

# “Social health inequalities: a French analysis based on the migrant population”

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## **Abstract:**

Using a representative survey of the French population, the Health, Health Care and Insurance Survey (ESPS: “*Enquête sur la santé et la protection sociale*”), this article aims to study the links between migration, region of origin and health status in France. Firstly, we have compared the health status between migrants and the native population in discerning an identifiable difference between first-generation and second-generation migrants. Following this, in order to explain the heterogeneity of health status amongst the migrant population, we have refined our analysis by integrating their country of origin into our estimation and then exploring the health differences between individuals who have emigrated from South-East Mediterranean (SEM) countries and individuals who have emigrated from all other countries.

Our findings show that there exist health inequalities that are related to immigration, when compared with the health status of the native population in France. First and second generation migrants have a higher risk than the native French born population to report a poor health status. By introducing country of origin into our analysis we are able to confirm the health heterogeneity within both groups of migrants. Individuals coming from SEM countries are more likely to report poor health status than the native French born population (for both generation migrants) and this risk seems significantly higher for individuals who have emigrated from Turkey. These inequalities are partly explained by the poor socio-economic conditions of the migrant population and a general lack of social integration in France.

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## **1. Introduction:**

This study explores the statistical relationship between an individual's migratory status, their country of birth and their health status. Social health inequalities are well documented in general population in France, however few studies have focused on migrant population due mainly to the lack of information on nationality and country of birth provided by most health surveys (Jusot & al, 2009; Fassin, 2000). In 2004, migrants represented 8.1% of the French population and there is evidence to suggest that the migrant population is fundamentally different from native population in relation to their health condition. Poor socio-economic status, language difficulties, stress due to new living conditions or discrimination and a lack of specific knowledge or information about the structure and organisation of the health care system are all factors that contribute to migrants' lower health status and go some of the way of explaining social health inequalities (Sender, 2008; Attias-Donfut & Tessier, 2005; Chaouchi, Casu & Caussidier, 2006). Based on these factors, the migrant population is considered at first glance as a high risk group in society with regard to health.

Paradoxically a number of studies have shown that the migrant population is on average in better health than the native population in relation to a number of key health indicators. This "Healthy Migrant Effect" suggests that people born overseas have generally better health than the native born population. This hypothesis, which can be considered as a selection effect, assumes that only people with good health status or who are initially wealthy are more able and likely to migrate. The "Healthy Migrant Effect" is well documented in both French and international literature, however the findings are not similar and there is no general consensus. For example, in the USA, Canada, Australia and the United Kingdom the immigrant population is on average healthier than the native population (McDonald & Kennedy, 2004; Kennedy & al, 2006; Rubalcava & al, 2008). However in France, the results of recent studies prove that the migrant or foreign population is more unhealthy than native French-born population (Jusot & al, 2009; Attias-Donfut & Tessier, 2005; Lert, Melchior & Ville, 2007). This selection effect can be offset over time by the deleterious effects of migration such as loneliness, a loss of social support or poorer living conditions and unfavourable socio-economic status.

In fact, health capital models suggest that socio-economic conditions represent one of the most important social determinants of an individual's health (Grossman, 2000). A large body of literature shows that an individual's social status within society and their material living conditions are strongly correlated to the individual's health status (Goldberg and al, 2002; Marmot and Wilkinson, 2006). Studies on migrant health have emphasised that such populations are more likely to be affected by unemployment, to have lower incomes and a lower level of education (Newbold & Danforth, 2003; Attias-Donfut & Tessier, 2005; Jusot & al, 2009). In France for example, the unemployment rate among immigrant's in 2007 is twice

as high as than of the native born population, and the level of unemployment is even more pronounced for people who have emigrated from Turkey or Tunisia (Perrin-Haynes, 2008). The immigrant population of France is over-represented amongst people employed in unskilled occupations. This is largely due to the fact that many migrants to France have no formal qualifications, which is demonstrated by the fact that more than sixty percent of immigrants from Turkey have no qualifications (Perrin-Haynes, 2008). Furthermore, a Canadian study has shown not only that migrant populations have more unfavourable socio-economic conditions but also that this is an important determinant which helps to explain the difference between migrant health and that of the native born population (Dunn and Dyck, 2000).

Apart from the influence of material living conditions on health status, some studies have stressed the importance of factors relating to social integration and more generally to psycho-social resources when explaining differences in levels of health. Psycho-social resources refer to social capital, social relationships or emotional and financial support. According to Putnam (1995), social capital “refers to features of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated actions”. Social capital encompasses the institutions, relationships and norms that shape the quality and quantity of a society’s social interaction and it may refer to an individual’s social characteristics that enable private returns via interaction with others (Glasear & al, 2002; Durlauf, 2002). Social capital is actually considered as a potential explanatory factor of an individual’s health status since social interaction, trust and reciprocity facilitate people to access resources and to have expectations towards others. Numerous studies have therefore suggested that a high level of social capital enhances population health outcomes and reduces health differences (Golberg & al., 2002; Jusot, Grignon & Dourgnon, 2008; Folland, 2007; Islam, 2007; Sirven 2006). Due to adaptation difficulties in the host country, a lack and loss of social or emotional support, an immigrant population may present high levels of psycho-social stress, which in turn lead to a poorer health status. In fact, social capital and psycho-social determinants appear to be a particularly relevant health determinant for vulnerable populations, of which the migrant population is, since it constitutes informal insurance against health risks, enabling a reduction in informational costs and to a spread of health norms (Putnam 1995, 2000). Therefore, in relation to the migrant population there is a positive and strong association between access to psycho-social resources, health conditions and access to health services (Zambrana & al, 2004; Leclere & al, 1994; Campbell & Mclean, 2002). More recently, Gresenz, Rogowski and Escarse (2007) have shown that a large social network is beneficial to the health status of the immigrant population residing in the US and particularly for those who are living in an area with a high concentration of immigrants because it improves access to health services.

