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How is the life of Latin American immigrants in Brazilian cities: one approach of the water supply and sanitation conditions in the beginning of XXI Century

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1. INTRODUCTION

It goes without saying that the economic growth heavily depends on the situation of the urban areas, whether in a local (such as in Brazil) or in a global scale; that is due to the fact that the best work opportunities are offered in big cities, where people have broader access to basic health, education, transportation, and infrastructure services. Considering this economic trend, several researchers and institutions (Jack, 2006; Martine, 2007; United Nations, 2010) believe that the growth of world population will take place exclusively in the developing countries urban areas, therefore widening the ever-existing social and economic gap of these nations as well as spatial fragmentation; Brazil will be no exception to the rule.

The main forces driving the transformation of urban areas are both the developing of new communication and transportation tecnologies and the process of globalization itself, which has contributed to fostering new economic opportunities across the globe. These changes are not restricted only to the economic activities and other connected areas; they stretch far beyond and affect the very social relations and lifestyles of people all around the world.

Nevertheless, as much as globalization yields new business and job opportunities (particularly in big cities), it presents the urban environments with a whole category of challenges to be solved, especially concerning the developing countries due to the fast growth of their populations. In general, it was thought that this social process took place as a consequence of migration within the countries themselves; within this new globalized, interconnected contemporary society scenario, however, immigration across nations has played a much more important role.

It is estimated that the number of international immigrants was around 195 million in 2005; according to a 2009 study (United Nations, 2009), the projection was for that number to rise to 214 millions, which represents a 9.7% growth in 5 years. The rule of thumb is, these immigrants leave their home countries in pursue of a better job opportunities and quality of life; needless to say, they end up looking for such in the urban areas of the destination countries.

As a consequence to this movement, immigration across countries became a major politic issue due to the problems it brings along to the cities. Growth of the unemployment rate, threats to the national unity, rise of violence in bigger cities; these are just some of the new problems attributed to the immigrational flow by some political organizations. However, the existing data concerning the Latin American countries point to less conflicts due to immigration issues when compared to the developed countries; for comparison purposes, it is worth mentioning the recent turmoil in France, where thousands of gipsies were harassed and held responsible for the growth of vandalism acts in Paris in 2009[1], as well as the massacre of 72 illegal immigrants in the Mexican city of Tamaulipas, close to the United States border[2]. Despite this seemingly peaceful and respectful behavior toward immigrants, not much is known about their actual status in Latin American countries, particularly Latin American people who no longer live in their home country. Moreover, it is important to highlight that the mere lack of news about conflicts involving immigrants in these countries does not mean they have their civil rights guaranteed by the country where they currently live. It is common for them to enter the destination countries without legal paperwork and so they remain illegal immigrants seen by employers as low-end workforce, with no rights to the basic services and facilities. Some considerable amount of these immigrants subject themselves to living in areas with no sanitary conditions provided at all, which means that not only they have no access to basic conditions as a group but also they have trouble seeking solution on an individual basis. The immigrant settling in

[1] http://pt.euronews.net/2010/08/25/oito-mil-ciganos-expulsos-de-franca-este-ano/

[2] http://www1.folha.uol.com.br/mundo/792283-mexico-confirma-segundo-sobrevivente-de-massacre-de-imigrantes-ilegais.shtml

precarious conditions in the urban areas of this country has been a reality to be confronted since the mid-twentieth century; it builds to the growth of disparities between them and other parts of society, thus hindering their acceptance from the destination country. In this context, the occupation tends to be thought of firstly as a transitory stage, but ends up getting estabilished as permanent, thus preventing the creation of the notion of immigrant's citizenship.

Therefore, the aim of this study is to investigate the socioeconomic situation of Latin American immigrants living in Brazil as well as the sanitary conditions to which they are subjected; this task will be carried out through analysis of the 2000 Brazilian Demographic Census. Moreover, a binary logistic regression model was employed in order to identify the opportunities for these immigrants to have appropriate access to water supply and sewage system in comparison to the services provided to born Brazilians. Through the gathering and analysis of such information, it will be possible to offer a detailed overview of the immigrants' situation in Brazil concerning their access to urban facilities and services as a means to evaluate their inclusion in Brazilian society.

2. IMMIGRATION AND LACK OF RIGHT TO CITIZENSHIP

The pattern of urban growth in the developing countries displays an increasing demographic boom and is usually associated to poverty, environmental issues, and unmatching supply and demand of basic services (Moore, *et al*, 2002). For example, insufficient water supply, poor sanitation services, and non-comprehensive waste collection are only some of the negative consequences of the growth of urban population dealt with in a very disorganized way.

When outlining the International Poverty Water Index, Lawrence *et al* (2002) looked into the role of the socioeconomic status of a household among other feature as a decisive factor to its access basic water supply and sanitation services. Then it can be inferred the access of poor people to water and sanitation – sometimes very precarious or even non-existent – is associated on the one hand with the area where their households are located; since they are ignored by the government, they end up being "pushed" by the real estate business to areas excluded not only from the economic, but also from the

social, cultural, political spheres of the city. On the other hand, this poor and insufficient access to basic facilities is related to the cost of such services, which often times represent a significative part of the income of this section of the population. It is more expensive, for example, to get pure water for consumption on a daily basis in poor neighborhoods than it is in high earners neighborhoods. Since their households are not provided with indoor plumbing, a big percentage of population needs to get water through other means, such as buying it from private companies or managing to get it from open-air sources of water like streams or rivers, which often do not yield clear water. Therefore, poor people not only lack clear water in their households but also have to pay extra money for it or subject themselves to poor quality water, which of course has great impact on both their health and quality of life.

