainathan (2004) found statistically significant differences among surnames associated to African American versus white population groups we did not find the same in our study. It may still be the case that discrimination in the US is deeper than in Chile. Chile is not a country with significantly different racial groups as it may be the case of other Latin American countries such as Bolivia, Perú or Brasil. The percentage of indigenous population in Chile is small. The type of discrimination we are looking at it may indeed be related to historical factors of inequality of opportunities rather than subjective discrimination.

I.5. Conclusions

The objective of this paper is to study the Chilean labor market and determine the presence or absence of gender discrimination. In order to break past the limitations of earlier works, an experimental design is used, the first of its kind in Chile. This study also allows socioeconomic discrimination associated to names and places of residence in the Chilean labor market to be tackled.

The study consists of sending fictitious Curriculum Vitae for real job vacancies published weekly in the “El Mercurio” newspaper of Santiago. A range of strictly equivalent CVs in terms of qualifications and employment experience of applicants are sent out, only varying in gender, name and surname, and place of residence. The study allows differences in call response rates to be measured for the various demographic groups.

We find no statistically significant differences in call backs for any of the groups we explore: gender, socioeconomic background and place of residence. The findings are surprising and generate new questions. We discuss several issues that may be behind these findings. We are only looking one step in the search of a job, which is the call back. We may not be looking the complete behavior of the labor market.

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Appendix

Table A.1

	Unskilled	
	Number	%
Administrativo	952	25.37
Aseador	208	5.54
Auxiliar Aseo	48	1.28
Bodeguero	384	10.23
Cajero	328	8.74
Cobrador	96	2.56
Conductor	32	0.85
Conductores	16	0.43
Digitador	368	9.81
Encuestador	88	2.35
Fotocopiador	8	0.21
Garzon	112	2.99
Garzón	40	1.07
Guardia	56	1.49
Operario Producción	8	0.21
Operario Tintorería	8	0.21
Promotor	304	8.1
Recepcionista	8	0.21
Recepcionistas	8	0.21
Vendedor	624	16.63
Volantero	56	1.49
Total	3,752	100

Table A2
Professionals

	Number	%
Abogado	168	4.51
Abogado litigante	8	0.21
Abogado media Jornada	8	0.21
Abogado part-time	8	0.21
Constructor Civil	600	16.09
Constructor Civil (jefe proyecto)	8	0.21
Constructor Civil de Obra	8	0.21
Constructor Civil en altura	8	0.21
Contador Auditor	905	24.28
Contador Auditor Bilingüe	7	0.19
Ing. Civil Electronico	8	0.21
Ing. Civil Informatico	32	0.86
Ing. Civil Informático	48	1.29
Ing. Civil Telecomunicaciones	8	0.21
Ing. Comercial (Marketing)	8	0.21
Ing. Ejec. En Computacion	8	0.21
Ing.Comercial Marketing	8	0.21
Ingeniero Civil	104	2.79
Ingeniero Civil Computacion	16	0.43
Ingeniero Civil Constructor	8	0.21
Ingeniero Civil Industrial	24	0.64
Ingeniero Civil en Computacion	8	0.21
Ingeniero Comercial	552	14.81
Ingeniero Comercial MBA	8	0.21
Ingeniero Constructor	8	0.21
Ingeniero Ejec Informatico	16	0.43
Ingeniero Ejec. Informatico	24	0.64
Ingeniero Ejec. Informático	72	1.93
Ingeniero Electronico	8	0.21
Ingeniero Informatico	136	3.65
Ingeniero Informático	104	2.79
Ingeniero Informático (Teradata)	8	0.21
Ingeniero Obras Civiles	8	0.21
Ingeniero Telecomunicaciones	8	0.21
Ingeniero en Computacion	8	0.21
Ingeniero en Telecomunicacione:	8	0.21
Ingeniero, Const. Civil	8	0.21
Profesor	720	19.17
Psicologo	8	0.21
Psicólogo	8	0.21
Supervisor Educacional	8	0.21
Total	3728	100