Finally, studies have shown that a migrant population could be considered as a specific group since they have their own health characteristics. Hence, it has been proved that among the

immigrant population health status may be heterogeneous. The native country, the length of stay in the host country and the language barrier are all relevant determinants of an individual migrant's health (Attias-Donfut & Tessier, 2005; Lert, Melchior & Ville, 2007). The country of origin has an important implication on an individual's health and especially through the influence of the economic or political context and the country's customs. Jusot & al (2009) have noted that individuals who have emigrated from countries whose GDP per capita is low (that is second or third quartile of GDP) are more likely to report a poor health status than individuals who have emigrated from countries with a higher GDP. Moreover, the results are similar if they introduce the country human development indicator into their analysis. In this way there is a clear protector effect of a country's development level on health status. Hence, this study suggests that there is a long term effect of the economic situation of a migrant's native country on their individual health. Cultural habits (such as food consumption or medicine patterns) may also explain a migrant's health. Findings of Khlat and Courbage's (1995) study have shown that individual who have emigrated from Morocco are more likely than French people to benefit from a lower death rate due to a healthy diet and lower alcohol consumption. More recently, Gee, Kobayaski and Prus (2007) indicated that individuals residing in Canada, who had emigrated from Asia, have a much higher risk of reporting chronic disease. To explain this result, the named authors suggest that Asian people encounter difficulties in understanding the health care system or prevention programs. Finally, to explain the health disparities within the migrant population, some authors have shown that the length of stay in the host country and the language barrier are positively associated with the likelihood of reporting poor health (Attias-Donfut & Tessier, 2005; McDonal & Neily, 2007; Lert, Melchior & Ville, 2007; Zambrana & al., 1994; Leclere, Jensen & Biddlecom, 1994). In fact, the migrant population may suffer from language difficulties and thus the information associated with the health care system or the preventive action may be misunderstood which in turn leads to a poorer level of health.

As for the native population, the migrant health depends not only on socio-economic status and psycho-social resources but also on specific determinants attached with the migratory history such as the length of stay, the language barrier, the migratory status or the country of origin. Taken together, these factors may explain differences in the levels of individual health between native born people and the immigrant population but also within the migrant population. Using a representative survey of the French population, the Health, Health Care and Insurance Survey (ESPS: "*Enquête sur la santé et la protection sociale*") we intend to analyse the links between migratory status, country of birth and health status by supplementing the existing literature in several ways. Apart from comparing the health status of the migrant population and native French population, we propose to analyse more precisely the health disparities according to migratory status through distinguishing between first-generation and second-generation migrants. Due to this analyse it is then possible to consider the healthy migrant effect hypothesis and to assess whether people who are descendents of immigrants have a similar level of health in comparison to the native born population.

Moreover, the analysis is further refined by integrating the country of origin variable into our study in order to determine health heterogeneity within both groups of the migrant population. Hence, we attempt to explore the health differences between individuals who have emigrated from South-East Mediterranean countries and individuals who have emigrated from all other countries. This distinction enables to appreciate the extent of social health inequalities caused by a migrant's region of origin. Finally, in order to confirm the health determinants proposed by previous literature we explore the influence of socio-economic conditions and psycho-social resources on health status.

The next section introduces the data and variables used in the regression analyses. The methodology and the estimation strategy are also presented in this section. The results are presented in section 3, followed by a conclusion in section 4.

## **2. Data and Method:**

The analysis is based on a population survey, representative of the French population, the Health, Health Care and Insurance Survey (ESPS: "*Enquête sur la santé et la protection sociale*"), coordinated by the Institute for Research and Information in Health Economics (IRDES). We have used the 2006 survey which included a set of question on native country, country of birth and psycho-social resources. The survey sample, which comprised of 8100 households and 22 000 individuals, is based on a random draw from the administrative files of the main health funds of France which over 90% of the French population are members of. Individuals drawn at random from the administrative files are used to identify households. The socio-economic questionnaire has been answered by one key respondent from each household (aged at least 18 years old), who is not necessarily the individual who was selected at random. The questions on health status are collected through a self-administered questionnaire completed individually by each household member. Questions on psycho-social resources and nationality are answered by the key respondent.

Since our main objective is to examine the health differences between migrants and the native population, we have restricted our analysis of the population to individuals aged 18 years old and over, who have reported both their health status and their national origin (7260 individuals).

### 2.1. Migration status and country of birth:

To build a migratory status variable, we have used information relating to nationality and country of birth of individuals and those of their parents. Through integrating these questions, we have identified three distinguishable migratory statuses: "individuals who were born French and whose parents were born in France", "First-generation migrants" and "Second-generation migrants".

Firstly, the population of “individuals who were born French and whose parents were born in France” represents in our analysis the reference population and it gathers individuals with French nationality whether they were born in France or not and whose parents were born in France. Secondly, the population of “First-generation migrants” gathers foreign individuals who were born abroad, regardless of their parents nationality and country of birth. Lastly, the “second-generation migrant” group represents individuals who are not foreigners born abroad and who have at least one parent who was born abroad. To analyse the social health inequalities of individuals who come from SEM countries, we have used an individual’s country of birth for first-generation migrants and then for second-generation migrants, the parent’s country of birth. Hence, we constructed an indicator variable named “origin” in order to distinguish individuals or parents who have emigrated from Turkey, Morocco, Tunisia, Algeria, Egypt, Israel, Libya and Lebanon from individuals or parents who have emigrated from all other countries.

Individuals who were born French and who have French parents, which constitutes the reference population, represent 80.9% of the sample (Table 1). 9% of the sample is composed of first-generation migrants. Within this group, 31.2% have emigrated from South-East Mediterranean countries and 68.8% have emigrated from all others countries. Second-generation migrants represent 10.2% of the sample. Within this last category, 23% have parents who have emigrated from SEM countries and almost 77% have parents who have emigrated from all other countries. Note that the first-generation migrant population is on average older than the second-generation one (49.2 years versus 45.3 years old), which is itself younger than the French reference population (48.8 years old).

Table 2 below shows that the majority of the migrant populations coming from SEM countries are nationals from Maghreb (Morocco, Algeria and Tunisia). Actually, among first-generation migrants who have emigrated from SEM countries, nearly 88% are nationals from Maghreb and the composition of the second migrant generation group is similar, with 89% native to these countries. Note that individuals coming from Turkey or Middle East are not well represented in our sample. Only 16 and 14 individuals have come from Turkey for the first and second generation groups respectively. Similarly, only 9 and 5 individuals have come from the Middle East, Libya and Egypt for the first and second generation migrants groups. In this way, these small samples may constitute a statistical problem into econometric analysis.