By its turn, inadequate solutions such as moving away the sewage system are another problem of the developing countries urban areas, particularly due to the spreading water network which fostered an increased water consumption rate *per capita* and resulted in the increase of untreated waste thrown into the environment. Thus, those who are excluded from the areas containing sewage disposal services are more exposed to hazardous health conditions, especially little children, who tend to be more subjected to death caused by infectious and parasitic diseases. It is easily seen that the priorization of water supply in spite of measures towards sanitary conditions – *status quo* in developing countries – has had great impact in the exclusion of poor people from having access to basic sanitary installations; that process is a consequence of the fact that poor people normally occupy illegal areas which according to the government are difficult to be equipped with basic infrastructure due to the yet unresolved land issue involved.

Housing and basic infrastructure services are probably the first drawbacks poor immigrants have to face when they finally reach their destination. Even for those who legally immigrate into developing countries (filling in the proper paperwork), finding a place to live is not an easy endeavor. For example, the formal real estate business proves to be highly bureaucratic for people wanting to rent a house: not only do they have to prove they are legal immigrants, but they also

must have contacts in that country as well as a guarantor. Since they usually have just arrived in a country, often times immigrants are not able to fulfill such demands and, therefore, end up like most migrants: they usually have not choice but to seek unofficial real estate deals in suburban regions, where unemployment, violence, and exclusion from the basic urban rights are the norm. Thus, these people prove to be in a delicate situation not only for being poor, but also for being immigrants (with access to basic services made more difficult).

Crush (2005) describes the internation immigration process taking place in Johannesburg, South Africa, in order to show the spatial and social segregation of both migrants and immigrants in that city. In general, qualified immigrants live in gated communities located in the north suburbs of the city whereas semi-qualified (or no qualified at all) immigrants from certain countries occupy informal urban areas and live in apartments; French-speaking and West African immigrants tend to occupy the decadent areas near downtown, as well as the refugees. For example, in Soweto, which is one of the immigrants' main destination, only people from countries that share the same language and similar cultural values are welcome, such as Botswana, Lesotho, and Swaziland, but Mozambican and Zimbabwean immigrants are also found in that city, usually paying a rent fee to live in sheds in the backyard of many houses (Crush, 2005).

Cymbalista and Xavier (2007) researched the territorial insertion of Bolivian people into the Brazilian city of São Paulo and verified that immigrants of that nationality do not fit into any of the territorial classifications usually associated with the ethnic minorities internationally acknowledged by the literature. Bolivians live in central or intermediary neighborhoods, concentrated near the production and trading centers of São Paulo's clothing market (neighborhoods like Brás, Bom Retiro, Pari, Belém, Cambuc, Mooca, and Barra Funda, among others) (Silva, 2006). The Bolivian immigration movement into Brazil is motivated by work reasons, markedly for the textile industry, to which they are illegally hired and therefore are subjected to poor working and housing conditions. In general, these workers live in their working environment and

hardly ever leave those places; that may explain the fact that they are scarcely seen in public spaces, making use of transportation as well as other facilities (Cymbalista and Xavier, 2007, p.126).

It is important to highlight the importance of social network websites to the clustering of immigrants in certain areas; besides the role of real estate, the concentration of people from certain nationalities in specific areas is related to what Crush (2005) refers to as process of cumulative causation, that is, certain regions become attractive for new immigrants due to the presence of their fellow country people who provide them with information and support them whenever they need.

3. LATIN AMERICAN IMMIGRATION INTO BRAZIL

Immigration is an essential feature of the history of Latin America and Caribbean Islands. The flow of people into these regions was very common even before the formation of national states and its consequent establishing of borders separating the countries, especially within locations occupied by ethinic identities with pre-existing bonds (Pellegrino, 2003). After the creation of borders separating independent nations in the nineteenth century, the traditional flow taking place in Latin America and Caribbean Islands officially acquired the status of immigration (Patarra & Antico, 1998).

However, it was not until the 1960s that the process of immigration between different regions began to draw the attention of government authorities and reserchers. That decade witnessed major changes in both the economic and social scenarios of Latin American countries. On the one hand, there was the shift from a predominantly agricultural exporting economic model to a more importation-based model. On the other hand, there was a quick populational growth of some countries as a consequence of the demographic transition experienced in previous decades. These were the main causes of massive migration (from the countryside to the urban areas) and immigration (from a country to another) (Brito, 1995; Kratochwil, 1996; Pellegrino, 2003).

Patarra & Baeninger (2001) highlight the increasing importance of populational flow between Latin American countries and Caribbean Islands, especially from

the 1970s on. The stock of Latin American and Caribbean immigrants living in those regions, yet in a location other their home countries, amounted to 1,218,990 people in 1970. In 1980, this number increased to 1,995,149 immigrants and in 1990 it expanded to 2,242,268 individuals. In Brazil, the stock of Latin American immigrants followed this upward trend, going from 63,474 immigrants in 1960 to 118,606 in 1991, mainly Argentineans (21.4%), Paraguayans (18.6%), and Uruguayans (16%). In 2000, this stock of immigrants peaked to 144,528 people, which represents an increase of 21.8% in a nine-year period. Again, those three nationalities were responsible for the biggest figures in relation to other nations, showing little relative variation within the two decades: Argentineans (19.0%), Paraguayans (19.9%), and Uruguayans (17.1%) (Brazilian Institute of Geography and Statistics – IBGE, 1991 and 2000). These stock statistics provide a general overview of immigration in Brazil, but it should be born in mind that such data may be undercounted, especially if taken into account that the proportion of illegal immigrants in Brazil is high.