Table A3

Technicians			Technicians		
Number	%		Number	%	
Soporte Computacional	8	0.23	Informático Hardware	8	0.23
Administrador	16	0.45	Jefe Adquisiciones	8	0.23
Administrador Empresas	8	0.23	Jefe Facturación	8	0.23
Administrador Sistema	8	0.23	Jefe de Abastecimiento	8	0.23
Administrador de Botilleria	8	0.23	Jefe de Bodega	8	0.23
Administrador de Empresas	8	0.23	Jefe de Local	56	1.58
Administrador de Local	16	0.45	Jefe de Locales	8	0.23
Administrador de Redes	16	0.45	Jefe de Personal	8	0.23
Administrador de Restaurant	8	0.23	Jefe de Recursos Humanos	8	0.23
Administrador de Sistemas	16	0.45	Jefe de Tienda	32	0.9
Administrador de red	8	0.23	Jefe de Tiendas	8	0.23
Administrador de redes	8	0.23	Jefe para cafetería y pastelería	8	0.23
Administrativo en Comex	8	0.23	Operador Informático	8	0.23
Adquisiciones	8	0.23	Paramédico	16	0.45
Agente de Ventas	16	0.45	Paramédico RX	8	0.23
Agente de Ventas Intangibles	8	0.23	Paramédicos	8	0.23
Analista Computacional	8	0.23	Pedidor Aduanero	8	0.23
Analista Programador	200	5.66	Prevencionista Riesgos	8	0.23
Analista Sistemas	8	0.23	Procurador	32	0.9
Analista de Sistema	32	0.9	Programador	544	15.38
Analista de Sistemas	24	0.68	Programador Analista	8	0.23
Analista o Programador	8	0.23	Programador Clipper	8	0.23
Asesor Comercial Marketing	8	0.23	Programador Web	80	2.26
Asistente Adquisiciones	16	0.45	Programador Webmaster	8	0.23
Asistente Comercio Exterior	8	0.23	Programador o Analista	8	0.23
Asistente Contable	40	1.13	Programador y Analistas	8	0.23
Asistente Técnico Hardware	8	0.23	Proyectista Autocad	8	0.23
Asistente de Enfermería	8	0.23	Soporte	16	0.45
Asistente de Enfermos	16	0.45	Soporte Computacional	88	2.49
Auxiliar Enfermería	8	0.23	Soporte Informático	8	0.23
Auxiliar Paramédico	16	0.45	Soporte Técnico	8	0.23
Auxiliar Paramédico	32	0.9	Soporte Técnico	24	0.68
Auxiliar Técnico de Laboratorio	8	0.23	Soporte en Redes	16	0.45
Auxiliar de Enfermería	40	1.13	Supervisor	8	0.23
Auxiliar de Enfermería	40	1.13	Supervisor Cobranzas	24	0.68
Auxiliar de Laboratorio	8	0.23	Supervisor Locales Comerciales	8	0.23
Auxiliar de enfermería	8	0.23	Supervisor Logístico	16	0.45
Auxiliar de laboratorio	8	0.23	Supervisor de Call Center	8	0.23
Auxiliar de toma de muestra	8	0.23	Supervisor de Facturación y cobranzas	8	0.23
Ayudante Contable	8	0.23	Supervisor de Venta	8	0.23
Ayudante de Contador	40	1.13	Técnico Informático	8	0.23
Chef	32	0.9	Técnico Paramédico	8	0.23
Cheff Ejecutivo	8	0.23	Técnico Paramédicos	8	0.23
Comercio Exterior	8	0.23	Técnico Soporte	16	0.45
Conocimientos en Computación	8	0.23	Técnico en Computación	8	0.23
Contador	200	5.66	Técnico en Redes	8	0.23
Contador Administrador	8	0.23	Técnico paramédico	8	0.23
Contador Asistente	16	0.45	Técnico Administración de Redes	8	0.23
Contador General	72	2.04	Técnico Administrador Empresas	8	0.23
Contador general	8	0.23	Técnico Comercio Exterior	32	0.9
Desarrollador de Web	8	0.23	Técnico Computación	16	0.45
Dibujante Autocad	48	1.36	Técnico Gastronómico	8	0.23
Dibujante Estructural	8	0.23	Técnico Informático	32	0.9
Dibujante Gráfico	8	0.23	Técnico Instalación Redes	8	0.23
Dibujante Mecánico Autocad	8	0.23	Técnico Jurídico	24	0.68
Dibujante Proyectista	8	0.23	Técnico Paramédico	88	2.49
Dibujante Técnico	32	0.9	Técnico Prevención	8	0.23
Dibujante de Arquitectura	8	0.23	Técnico Programador	24	0.68
Dibujante técnico	24	0.68	Técnico Químico	8	0.23
Dibujante y Proyectistas	8	0.23	Técnico Soporte Terreno	8	0.23
Diseñador Gráfico	128	3.62	Técnico Soporte en Linux	8	0.23
Diseñador Industrial	32	0.9	Técnico de Comercio Exterior	8	0.23
Diseñador Internet	8	0.23	Técnico en Comercio Exterior	16	0.45
Diseñador Web	16	0.45	Técnico en Comex	8	0.23
Diseñador Web Master	8	0.23	Técnico en Computación	128	3.62
Diseñador de Página web	8	0.23	Técnico en Computación y Redes	8	0.23
Diseñador de web	8	0.23	Técnico en Enfermería	8	0.23
Ejecutivo Comercio Exterior	8	0.23	Técnico en Gastronomía	8	0.23
Ejecutivo Telemarketing	8	0.23	Técnico en Hardware y Redes	8	0.23
Ejecutivo de Ventas	8	0.23	Técnico en Hardware y Software	8	0.23
Encargado de Adquisiciones	16	0.45	Técnico en Informática	16	0.45
Encargado de Adquisiciones	8	0.23	Técnico en Logística	8	0.23
Encargado de Compras	8	0.23	Técnico en Mantenimiento	8	0.23
Encargado de Informática	8	0.23	Técnico en Programación	8	0.23
Encargado de Informática	8	0.23	Técnico en Redes Computacionales	8	0.23
Encargado de Local	8	0.23	Técnico en Reparación	8	0.23
Encargado de Remuneraciones	8	0.23	Técnico en Soporte	72	2.04
Encargado de comercio exterior	8	0.23	Técnico en Soporte Computacional	8	0.23
Encargado de informática	8	0.23	Técnico en comex	8	0.23
Encargado de remuneraciones	8	0.23	Técnico paramédico	8	0.23
Experto en Computación	8	0.23	Técnico pc gráfico	8	0.23
Experto en Diseño Página Web	8	0.23	Vendedores Isapre	8	0.23
Explotador de Sistemas	8	0.23	Web Master	8	0.23
Informático	8	0.23	Total	1648	100