**Table 1. Statistics descriptives : Origin and migratory status of the sample**

Characteristics		N	%
<b>Migratory status and origin</b>	<i>Migratory status: French</i>	5836	80,88
	<i>First migrant generation</i>		
	From SEM countries	203	2,81
	From all other countries	447	6,19
	<i>Second migrant generation</i>		
	From SEM countries	169	2,34
	From all other countries	561	7,77

**Table 2. Statistics descriptives: Origin country of migrant population**

Characteristics		First migrant generation	Second migrant generation
		N	N
<b>Country of Origin</b>	<i>SEM countries</i>	203	169
	Morocco	73	42
	Algeria	69	85
	Tunisia	36	23
	Egypt	1	3
	Lebanon	6	2
	Israel	1	0
	Libye	1	0
	Turkey	16	14
	<i>From all other countries</i>	447	561

## 2.2. The Health Status Assessment:

Health status is difficult to represent as a unique indicator due to its multidimensional character. According to the WHO, a good health status means not only the absence of disease or injury but also physical, mental and social well being. Mortality and morbidity indicators are the most common measures for health status and the latter is used in our study. To assess individual health status, we use the first of three standardised questions suggested by the WHO European Office relative to self-assessed health. This indicator relies on the following question: “*Would you say that your health is: very good, good, fair, bad or very bad?*” This self-assessed health question is a subjective indicator of an individual’s overall health status which refers to the perception of a person’s health in general. It has the advantage of reflecting aspects of health not captured in other measures, such as: incipient disease, disease severity, aspects of positive health status, physiological and psychological reserves and social

and mental function. This indicator may however suffer from individual reporting heterogeneity (Bago d’Uva & al. 2008) and its comparability among native and immigrant populations may be questioned. Some studies have shown that health perception differs according to health norms and individual aspirations, which relate to culture. Despite the variable’s subjectivity, several studies have validated its utilisation among ethnic groups and have shown that across ethnics groups a poorer self-assessed health status is constantly associated with higher disease prevalence rate (Chandola & al., 2000; Molines & al., 2000; Jenkinson & al., 2001). This indicator has also been found to be a good predictor of mortality (Idler & Benyamini, 1997).

To study individuals’ health we have constructed a binary health descriptor. This descriptor places people who have reported a “very good” or “good” general health status opposite people reporting a “fair”, “bad”, or “very bad” general health status.

Nearly 25% of the sample declared that their own self-assessed health was poor<sup>§</sup>. The descriptive analysis shows some health differences according to migratory status and country of origin (Table 3). On average, first-generation migrants are more numerous in the poorer health category than the native French population. Among the French population, 26.1% report poor self-assessed health while 43.8% and 40.2% of first-generation migrants who emigrated from SEM countries and from all other countries (respectively) report the same results. First-generation migrants are also more numerous in the poorer health category when compared to second-generation migrants. This latter group seems, on average, to be almost identical to French population with regard to health status. Note that 23.1% of second-generation migrants coming from SEM countries and 29.1% coming from all other countries report a poor health status.

**Table 3. Statistics descriptives: Health status of the sample according to origin and migratory status (% row)**

Characteristics	Poor self assessed health
<b>Migratory status and origin</b>	
<i>Migratory status: French</i>	26,1
<i>First migrant generation</i>	
From SEM countries	43,8
From all other countries	40,2
<i>Second migrant generation</i>	
From SEM countries	23,1
From all other countries	29,1

*Note:* \* Within the french population, 26.1% report a poor self assessed health.

4 Data not reported.

### 2.3. Psycho-social resources measures:

Psycho-social resources, which represent a proxy indicator of social integration, can be assessed through the three dimensions usually used in the literature: social capital, social support and sense of control at work.

Social capital is often measured at the individual level through civic engagement, which refers to participation in collective activity such as associations, sporting clubs, a religious community, unions or political parties. Therefore, in this research the study of social capital is part of Putnam's framework which "refers to features of social organisation, such as trust, norms and networks that can improve the efficiency of society by facilitating coordinated action" (Putnam, 1995). For social support, we used a question which addresses whether individuals have suffered from loneliness during their life. Lastly, sense of control at work which refers to an individual's perception towards their position in society is measured via individual autonomy at work. The last indicator of social integration that was used refers to the language spoken during childhood, for which there were three possible responses: "to have spoken in French", "to have spoken in French and another language" or "to have spoken only in language other than French".

Descriptive statistics indicate that the distribution of psycho-social resources is unevenly distributed within the sample (Table 4). In this way, first and second generation migrants are more represented in the categories of not having any civic engagement, to have suffered from loneliness and not to have any sense of control at work in comparison to the French population. Note that more first-generation migrants than second-generation migrants suffer from lack of psycho-social resources. Within both groups of migrants, individuals coming from SEM countries are more numerous not to have participated in a collective activity or not to have autonomy at work than individuals coming from all other countries. Finally and not surprisingly, only 10.3% and 9.4% of first-generation migrants coming from SEM countries and all other countries respectively have spoken French during childhood. This is in contrast to the share of second-generation migrants where this is the case (respectively 40.2% and 56.9% for individuals whose parents have emigrated from SEM countries and all other countries).

Descriptive statistics also indicated that individuals with a poor access to psycho-social resources presented on average a poorer health status (Table 5). Hence, individuals who do not participate in collective activities are more likely to report poor self-assessed health than individuals who participate in some form of collective activity (31.7% versus 20.5%). Similarly, individuals who have suffered from loneliness contrary to people who did not are more likely to have a poor self-assessed health status (47.2% versus 25.7%). Finally, individuals who have spoken French and another language, or solely in a language other than French, are more likely to report poor health than those who have spoken only in French.

**Table 4. Statistics descriptives: Social integration indicators according to migratory status and origin (% col)**

Characteristics		French Population	1st Migrant Generation SEM countries	1st Migrant Generation All other countries	2nd Migrant Generation SEM countries	2nd Migrant Generation All other countries
<b>Civic engagement</b>	Participation	38,1	21,2	24,6	31,4	35,7
	No participation	61,9*	78,8	75,4	68,6	64,4
<b>Loneliness</b>	Yes	7,5	21,2	21,9	14,1	9,8
	No	92,5	78,8	78,1	85,9	90,2
<b>Sense of control at work</b>	Yes	62,1	48,6	55,5	52,4	65,4
	No	38,0	51,4	44,5	47,7	34,6
<b>Spoken language</b>	French language	84,2	10,3	9,4	40,2	56,9
	French & other language	11,2	17,7	9,6	36,1	23,2
	Other language only	4,6	71,9	81,0	23,7	20,0

*Note:* \* Within the French population, 61,9% do not have any civic engagement.