For the 2000s, to which referent data will be published in 2012[3], a significant growth in the number of Latin America and Caribbean Islands immigrants into Brazil is expected since the geopolitical and economic position of the country has changed throughout the decade not only in the region, but in the whole world.

To what regards the immigrants by decade, Brazilian census polls shows that approximately 31,006 Latin American and Caribbean immigrants went to that country, predominantly South American people, especially Argentineans, Bolivians, Chileans, Paraguayans, Uruguayans, Peruvians, and Colombians; all these nationalities together amounted to 90% of the total number of immigrants to the region (27,819 people). In the 1990s, the amount of Latin Americans who moved to Brazil totaled 44,950 immigrants and once more these seven

[3] The stock, volume, and demoggraphic and socioecnomic features of Latin American immigrants in Brazil for the 2000s will only be known after the unveiling of information from the Brazilian 2010 Demographic Census, from which data samples will only be published in 2012.

nationalities formed the vast majority of the total number immigrants from this subcontinent, reaching again about 90% (40,283 people) from the total figure (Table 1). Since they had little participation in the final results, the other nationalities were grouped together into one single category named “other immigrants[4]” so as to make analysis easier.

Table 1 – Latin American immigrants living in Brazil – 1980/1991 and 1991/2000

Nationality	1991		2000	
	Absolute	%	Absolute	%
Argentineans	6.702	21,62	8.447	18,79
Bolivians	6.030	19,45	6.810	15,15
Chileans	5.266	16,98	2.294	5,10
Colombians	893	2,88	1.943	4,32
Paraguayans	3.698	11,93	10.837	24,11
Peruvians	2.100	6,77	4.237	9,43
Uruguayans	3.131	10,10	5.715	12,71
Other Immigrants	3.185	10,27	4.668	10,38
Total	31.004	100,00	44.951	100,00

Taken from: IBGE. Microdata from the 1991 and 2000 Demographic Census.

Out of the total number of Latin American immigrants who moved to Brazil in the 1980s, a great part (36.4%) chose the state of São Paulo as their preferred destination, followed by the states of Rio Grande do Sul (14.8%), Rio de Janeiro (8.3%), Mato Grosso do Sul (8.2%), and Paraná (8.1%) (Appendix 1). In the 1990s, these five states remained as the favorite destinations of immigrants from these seven nationalities, in a relatively different order though. São Paulo still headed the list, but had a realtively smaller participation, housing 26.1% out of the total figure of immigration for the decade; the state of Paraná came second in the preference with 16.2% followed by Rio Grande do Sul (14.8%), Rio de Janeiro (8.5%), and Mato Grosso do Sul (6.4%) (Appendix 2).

[4] The author refers to the following countries: Costa Rica, Cuba, Ecuador, Guatemala, Guyana, French Guyana, Haiti, Honduras, Belize, Jamaica, Mexico, Nicaragua, Panama, Dominican Republic, El Salvador, Suriname, Venezuela, and other countries.

According to the 1991 Census, Bolivian immigrants (24.1%) composed the second largest group of Latin American immigrants heading for the state of São Paulo in the 1980s, second only to the Chileans (31.3%). In 2000, this scenario changes and the Bolivians become the main nationality of immigrants among the ones here considered for the state, amounting to 35.0%, followed by the Argentineans (18.5%) and the Peruvians (10.1%) (Appendix 1 and 2). Out of the total number of Bolivians heading for the urban areas of São Paulo in the 1990s, a large part (85.5%) declared the capital of the state as their city of residence, just like 47.5% out of the Argentineans and 63.9% of the Peruvians.

This increasing number of Bolivian immigrants into the state of São Paulo (and especially in the capital of the state) is closely related to the job opportunities created by the textile industry. This sector of industry also employs Paraguayans and Peruvians who are often times subjected to degrading living conditions and tend to live in their working places (Marreiro, 2004; Illes, Timóteo & Fiorucci, 2008; Cymbalista & Nakano, 2008).

Out of the total figure of Latin American immigrants in the 1980s who headed for the state of Paraná, 39.3% were Paraguayans and 32.6% Argentineans. In the 1990s, on the other hand, the amount of Paraguayans in that state rocketed 474% and thus became 75,4% of all the immigrants of the decade; their participation also increased in the state of Mato Grosso do Sul in a comparison between both decades: from 66.2% in 1991 to 80.1% in 2000.

Approximately 42.0% of the Paraguayan immigrants registered in the urban areas of the state of Paraná in 2000 declared Foz do Iguaçu (city located near the Paraguay border) as their city of residence and 8.4% the city of Cascavel. In the state of Mato Grosso do Sul, Ponta Porã (also a border town) and Campo Grande (11.5%), the state's capital, were declared the city of residence of by 41.1% and 11.5% of Paraguayans, respectively.

The increase of the number of Paraguayans living in Brazil is associated with the number of Brazilians going back to Brazil from Paraguay after living in that country (second indirect effect of return migration); that figure became relevant

from the 1980s on, and actually was intensified in the 1990s. To illustrate such movement, approximately 1.2 thousand immigrants (mostly Paraguayans) moved to Brazil together with some Brazilian relative in the decade of 1981/1991. In the following decade (1990/2000), this number rocketed to 5.5 thousand people, accounting for an increase of almost 400% (Marques, 2009).