Table A4

Number of Days they lasted in calling back

Days	Type of job			Total
	Professionals	Technicians	Unskilled	
0	10	90	54	154
1	55	92	65	212
2	11	57	45	113
3	10	36	44	90
4	3	19	15	37
5	14	20	7	41
6	26	22	15	63
7	19	58	50	127
8	31	50	21	102
9	26	23	28	77
10	17	11	22	50
11	31	5	4	40
12	7	5	2	14
13	11	5	5	21
14	24	28	15	67
15	9	24	11	44
16	12	13	11	36
17	9	7	5	21
18	11	3		14
19	2	2	1	5
20	15		2	17
21	7	4	12	23
22	13	4	7	24
23	5	1	3	9
24	9	5		14
26	1	9	1	11
27	18	4	3	25
28	3	6	5	14
29	1	3	2	6
30	9	1	5	15
31		1		1
32			1	1
33	1	9		10
34			4	4

35	2		1	3
36	7	1	1	9
37	2		5	7
38	3			3
40	2		1	3
41	2		5	7
42	1	1		2
43		4	1	5
44		2		2
48	2	2		4
49		1	1	2
50	3		2	5
51			4	4
52			1	1
54		4		4
55			1	1
57			4	4
58		1	8	9
59		3	2	5
64		1		1
66		3		3
73			4	4
74			4	4
76			1	1
77	5		2	7
84	3		1	4
85			2	2
86			1	1
90			2	2
91			4	4
93			1	1
95			1	1
98			1	1
105			2	2
111			1	1
116			1	1
125			1	1
126			1	1
Average Day	14,02	8,69	14,81	12,18
Total Calls Back	452	640	532	1624
Total CVs Sent	3728	3536	3752	11016
Response Rate	12,12%	18,10%	14,18%	14,74%

Table A5
Number of Days they lasted in calling back
Way of sending them

Days	Physical Mail	Email	Fax
0		154	154
1		212	212
2	4	109	113
3	47	43	90
4	26	11	37
5	16	25	41
6	19	44	63
7	66	61	127
8	54	48	102
9	61	16	77
10	21	29	50
11	19	21	40
12	2	12	14
13	4	17	21
14	27	40	67
15	29	15	44
16	20	16	36
17	9	10	21
18	10	4	14
19	3	2	5
20	10	7	17
21	11	12	23
22	17	7	24
23	5	4	9
24	11	3	14
26	9	2	11
27	6	19	25
28	8	6	14
29	5	1	6
30	14	1	15
31		1	1
32		1	1
33	1	9	10
34	4		4
35		3	3
36	4	5	9
37	7		7

38	2	1		3
40		3		3
41	6	1		7
42	2			2
43		5		5
44	2			2
48	2	2		4
49	2			2
50	2	3		5
51	4			4
52	1			1
54		4		4
55	1			1
57	4			4
58	8	1		9
59	3	2		5
64		1		1
66		3		3
73	4			4
74	4			4
76	1			1
77	7			7
84	3	1		4
85	2			2
86	1			1
90	2			2
91	4			4
93	1			1
95	1			1
98		1		1
105		2		2
111	1			1
116	1			1
125	1			1
126		1		1
Average	18,70	8,12	17,00	12,18
Total Calls Back	621	1001	2	1624
Total CVs Sent	3941	7059	16	11016
Response Rate	15,76%	14,18%	12,50%	14,74%