**Table 5. Statistics descriptives: Health status of the sample according to psycho-social resources (% row)**

Characteristics	Poor self assessed health	
<b>Civic engagement</b>	Participation	20,5
	No participation	31,7
<b>Loneliness</b>	Yes	47,2
	No	25,7
<b>Sense of control at work</b>	Yes	21,7
	No	33,2
<b>Spoken language</b>	French language	25,2
	French & other language	30,0
	Other language only	40,2

*Note:* \* Within individuals who do not have any civic engagement, 31,7% report a poor self assessed health.

#### 2.4. Socio-economic variables:

To assess the influence of socio-economic status on an individual's health, educational level, occupation, activity status, income and household composition are used.

Level of educational is measured as follows: without qualification, primary level, first level of secondary school, second level of secondary school, post secondary education and other level of education which includes missing values, foreign diplomas, professional training and other education. There are four occupational statuses: in employment, non-working, retired and unemployed. For our analytical framework we also used the famous French "Socio Professional Category" in which 8 activity statuses are defined: executive (used as reference), agricultural employee, self-employed, intermediary occupations, administrative employee, business employee, skilled worker, unskilled worker, non-working. Income is measured as household income (from all sources of income), divided by the OECD equivalent scale (1 for the first household composition, 0.5 for the second and 0.3 for the third and following one). We created an income quintile and a last category was built which refers to those who did not provide income information. Finally, to assess the household composition we constructed 5 categories: couple with child (used as reference), single, single-parent, childless couple and other household compositions.

As previously stated, the descriptive analysis proves some differences according to migratory statuses and country of origin (Table 6). First-generation migrants have on average more unfavourable socio-economic conditions than the native French born population and this is confirmed when all indicators are considered (educational level, occupation and activity statuses, income or household composition). First-generation migrants are, for instance, more likely not to have any qualifications, to be unemployed or to have a lower income than the native French population. However, socio-economic status is not homogenous within the first migrant generation group. Individuals who have emigrated from SEM countries have a poorer socio-economic situation than those who have emigrated from all other countries. In contrast, the socio-economic situation of second-generation migrants is not always poorer than the native French population. For example, second-generation migrants are more likely to have a post secondary education level than the native French born population but at the same time are more likely to be unskilled workers, unemployed or to have low incomes (1<sup>st</sup> quintile of income). Note that within the second-generation migrant group, individuals whose parents have emigrated from SEM countries have generally a more unfavourable situation.

**Table 6. Statistics descriptives: Socio-economic conditions according to migratory status and origin (% col)**

<b>Characteristics</b>		<b>French Population</b>	<b>1st Migrant Generation SEM countries</b>	<b>1st Migrant Generation All other countries</b>	<b>2nd Migrant Generation SEM countries</b>	<b>2nd Migrant Generation All other countries</b>
<b>Sex</b>	Male	40,5	54,6	40,7	37,3	41,9
	Female	59,5	45,3	59,3	62,7	58,1
<b>Age</b>	Age<30	14,4	12,3	8,3	37,3	14,1
	30<=age<40	18,7	30,1	21,0	30,2	21,2
	40<=age<50	21,5	23,2	21,0	16,0	18,4
	50<=age<65	25,5	23,7	28,6	14,2	27,8
	65<=age<75	10,7	5,9	10,1	1,2	11,9
	age>=75	9,2	4,9	11,0	1,2	6,6
<b>Education level</b>	Without qualification	1,4	11,3	10,5	0,6	0,5
	Primary	18,6	16,3	22,2	5,3	16,2
	1st level of secondary school	33,5	33,5	27,3	39,1	38,7
	2nd level of secondary school	16,7	15,8	16,1	24,3	15,0
	Post secondary education	29,8	23,2	23,9	30,8	29,6
<b>Activity Status</b>	Agricultural employee	4,9	0,0	1,3	0,0	1,8
	Self-employed	5,7	4,9	5,8	3,0	4,5
	Executive	12,4	5,9	9,6	6,5	12,7
	Intermediary occupations	20,8	12,8	13,7	10,7	18,5
	Administrative employee	17,8	8,9	11,4	18,3	21,8
	Business employee	12,4	13,8	22,4	17,8	13,0
	Skilled worker	13,6	21,2	17,9	11,8	16,0
	Unskilled worker	9,2	24,1	14,8	16,6	8,9
	Non-working	3,3	8,4	3,1	15,4	2,9

Table 6. Continued

Characteristics		French Population	1st Migrant Generation SEM countries	1st Migrant Generation All other countries	2nd Migrant Generation SEM countries	2nd Migrant Generation All other countries
<b>Occupation status</b>	In employment	57,4	49,3	54,1	59,8	59,4
	Non-working	9,8	20,7	11,9	22,5	9,1
	Retired	25,0	13,3	22,4	3,6	24,1
	Unemployed	7,8	16,8	11,6	14,2	7,5
<b>Income</b>	1st Quintile	15,2	40,4	11,9	14,8	13,9
	2nd Quintile	16,4	19,2	25,7	30,2	15,5
	3rd Quintile	16,6	12,3	20,6	20,1	17,7
	4th Quintile	18,1	7,4	17,2	13,6	17,5
	5th Quintile	20,0	7,4	11,2	8,9	15,9
	Refus	13,7	13,3	13,4	12,4	19,6
<b>Household composition</b>	Single	19,4	20,7	20,1	10,1	18,0
	Single-parent	7,8	7,9	11,0	13,6	7,8
	Childless couple	29,9	11,3	24,6	17,2	31,0
	Couple with child	40,4	53,2	37,8	54,4	39,0
	Other household composition	2,6	6,9	6,5	4,7	4,1

Note : \* Among French population, 57,4% are active.

## 2.5. Analytic Strategy:

To analyse the link between migration, country of origin and health status, we have run several binary probit regressions with marginal effect aimed at studying at the same time the influence of migratory status and country of origin on the risk of reporting a poor health status.