To what concerns the state of Rio Grande do Sul, the amount of Latin American immigrants who chose that state as destination also increased between 1991 and 2000: it departed from 4,522 immigrants to a total of 6,684, which represents an 47.8% increase. The leading nationalities over both decades were the Uruguayans and the Argentineans, with relative participations of 54.1% and 32.7% in 1991 and 65.7% and 19.6% in 2000, respectively. The Uruguayan emigration movement (just like the Argentinean) taking place in 1990s was a consequence of the economic crises in those countries at that time; the umemployment and the inflation rates of both countries felt the impact (Sala e Carvalho, 2008; Moya, 2009).

Out of the Argentineans who declared to live in the urban areas of that state in 2000, 17.8% were registered in Porto Alegre, the state's capital, 9.4% in the city of Três Passos, and 8.0% in Uruguaiana, border town between Brazil and Argentina. 31.6% of the Uruguayan, by their turn, declared to live in the city of Santana do Livramento and 18.0% in Chuí, both towns next to the border with Uruguay.

To what regards the state of Mato Grosso do Sul, there is a majority of Paraguayans and Bolivians, who accounted for 80.1% and 14.4%, respectively, out of the total of latin immigrants who headed to that state. As mentioned before, Ponta Porã and Campo Grande were the preferred destinations of a great number of Paraguayans, as well as Corumbá (83.3%), located on the border to Paraguay and Bolivia, and Campo Grande (11.0%) were the preferred destinations of Bolivians who entered that state.

Sala and Carvalho (2008) propose a hypothesis according to which the relevant increase of Western Bolivia may have boosted or even created different immigration routes from that country into Brazil. Moreover, the authors also

mention the role free trade zones located both in Bolivia and in Paraguay play in the growth of border towns and consequently the immigration flow from those countries into neighboring nations.

4. DESCRIPTIVE ANALYSIS OF THE VARIABLES USED IN THE MODEL

This section presents the descriptive analysis of the variables related to the availability of sewage system in Brazilian urban households; the percentage of water supply and sewage services made available are observed. In spite of its limitations, this descriptive analysis provides some evidence of the importance of the variables associated with the supply and demand of sewage services. Demand is closely related to households; it is possible to infer that the head of household's socioeconomic, demographic, and cultural heritage are essential for their understanding of the sewage system service available to them. The provision of sewage services, by its turn, is related to the type of response the population and the government provide to the existing problems regarding the sewage system. In Brazil, the regional differences, the size of the cities, the socioeconomic indicators and the management models are some of the variables conditioning the provision of sewage services.

4.1. Understanding the relation between the coverage of water supply and sewage services and some features of the heads of household of Brazilian urban homes

Table 2 shows that the male heads of household who live in the Southeast of Brazil and have high education and income tend to be ahead when it comes to the provision of sewage services.

Table 2 – Brazil: coverage* of water supply and sewage system networks according to some features of Brazilian homes and their heads of household, 2000

Information regarding the heads of household	Water supply	Sewage service
Macro region		
North	77,4	12,1
Northeast	80,9	36,6
Southeast	94,0	79,6
South	92,4	33,8
Midwest	80,0	35,1
Gender		
male	90,3	60,3
female	89,4	56,8
Schooling Years		
0-1	81,9	44,9
2-3	86,1	50,6
4-7	90,0	57,4
8-10	93,5	64,1
11 – plus	96,1	77,6
Total family income		
Up to 1.5 MS	81,6	43,6
1.5 MS – 3.0 MS	87,0	49,6
3.0 MS – 5.0 MS	90,9	57,0
Over 5.0 MS	94,8	70,3

Taken from: Rezende (2005). * Coverage of water network refers to provision by linking to general network whereas coverage of sewage system refers to provision by linking to general sewage network.

To what concerns the variable gender of heads of household, men not only have the best job opportunities but also have an average better income than women, which may favor a higher provision of water supply and sewage services in homes headed by men (Rezende, 2005).

The head of household's education measured per schooling years bears broad relation to the provision of sewage services. There is a clear gradient in the distribution of provision of water and sewage networks according to schooling years of the head of household. The higher their education is, the higher the percentage of coverage. The differences of access to education opportunities are considered to explain the socioeconomic inequalities according to Marteletto (2002). If the variable taken is total family income, the result is the

same: higher family incomes are associated with higher percentages of coverage. The difference between the percentage of provision of such services in relation to these two categories (namely, years of study and total family income) are quite significant, which highlights these variables and their importance for immigrants to both choose their homes and get a wider coverage of the offered services. It can also be observed that the variable macro region is also relevant: the provision of sewage services is much wider in the Southeast cities, the only in the country featuring a sewage system coverage rate higher than 50%.

4.2 Latin Americans in Brazil and their urban household infrastructure

This section aims to describe the demographic and socioeconomic characteristics of the households of Latin American immigrants who entered Brazil in the 1990s and their sanitary conditions. Regardless of their nationalities, the higher proportion of immigrant-headed households with access to water supply and sewage service is very noticeable.

The observation of deficit of basic sanitary services to population – water supply and sewage system - was based on the definitions adopted by the Brazilian National Plan for Basic Sanitation (PLANSAB) (Brasil, 2011), with some caveats. As in PLANSAB, the situations which are considered precarious were labeled as deficit since it means that the service is not offered in fully satisfying conditions, thus potentially putting human health in hazard as well as the quality of the home environment and its surrounding areas. Chart 1 details such analysis.