Suppose that the binary health variable  $\bar{H}$  is the result of a continuous latent health variable  $H_i$ , representing health status in a continuous way. The observed dummy variable  $\bar{H}$  is defined by:

$$\begin{aligned}\bar{H} &= 1 \text{ if } H_i > 0 \\ \bar{H} &= 0 \text{ otherwise}\end{aligned}$$

First we ran a baseline probit analysis to assess the influence of origin ( $\delta_i$ ) on the risk of reporting a poor health status ( $H_i$ ), controlled only by biological dimensions such age and gender ( $D_i$ ). The average of health status in the sample is represented by the constant  $\beta_0$  and the standard error  $e_i$  is assumed to follow a normal distribution.

$$H_i = \beta_0 + \alpha D_i + \rho \delta_i + e_i \quad (\text{Model 1})$$

All socio-economic indicators ( $X_i$ ) were then introduced simultaneously in a second model to analyse the association *ceteris paribus* between self assessed health and origin.

$$H_i = \beta_0 + \alpha D_i + \sigma X_i + \rho \delta_i + e_i \quad (\text{Model 2})$$

These two first models enabled a distinction between the direct effect of migration and the country of origin on health status, from the indirect effect which passes through socio-economic conditions. Through to these models, it is possible to assess the share of social health inequalities that is explained on one hand by biological and material factors and on the other hand by migration and country of origin.

To test further the influence of psycho-social resources on health status, lastly we introduced in a third model indicator representing social integration ( $\psi_i$ ) that is: civic engagement; social support; sense of control at work and language spoken during childhood. This last analysis attempts to assess the share of social health inequalities that is explained by a lack of psycho-social resources and more generally by a lack of social integration in France.

$$H_i = \beta_0 + \alpha D_i + \sigma X_i + \mu \psi_i + \rho \delta_i + e_i \quad (\text{Model 3})$$

Note that coefficients  $\alpha, \sigma, \mu$  and  $\rho$  are estimated by the maximum likelihood methods under the assumption that the residual term  $e_i$  is uncorrelated with the exogenous variable.

These three analyses have been reproduced separately among men and women to test a different impact of origin on a person's health status according to gender. In fact, the determinants of migration are different for men and women. Considering that men more commonly migrate in search of new employment opportunities than women, we may expect stronger health selective migration in males than in females.

Lastly, we performed an analysis in which the two migrant generation groups coming from SEM countries are broken down into two sub-groups: individuals coming from Turkey versus individuals coming from North Africa or the Middle East. Similarly to the first analysis, we replicated the three models (that is a baseline model in which only sex, age and origin are entered, followed by a second model in which socio-economic conditions are then introduced and finally a third model in which social integration proxies are entered next to other control variables).

The goal of this exploratory study was to try to find any relationship between origin and health status and more specially to assess the share of social health inequalities that can be explained by the fact that a migrant emigrated from South-East Mediterranean countries. Is there any association between health and migratory status? Among migratory status, is there any difference in health according to a person's region of origin?

Note that all models have been estimated using ordered probit analyses since our health variable (namely the self-assessed health) was originally a multinomial ordered and dependant variable. In theory, this model enabled us to refine the analysis and to estimate more accurately the influence of migration and country of origin on health across the transition between bad health status and good health status. However, we did not retain this estimation strategy since the consistency assumption test of effects across different categories was rejected. The likelihood ratio test which was performed indicated that slopes were not equal across our five health categories. Therefore, we decided to maintain our dependant variable in a binary health descriptor.

### 3. Findings:

Table 6 presents the results of a probit analysis aimed at studying the individual determinants of health status and migrant health heterogeneity according to their migratory status and their origin.

Model 1, which contains only a control variable of biological factors (age and sex), shows that migratory status has a significant effect on the risk of reporting a poor self-assessed health status (column 1, table 7). First and second generation migrants have a significant higher risk than the native French born population to report a poor health status and this risk is dissimilar among the migrant population. Individuals coming from SEM countries are more likely to be in the poorer health category, whether they belong to the first generation or second group. This result is consistent with previous French studies that show the poor health conditions of the migrant population in France, which contrasts with the “healthy migrant effect” hypothesis (Attias-Donfut & Tessier, 2005; Lert & al., 2007; Jusot & al., 2009). As expected, the probability of reporting a poor health status is higher for women and also increases with age.

The control variable for socio-economic conditions provides different results (model 2). First, the decrease in marginal effects associated with migratory status between model 1 and 2 shows that the poor health status of migrants is partly explained by their more unfavourable socio-economic conditions. In spite of this decrease, first-generation migrants still have a significantly higher risk than the native French population to report poor health status. Even after control for socio-economic conditions, the risk of being in the poorer health category is higher for people who have emigrated from SEM countries (marginal effect equals 0.14 and is significant to the 1% level) than people who have emigrated from all other countries (marginal effect equals 0.07 and is significant to the 5% level)<sup>5</sup>. This result suggests that migration and origin have a detrimental effect that is independent of socio-economic conditions of immigrants in the host country. Among second-generation migrants, only individuals whose parents have emigrated from all other countries but not SEM countries have a significant higher risk than the native French born population to report, *ceteris paribus*, a poor self-assessed health status. Thus, the detrimental effect of migration independently of socio-economic conditions is again observed for this sub-group of second-generation migrants. However, this effect is not verified for second-generation migrants whose parents have emigrated from SEM countries and thus it seems that their poor health status is entirely explained by poor material conditions.

Furthermore, the findings of model 2 confirm the influence of socio-economic conditions on health status proved by previous studies relating to social health inequalities. All socio-

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<sup>5</sup> Note that the equality test of marginal effect has been accepted.

economic variables have a significant effect on health and in the expected way (Goldberg & al., 2002; Cutler, Lleras-Muney & Vogl, 2008). Individuals without any qualifications and those with a primary level of education are more likely to report poorer health status compared to individuals with a post-secondary education level and skilled or unskilled workers compared to executives. Individuals also are more likely to report a poor health status when they are inactive, unemployed or a single parent. Household income has a strongly significant effect on self-assessed health status since it reduces the risk of reporting a poor health status.