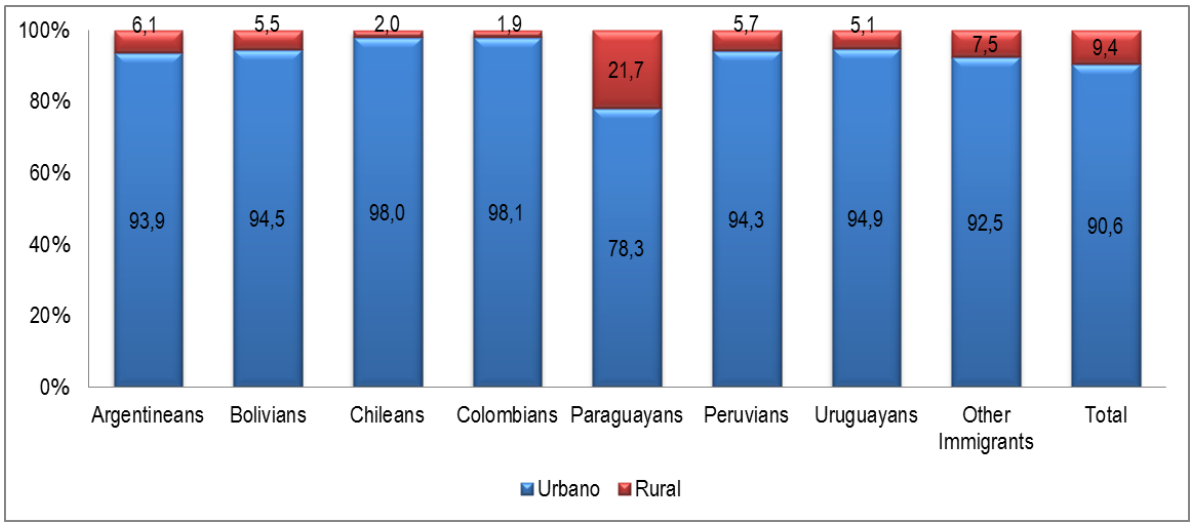
Chart 1. Analysis of the offered water supply, sewage system, and solid waste disposal services.

Basic Sanitation Services		
Water Supply	**Type of Service**	
General network with indoor plumbing	Adequate	Access
Water well or spring with indoor plumbing	Adequate	
General network with no indoor plumbing	Precarious	Deficit
Water well or spring with no indoor plumbing	Precarious	
Other means, with indoor plumbing	Precarious	
Other means, with no indoor plumbing	Non existent	
Sewage System – type of disposal	**Type of service**	
General sewage system or storm drain	Adequate	Access
Septic system with tanks	Adequate	
Rudimentary septic system	Precarious	Deficit
Sewage ditch	Non existent	
Disposal in river, lake or sea	Non existent	
Other places to dispose	Non existent	
Lack of sanitary installations	Non existent	

Taken from: Brazilian Demographic Census 2000 and National Plan for Basic Sanitation, 2010.

As for the description referring to Brazil, only the households located in the urban areas were considered, since the spatial segregation and the inequality of opportunities are much more noticeable in those areas. Moreover, 90.6% of the Latin American immigrants who went to Brazil in the 1990s lived in urban areas, as shown by Figure 1.

Figure 1 – Situation of Latin American immigrants' households in Brazil (by nationality) – 1990/2000



Taken from: FIBGE, Microdata from the 2000 Demographic Census.

It is seen that more than 90.0% of all immigrant groups here discussed, except for the Paraguayans, were registered in urban areas in 2000, especially Colombians (98.1%) and Chileans (98.0%). Although most Paraguayans were also registered in the Brazilian urban areas, they were the leading nationality of immigrants living in the rural area. That is due to the type of economic activity they perform. Since the immigration of this group is related to the return migration of Brazilians back from Paraguay (and most of these Brazilians work in the primary sector), the Paraguayan immigrants follow the same economic pattern and tend to remain working within the primary sector of Brazil's economy.

Regarding the urban areas in Brazil, Table 3 shows that Latin American head-of-household male immigrants who live in the Southeast, have 11-year-plus education, and total family income above 5.0 minimum salaries have an advantage over the other immigrants when it comes to the provision of water supply and sewage services.

Table 3 – Latin American Immigrants: adequate access to water supply and sewage services according to some features of heads of household – 2000