Model 3 provides the results of the third analysis where social integration indicators (i.e. psycho-social resources) are introduced into the regression in addition to origin, socio-economic conditions, age and sex. Introducing psycho-social resources into the model substantially modifies the results and especially the influence of a person's country of origin in the explaining health status. Within the first-generation migrants' group, only people who had emigrated from SEM countries had a significant higher risk of reporting a poor health status than the French born population. Hence the native country, and especially being born in SEM countries, generates a detrimental effect on self-assessed health independently of economic conditions and social integration. This result suggests that apart from the effect of socio-economic conditions and social integration, there are still some hidden factors which have a detrimental impact on their health status. Conversely, the effect of having emigrated from countries other than those of the SEM did not remain significant on the risk of reporting a poor health status after control for psycho-social resources. Thus, there is no more significant difference in health status between this sub-group of first generation migrants and the native French born population. This suggests that the poor self-assessed health of migrants from those countries is mainly explained by their poor access to psycho-social resources, in addition to their disadvantaged socio-economic conditions. Despite a slight decrease in marginal effects, the results concerning the second-generation migrants did not change after the introduction of psycho-social resources. The self-assessed health status of the second-generation migrants' group whose parents had emigrated from SEM countries is not significantly different from the native French born population whereas those whose parents have emigrated from other countries have a higher risk of being in a poorer health status than the French born population.

All social integration indicators are strongly associated with the risk of reporting a poor self-assessed health status. Having spoken in French and another language during childhood in comparison to having spoken only in French increases the risk of reporting a poor health status. We did not find any significant effect of having spoken only in another language. Indeed, there is no significant difference between individuals who have spoken only in another language and those who have spoken in French. In addition there is a clear association between the three psycho-social resources and the probability of an individual declaring a poor self-assessed health status. Hence, individuals who do not have any collective

participation, who disagree that they have autonomy in their work and who have suffered from loneliness, have a higher risk to be in the poorer self-assessed health category (marginal effects significantly different from 0 at the 1% level). These results confirm previous literature on social health inequalities (Sirven, 2006; Folland, 2007; Islam, 2007; Jusot & al., 2008).

The analysis of the determinants of poor access to psycho-social resources<sup>6</sup> confirms also the contribution of this dimension to social health inequalities related to migratory status. Actually, socio-economic conditions, migratory status and origin play a considerable role in social integration. Hence, individuals with lower levels of education, income and more generally unfavourable socio-economic conditions suffer on average from less access to psycho-social resources. Similarly, the migrant population tends to have less access to these resources and is less likely to be socially integrated into society than the native French born population. For example, migrants participate significantly less often and frequently have less emotional and social support.

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<sup>6</sup> Findings not reported.

**Table 7. Influence of migratory status, origin and social integration on the risk to report a poor health status**

Characteristics	Poor self assessed health			Poor self assessed health			Poor self assessed health		
	Model 1			Model 2			Model 3		
	Mfx	p-value		Mfx	p-value		Mfx	p-value	
<i>Male</i>	<i>Ref</i>			<i>Ref</i>			<i>Ref</i>		
Female	0,03	0,00	**	0,00	0,91		0,00	0,95	
<i>Age</i>	<i>Ref</i>			<i>Ref</i>			<i>Ref</i>		
Age	0,01	0,00	***	0,01	0,00	***	0,01	0,00	***
<i>Migratory status: French</i>	<i>Ref</i>			<i>Ref</i>			<i>Ref</i>		
First migrant generation									
From SEM countries	0,25	0,00	***	0,14	0,00	***	0,10	0,01	**
From all other countries	0,12	0,00	***	0,07	0,01	**	0,03	0,29	
Second migrant generation									
From SEM countries	0,11	0,02	**	0,05	0,25		0,02	0,56	
From all other countries	0,04	0,05	*	0,05	0,03	**	0,04	0,08	*
<i>Post-secondary education</i>				<i>Ref</i>			<i>Ref</i>		
Without certificate				0,19	0,00	**	0,16	0,00	**
Primary				0,09	0,00	***	0,07	0,00	**
1st level of secondary school				0,05	0,01	**	0,03	0,06	*
2nd level of secondary school				0,01	0,46		0,01	0,80	
Other level of education				0,05	0,54		0,03	0,72	
<i>SES: Executive</i>				<i>Ref</i>			<i>Ref</i>		
Agricultural employee				0,01	0,72		0,02	0,52	
Self-employed				0,00	0,99		0,01	0,84	
Intermediary occupations				0,01	0,70		0,01	0,77	
Administrative employee				0,07	0,01	**	0,05	0,05	**
Business employee				0,08	0,01	**	0,06	0,04	**
Skilled worker				0,07	0,02	**	0,05	0,06	*
Unskilled worker				0,09	0,01	**	0,06	0,05	*
Non-working				0,00	0,93		0,00	0,92	
<i>Occupation : Actif</i>				<i>Ref</i>			<i>Ref</i>		
Non-working				0,19	0,00	***	0,17	0,00	***
Retired				0,02	0,41		0,02	0,37	
Unemployed				0,16	0,00	***	0,14	0,00	***
<i>Income: 5th quintile</i>				<i>Ref</i>			<i>Ref</i>		
1th quintile				0,18	0,00	***	0,16	0,00	***
2nd quintile				0,11	0,00	***	0,10	0,00	***
3rd quintile				0,05	0,03	**	0,04	0,06	*
4th quintile				0,05	0,03	**	0,04	0,06	*
Unknown				0,06	0,01	**	0,05	0,04	**
<i>Household composition: Couple with child</i>				<i>Ref</i>			<i>Ref</i>		
To be alone				0,06	0,00	**	0,05	0,00	**
Single-parent				0,07	0,00	**	0,06	0,01	**
Childless couple				0,04	0,02	**	0,04	0,02	**
Other household composition				0,06	0,10	*	0,04	0,23	
<i>French language</i>							<i>Ref</i>		
French and other language							0,03	0,07	*
Other language							0,02	0,33	
<i>Collective Praticipation</i>							<i>Ref</i>		
No collective participation							0,05	0,00	***
<i>To have autonomy at work</i>							<i>Ref</i>		
To have no autonomy at work							0,04	0,00	***
Not applicable							0,03	0,19	
<i>To not have suffered from loneliness</i>							<i>Ref</i>		
To have suffered from loneliness							0,14	0,00	***
No answer							0,00	0,89	
N	6555			6555			6555		
Pseudo R <sup>2</sup> (Mc Faden)	0,12	0,00	***	0,19	0,00	***	0,20	0,00	***
Log L	-3383,7			-3132,7			-3092,5		

Legend : \* p<0,1; \*\* p<0,05; \*\*\* p<0,01

Conducting separate analyses for both sexes we found different associations between migration, origin and health status (Table 8 & 9). The first column of both tables shows that migratory status does not work identically for men and women after control for biological factors. Among women, first and second generation migrants have a higher risk to be in a poorer health category than the native French born population (Table 8) whereas this risk is only higher for first-generation migrants among men (Table 9). In both genders, the risk is higher for people coming from SEM countries than for those coming from all other countries, which is consistent with the previous analysis (Table 7).

The control for socio-economic conditions reveals some interesting patterns, especially for men (column 2 of Tables 8 & 9). While all migratory status remains significantly associated with a poor health status for women, this is not observed for men. Indeed, there is no significant difference in health status between the migrant population (whether they belong to the first or second generation) and the native French born population. These results suggest that the poor health status of male immigrant population is entirely explained by their more unfavourable socio-economic conditions in France. For women however, marginal effects associated with migratory status are still significant which suggests a detrimental effect of migration on health independently of socio-economic conditions. Once again, for first and second generation migrants the risk of reporting a poor health status seems higher for women coming from SEM countries (marginal effects equal to 0.22 and 0.10 and is significant at the 1% and 10% level respectively). Note that the effect of socio-economic conditions on health status is quite similar among men and women. The only differences are that education is more strongly associated with a women health status than to men, whereas socio-economic position is not associated with health status in women but is in men. Apart from the occupation's modality "retired" which is negatively associated with a poor health status for men, we found associations of the same sign and magnitude.

Introducing social integration indicators into the model (column 3 of Table 8 & 9) considerably affected the results concerning the influence of origin in the explanation of health status but only for women. Among women, only first-generation migrants from SEM countries had a higher risk than the native French born population to be in the poorer health category (marginal effect equals to 0.15 and significant at 5%). This suggests that if socio-economic conditions and social integration largely explain the poor health status of the female migrant population, there is still a hazardous effect on health of being born in a SEM country. However, with regard to men there are still no significant differences between migrant population and French population, even if social integration is strongly associated to health status in male population.

The influence of socio-economic conditions on health is, in general terms, quite similar even after control for social integration indicators and for both analyses we find again the same associations between social integration indicators and health status.

**Table 8. Influence of migratory status, origin and social integration on the risk to report a poor health status (Women only)**

Characteristics	Poor self assessed health			Poor self assessed health			Poor self assessed health		
	Model 1			Model 2			Model 3		
	Mfx	p-value		Mfx	p-value		Mfx	p-value	
<i>Age</i>	<i>Ref</i>			<i>Ref</i>			<i>Ref</i>		
Age	0,01	0,00	***	0,01	0,00	***	0,01	0,00	***
<i>Migratory status: French</i>	<i>Ref</i>			<i>Ref</i>			<i>Ref</i>		
First migrant generation									
From SEM countries	0,30	0,00	***	0,22	0,00	***	0,15	0,01	**
From all other countries	0,15	0,00	***	0,11	0,00	**	0,05	0,18	
Second migrant generation									
From SEM countries	0,15	0,00	**	0,10	0,05	*	0,06	0,23	
From all other countries	0,06	0,05	**	0,06	0,03	**	0,05	0,10	
<i>Post-secondary education</i>				<i>Ref</i>			<i>Ref</i>		
Without certificate				0,21	0,00	**	0,17	0,02	**
Primary				0,15	0,00	***	0,12	0,00	***
1st level of secondary school				0,07	0,01	**	0,05	0,03	**
2nd level of secondary school				0,04	0,16		0,02	0,36	
Other level of education				0,10	0,33		0,08	0,45	
<i>SES: Executive</i>				<i>Ref</i>			<i>Ref</i>		
Agricultural employee				0,00	0,96		0,01	0,88	
Self-employed				-0,01	0,84		0,00	0,98	
Intermediary occupations				0,00	0,96		0,00	0,96	
Administrative employee				0,06	0,13		0,04	0,27	
Business employee				0,07	0,09	*	0,05	0,21	
Skilled worker				0,06	0,20		0,05	0,29	
Unskilled worker				0,07	0,12		0,05	0,29	
Non-working				0,02	0,69		0,02	0,70	
<i>Occupation : Actif</i>				<i>Ref</i>			<i>Ref</i>		
Non-working				0,15	0,00	***	0,14	0,00	***
Retired				0,05	0,06	*	0,05	0,05	*
Unemployed				0,17	0,00	***	0,15	0,00	***
<i>Income: 5th quintile</i>				<i>Ref</i>			<i>Ref</i>		
1th quintile				0,14	0,00	***	0,13	0,00	***
2nd quintile				0,08	0,01	**	0,06	0,03	**
3rd quintile				0,03	0,36		0,02	0,54	
4th quintile				0,06	0,02	**	0,06	0,05	**
Unknown				0,03	0,34		0,02	0,51	
<i>Household composition: Couple with child</i>				<i>Ref</i>			<i>Ref</i>		
To be alone				0,07	0,00	**	0,07	0,01	**
Single-parent				0,05	0,04	**	0,05	0,09	*
Childless couple				0,02	0,46		0,01	0,50	
Other household composition				0,05	0,22		0,03	0,42	
<i>French language</i>							<i>Ref</i>		
French and other language							0,05	0,03	**
Other language							0,03	0,32	
<i>Collective Participation</i>							<i>Ref</i>		
No collective participation							0,06	0,00	***
<i>To have autonomy at work</i>							<i>Ref</i>		
To have no autonomy at work							0,04	0,02	**
Not applicable							0,01	0,86	
<i>To not have suffered from loneliness</i>							<i>Ref</i>		
To have suffered from loneliness							0,16	0,00	***
No answer							0,01	0,73	
N	3885			3885			3885		
Pseudo R <sup>2</sup> (Mc Faden)	0,12	0,00	***	0,18	0,00	***	0,19		***
Log L	-2046,3			-1900,3			-1870,4		

Legend : \* p<0,1; \*\* p<0,05; \*\*\* p<0,01

**Table 9. Influence of migratory status, origin and social integration on the risk to report a poor health status (Men only)**