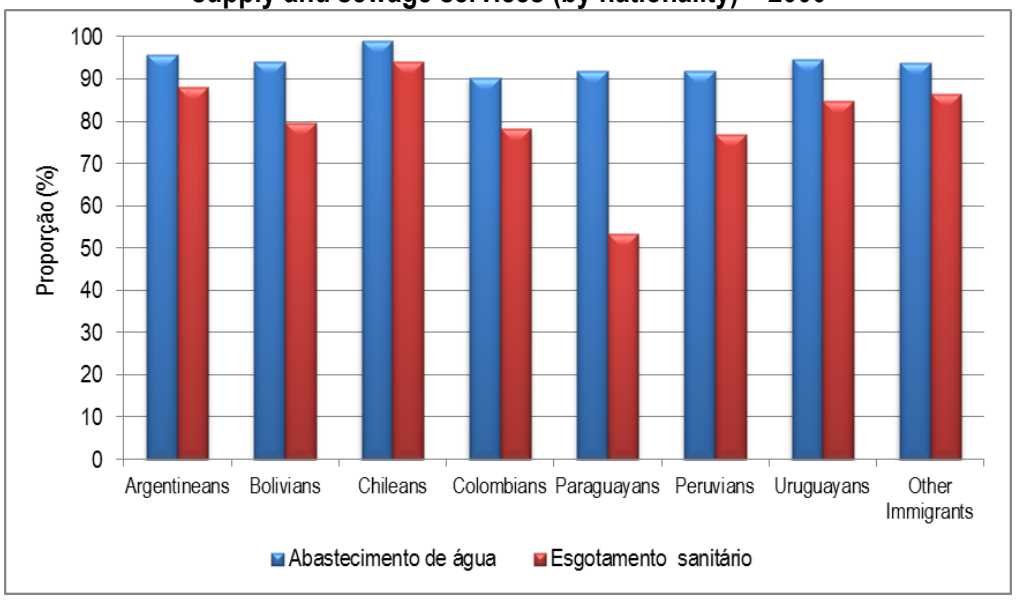
Information regarding the heads of household	Water supply	Sewage service
Macro region		
North	71.1	40.8
Northeast	96.5	77.1
Southeast	97.6	96.5
South	96.2	81.9
Midwest	91.2	41.5
Gender		
male	94.8	81.2
female	92.0	80.9
Schooling Years		
0-1	79.8	38.0
2-3	90.1	56.2
4-7	89.5	57.8
8-10	90.1	72.2
11 – plus	96.5	88.7
Total family income		
Up to 1.5 MS	87.1	53.0
1.5 MS – 3.0 MS	87.2	61.2
3.0 MS – 5.0 MS	91.0	74.1
Over 5.0 MS	97.5	91.1

Taken from: FIBGE, 2000 Demographic Census microdata.

In a 2000 analysis of adequate coverage of water and sewage services by nationality, it is possible to note that most part of Latin American immigrants had access to adequate conditions of drinking water supply, markedly Chileans (99.2%) and Argentineans (96.0%) (Figure 2), which bears relation to the educational and professional profiles of immigrants from these two nationalities. Sala (2005) highlights the predominance of qualified workforce from Chile and Argentina living in Brazil, even when compared to Brazilian born workforce.

To what concerns the sewage disposal, in Figure 2 it is possible to observe great variation in the relative distribution of such service per nationality. Chilean-headed households had wider coverage (94.1%), followed by Argentinean (88.1%) and the other nationalities (86.7%). Among the Latin American immigrant nationalities analyzed, the Paraguayans ranked last: only 53.5% of their households had adequate access to sewage disposal services.

Figure 2 – Relative distribution of Latin American immigrants who had access to water supply and sewage services (by nationality) – 2000



Taken from: FIBGE, 2000 Demographic Census microdata.

The Paraguayans were by far the group with the lowest level of schooling years among all the nationalities analyzed in this study: among the heads of household who had one-year or no education at all, 45.4% were from Paraguay; moreover, as previously shown, a great number of these immigrants headed for the state of Mato Grosso do Sul, located in the Midwest macro region, where

the proportion of immigrant-headed households with access to adequate sewage system conditions was 41.5%.

5. COMPARING SEWAGE SERVICES AVAILABLE FOR LATIN AMERICAN IMMIGRANTS AND NATURAL BORN BRAZILIANS

The use of models of discrete probability distribution is advisable in the study of sewage treatment variables, since the dependent variables are associated with the various situations found in households for each criteria analyzed, namely: water supply and sewage services (Hosmer & Lemeshow, 1989).

Using the definitions shown in Chart 1, the model tested in this study considered as response variables: i) household with adequate water supply service, and ii) household with adequate sewage service.

Table 4 shows the results of the logistic models adjusted to the urban population of the cities considered, that is, those who had Latin American immigrants according to the 2000 Demographic Census. The models test the census variables relevant to the analysis of water supply and sewage service; all the variables presented are predictors of the household sewage system with a significance level of 5%.

The categories of the explanatory variables were reorganized following the descending order of distribution of the dependent variable. Table 4 shows the ordering of variables, according to which the first category (reference) represents the poorest sewage service conditions. Note that the Latin American immigrants were compared to natural born Brazilian who never migrated.

Table 4 – Ratio of adequate water supply and sewage service opportunities, Brazil – 2000

Explanatory variables (e.v.)	Explanatory variable categories	Dependent variables	
		Adequate water supply	Adequate sewage service
Macro regions	North	1.00	1.00
	Northeast	2.10	1.43
	Southeast	5.30	4.42
	South	8.12	1.50
	Midwest	3.72	0.64
Total family income (per minimum salaries)	Up to 1.5	1.00	1.00
	From 1.5 to 3	1.66	1.14
	From 3 to 5	2.42	1.42
	Over 5	4.01	2.55
Schooling years of the head of household	Up to 1	1.00	1.00
	2 to 3	1.19	1.13
	4 to 7	1.40	1.39
	8 to 10	1.71	1.86
	Over 10	2.33	3.16
Gender	Male	1.00	1.00
	Female	1.16	1.20
People	Natural born Brazilians	1.00	1.00
	Latin American immigrants	1.46	1.20
Adequate services	Water supply	-	2.96
	Sewage	3.07	-
	Solid waste	2.67	4.34

Taken from: FIBGE, 2000 Demographic Census microdata.

The beta analysis, which represents the ratio of chance of an event in a given category in relation to a reference category, indicates that all variables were relevant to the study.

To the macro region variable are associated the greatest differences between categories: a Southeast household has an approximate 5.0 times bigger chance to have adequate water supply than a household in the North of Brazil. In relation to sewage services, a Southeast household has an average 4.5 bigger chance than a household in the North macro region. For the South urban households, the chance of having adequate water supply are as high as 8.0 times bigger than a household in the North, which is the reference macro region. It is noticeable that the Midwest macro region households have the least chances to have adequate sewage service, therefore leading to infer that the massive presence of Paraguayan immigrant in that region could be having an

impact in this result, since they represent the group of immigrants whose situation is the most challenging when it comes to sewage treatment.

The schooling years of the head of household and total family income variables display a quite similar behavior, since the most challenging situations are associated with immigrant with little or no education at all and whose income averaged 1.5 minimum salaries. Ascendant gradients are noticed in the categories of these two variables, meaning the chance of a household to have access to water supply and sewage services increase with more schooling years and bigger income.

In relation to the gender of the head of household variable, female-headed homes are more likely to have adequate water supply and sewage service, unlike the descriptive analysis according to which the provision of both services is more abundant for men-headed homes. This result is more consistent in comparison to the findings of descriptive analysis since this fact is controlled by other variables, which are essential to explain the chance of a household to have access to these services. This chance significantly increases when a household is provided with other basic services.

The preconception according to which Latin American immigrants are marginalized in Brazil and live in terrible conditions was proven false. All the data reveals that the chance of having adequate access to sewage service by an immigrant living in Brazil in the 1990s is 20% higher compared to that of a natural born Brazilian; when it comes to water supply, the chance is even higher (46%). These results are in accordance with the study of Sala (2005), which shows the positive selectivity of Southern Cone immigrants into Brazil. This country is an attracting center for the subcontinent's qualified workforce, which can be partially explained by the lack of education of the general Brazilian workforce as well as its consequences upon the country's labor market. In 2000, the proportion of Brazilian workers with over 15 schooling years in the total workforce was 7%, lower than those of male immigrants from all Southern Cone countries and of Argentinean, Bolivian, Chilean, and Uruguayan women with complete superior education (Sala, 2005, p.89). Thus, it can be inferred

that this positive selectivity is the leading factor responsible for the privileged access of a large number of Latin American immigrants to basic services. Highly qualified immigrants with high total family income can choose where to live and of which services to make use, which has a positive impact resulting in a higher percentage of coverage.

However, it is necessary to bear in mind how heterogeneous these groups of immigrants are from an economic and social perspective. This analysis provided a general overview of these immigrants' access to basic services in comparison to natural born Brazilian, but as previously shown, certain immigrant groups (like the Paraguayans) come from a disadvantaged socioeconomic background, which impacts on their precarious access to basic services and, therefore, their living conditions. What is more, the data from immigrants used in this study come were taken from the Census, that is, only legal immigrants officially accounted for in this country. Illegal immigrants, typically identified as groups like Bolivians, Paraguayans, and Peruvians (Illes *et al*, 2008), were not taken into account in this analysis; curiously, they are the very nationalities presented in the literature as the most vulnerable immigrant groups.

6. CONCLUSION

The aim of this study was to investigate the relation between some demographic and socioeconomic characteristics of the households of Latin American immigrants living in Brazil and the sanitation conditions to which they are exposed, as well as to try and identify the chances these immigrants might get to have access to water supply and sewage disposal services as compared to the native people. In order to do that, some information from the Brazilian 2000 Demographic Census were used since the microdata of the 2010 Census are yet to be released.

The results revealed that the male Latin American immigrants who are the heads of household, live in the Southeast of Brazil, have 11-over-year

education, and have income above 5 times the Brazilian Minimum Salaries get more chances to have access to water supply and sewage disposal services. Moreover, through logistic regression it was possible to observe that the general chances for a Latin American immigrant living in Brazil in the 1990s to have access to adequate sewage disposal services were 20% higher than those of a native. Tracing a parallel to what concerns water supply, these chances were even higher, which can be associated with the positive selectivity of the Southern Cone immigrants into Brazil.

However, it was possible to note that this positive selectivity does not correspond to all groups of immigrants and therefore not all of them have access to the basic sanitation services. Paraguayans, for instance, are the most vulnerable nationality among the Latin American immigrants. A significant part of the Paraguayans who were heads of household had one-year or no education at all, which directly impacts on their income levels and their living conditions. Moreover, even though the oficial statistics have shown that the Bolivians are in a better position than other nationalities of immigrants when it comes to their basic sanitation, both specialized literature and the media have called out to the fragility of this group of immigrants, which is reflected on the degrading working conditions and the violation of their human rights.

It is important to highlight once more that the number of Latin American immigrants in Brazilian cities is undercounted since it is very hard for the involved authorities to register undocumented immigrants, which makes for unreliable results and their consequent neglection from their rights. Thus, the process of identifying the immigrants in Brazil (especially in the urban areas) demands a joint effort by the State and the society that can only be accomplished through commitment. It is of utmost importance to know in details who these immigrants are, what their housing conditions are like, and how their social and work relations take place; as a consequence, it will be easier to include them in social policies and therefore respect their rights as citizens.

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8. APPENDIX

Appendix 1. Destination of Latin American in Brazil, 1980s

States	Nationality								Total
	Argentineans	Bolivians	Chileans	Colombians	Paraguayans	Peruvians	Uruguayans	Other Immigrants	
Rondônia	0,15	15,27	0,08	0,00	4,35	1,14	0,00	0,94	3,71
Acre	0,25	3,71	0,00	1,34	0,00	2,67	0,00	0,00	1,00
Amazonas	0,12	0,70	0,00	13,89	0,00	20,75	0,00	2,10	2,18
Roraima	0,00	0,00	0,00	0,00	0,00	2,05	0,26	18,05	2,02
Pará	0,28	0,25	0,17	2,80	0,00	0,00	0,00	4,55	0,69
Amapá	0,09	0,00	0,00	0,00	0,00	0,00	0,00	5,02	0,54
Tocantins	0,33	0,03	0,00	0,00	0,00	0,00	0,00	0,00	0,08
Maranhão	0,00	0,00	0,23	1,12	0,00	0,00	0,00	0,25	0,10
Ceará	0,48	0,15	0,13	0,00	0,00	0,48	0,00	2,42	0,44
Rio Grande do Norte	0,28	0,13	0,13	0,00	0,00	1,81	0,00	1,29	0,36
Paraíba	0,00	0,28	0,27	0,00	0,00	0,00	0,00	0,28	0,13
Pernambuco	0,51	0,85	0,08	0,00	0,00	0,48	0,10	2,45	0,58
Alagoas	0,03	0,33	0,25	0,00	0,00	0,67	0,00	0,00	0,16
Sergipe	0,13	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03
Bahia	4,21	0,36	1,82	0,00	0,00	1,81	0,42	1,57	1,62
Minas Gerais	2,04	2,04	2,15	1,90	0,95	5,09	0,57	4,27	2,21
Espírito Santo	0,46	0,00	0,42	0,00	0,00	0,00	0,00	2,26	0,40
Rio de Janeiro	11,52	5,46	10,37	25,31	1,16	12,71	2,65	10,42	8,38
São Paulo	31,46	45,32	67,24	36,51	14,77	33,94	12,93	28,97	36,43
Paraná	11,89	4,68	4,08	6,27	25,94	2,38	2,52	2,82	8,15
Santa Catarina	10,39	0,60	4,37	0,00	2,11	1,43	1,92	1,22	3,77
Rio Grande do Sul	22,07	1,92	5,18	3,81	2,38	4,05	78,13	2,29	14,82
Mato Grosso do Sul	0,33	13,22	0,47	0,00	45,63	0,71	0,00	0,31	8,24
Mato Grosso	0,03	2,60	0,55	0,00	1,81	0,14	0,00	0,00	0,83
Goiás	0,55	1,21	0,74	0,67	0,00	0,14	0,26	0,53	0,59
Distrito Federal	2,39	0,88	1,27	6,38	0,89	7,57	0,26	7,97	2,55
Total	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00

Taken from: FIBGE, Microdata from the 1991 Demographic Census.

Appendix 2. Destination of Latin American in Brazil, 1990s

States	Nationality								Total
	Argentineans	Bolivians	Chileans	Colombians	Paraguayans	Peruvians	Uruguayans	Other Immigrants	
Rondônia	0,13	10,65	0,00	0,00	1,05	2,99	0,00	1,40	2,30
Acre	0,00	4,12	0,00	0,00	0,00	5,55	0,00	0,08	1,16
Amazonas	0,76	0,00	0,47	22,90	0,00	27,48	0,14	4,31	4,31
Roraima	0,13	0,00	0,21	1,24	0,20	1,17	0,00	16,28	1,98
Pará	0,12	0,35	0,00	2,19	0,28	0,67	0,00	2,81	0,60
Amapá	0,00	0,00	0,00	0,50	0,00	0,52	0,00	5,40	0,65
Tocantins	0,00	0,26	0,00	0,60	0,00	0,00	0,00	2,01	0,28
Maranhão	0,20	0,00	0,00	0,00	0,00	0,00	0,15	0,25	0,08
Piauí	0,00	0,00	0,00	0,00	0,10	0,00	0,00	0,18	0,04
Ceará	1,87	0,56	0,38	0,40	0,00	0,43	0,00	0,86	0,60
Rio Grande do Norte	0,38	0,00	0,00	0,40	0,04	0,34	0,00	1,46	0,29
Paraíba	0,12	0,23	0,47	0,00	0,00	0,94	0,00	0,47	0,22
Pernambuco	0,38	0,28	0,30	0,00	0,00	0,97	0,14	2,03	0,46
Alagoas	0,85	0,00	0,00	0,00	0,00	0,00	0,00	0,16	0,18
Sergipe	0,13	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,02
Bahia	2,49	0,00	3,56	1,14	0,16	1,57	2,16	2,30	1,41
Minas Gerais	3,60	2,77	3,86	3,33	1,15	1,78	0,82	4,85	2,50
Espírito Santo	0,82	0,22	0,00	0,00	0,06	0,58	0,00	1,68	0,44
Rio de Janeiro	15,97	4,73	14,29	24,44	1,45	9,87	3,95	14,17	8,82
São Paulo	26,21	60,43	51,15	32,24	9,26	29,01	7,43	22,95	26,36
Paraná	13,22	2,14	5,13	2,78	50,95	3,48	2,47	1,66	16,12
Santa Catarina	13,19	0,78	5,39	1,09	6,21	3,01	6,37	1,33	5,64
Rio Grande do Sul	15,62	0,63	7,46	1,24	3,87	3,55	75,69	3,10	14,70
Mato Grosso do Sul	0,89	6,08	0,25	0,00	21,18	1,48	0,00	0,12	6,27
Mato Grosso	0,44	4,35	1,31	1,54	3,66	0,20	0,17	0,70	1,85
Goiás	1,00	0,60	0,25	2,38	0,17	1,66	0,00	2,44	0,85
Distrito Federal	1,48	0,82	5,51	1,59	0,21	2,74	0,51	6,98	1,88
Total	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00	100,00

Taken from: FIBGE, Microdata from the 2000 Demographic Census.