Characteristics	Poor self assessed health			Poor self assessed health			Poor self assessed health		
	Model 1			Model 2			Model 3		
	Mfx	p-value		Mfx	p-value		Mfx	p-value	
<i>Age</i>	<i>Ref</i>			<i>Ref</i>			<i>Ref</i>		
Age	0,01	0,00	***	0,01	0,00	***	0,01	0,00	***
<i>Migratory status: French</i>	<i>Ref</i>			<i>Ref</i>			<i>Ref</i>		
First migrant generation									
From SEM countries	0,20	0,00	***	0,07	0,13		0,05	0,34	
From all other countries	0,08	0,04	**	0,02	0,69		0,00	0,99	
Second migrant generation									
From SEM countries	0,00	0,97		-0,05	0,44		-0,06	0,39	
From all other countries	0,02	0,56		0,02	0,44		0,02	0,52	
<i>Post-secondary education</i>				<i>Ref</i>			<i>Ref</i>		
Without certificate				0,20	0,02	**	0,17	0,05	**
Primary				0,03	0,34		0,02	0,53	
1st level of secondary school				0,03	0,30		0,02	0,45	
2nd level of secondary school				-0,01	0,71		-0,02	0,55	
Other level of education				0,02	0,88		0,01	0,95	
<i>SES: Executive</i>				<i>Ref</i>			<i>Ref</i>		
Agricultural employee				0,02	0,67		0,03	0,49	
Self-employed				0,01	0,85		0,02	0,70	
Intermediary occupations				0,02	0,61		0,02	0,63	
Administrative employee				0,10	0,04	**	0,08	0,08	*
Business employee				0,06	0,37		0,04	0,50	
Skilled worker				0,08	0,02	**	0,07	0,06	*
Unskilled worker				0,11	0,01	**	0,08	0,07	*
Non-working				-0,11	0,11		-0,14	0,03	**
<i>Occupation : Actif</i>				<i>Ref</i>			<i>Ref</i>		
Non-working				0,38	0,00	***	0,36	0,00	***
Retired				-0,06	0,06	*	-0,06	0,07	*
Unemployed				0,13	0,00	***	0,11	0,00	**
<i>Income: 5th quintile</i>				<i>Ref</i>			<i>Ref</i>		
1th quintile				0,22	0,00	***	0,20	0,00	***
2nd quintile				0,14	0,00	***	0,13	0,00	***
3rd quintile				0,08	0,01	**	0,07	0,03	**
4th quintile				0,01	0,64		0,01	0,80	
Unknown				0,10	0,01	**	0,09	0,02	**
<i>Household composition: Couple with child</i>				<i>Ref</i>			<i>Ref</i>		
To be alone				0,06	0,02	**	0,05	0,07	*
Single-parent				0,12	0,01	**	0,10	0,03	**
Childless couple				0,07	0,00	**	0,07	0,01	**
Other household composition				0,08	0,19		0,07	0,23	
<i>French language</i>							<i>Ref</i>		
French and other language							0,01	0,82	
Other language							0,02	0,63	
<i>Collective Participation</i>							<i>Ref</i>		
No collective participation							0,04	0,04	**
<i>To have autonomy at work</i>							<i>Ref</i>		
To have no autonomy at work							0,05	0,01	**
Not applicable							0,17	0,00	**
<i>To not have suffered from loneliness</i>							<i>Ref</i>		
To have suffered from loneliness							0,09	0,01	**
No answer							-0,04	0,32	
N	2670			2670			2670		
Pseudo R <sup>2</sup> (Mc Faden)	0,14	0,00	***	0,23	0,00	***	0,23	0,00	***
Log L	-1332,8			-1199,6			-1185,6		

Legend :\* p<0,1; \*\* p<0,05; \*\*\* p<0,01

The only difference is that the language spoken during childhood influences only women's health status. Otherwise, the lack of civic engagement, no sense of control at work and no social support increase significantly the risk to be in the poorer health category for both women and men.

The last analysis (Table 10) was performed by breaking down the two migrant generation groups coming from SEM countries into two sub-groups: individuals coming from Turkey versus those coming from North Africa or the Middle East. Model 1 is consistent with results previously shown since first and second generation migrants have a higher risk of being in poorer health status after control for biological factors. This risk is again dissimilar among the migrant population. Within both migrant generation groups, the risk to report a poorer health status is higher for individuals coming from SEM countries. Moreover, among both groups the effect is strongest for those coming from Turkey. After control for socio-economic conditions, first-generation migrants still have a higher risk than the native French born population to report poorer health status. Within this group, the estimated risk of poorer health status is higher for people who have emigrated from Turkey than for people who had emigrated from North Africa or the Middle East and finally for those who had emigrated from all other countries. The effect associated with being born in Turkey is therefore the strongest one (marginal effect equal to 0.24), even though it is only significant at the 10% level.<sup>7</sup> Among the second-generation migrants group, only people whose parents have emigrated from Turkey and from all other countries (that is not SEM countries) still have a higher risk of being in the poorer health status category. The decrease in marginal effects associated with migratory status between model 1 and 2 shows that socio-economic conditions partly explain the poorer health status of this group of the migrant population. Unlike the poor health status of second-generation migrants whose parents have emigrated from North Africa or the Middle East, this seems to be entirely explained by socio-economic factors.

When social integration indicators are introduced into the model (model 3), the results are partly altered. Among the first-generation migrants, only people who have emigrated from North Africa and Middle East still have a higher risk of reporting a poorer health status than the native French born population. Therefore there are no more differences between individuals who have emigrated from Turkey or from all other countries and the French population regarding self-assessed health. These results confirm that a lack of social integration and poor socio-economic conditions largely explain the poor health status of individuals who have emigrated from Turkey or from all other countries. Even so, there is a detrimental effect of migration for those who have emigrated from North Africa or the Middle East which is independent of socio-economic conditions or social integration. Findings concerning the second migrant generation are similar to those of model 2, even after control for psycho-social resources. Hence, only people whose parents have emigrated from Turkey

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<sup>7</sup> Due to the sample size of this migrant population, we suspect a statistical robustness problem.

and all other countries have a higher risk of reporting a poor health status. The slight decrease in coefficient tends to show that social integration explains only a small part of health status for these sub-groups of migrants.

Note that findings concerning the impact of socio-economic conditions and psycho-social resources are similar to the first analysis (Table7). Individuals without any qualifications, skilled or unskilled workers, non-worker, unemployed or single parents for instance also have a higher risk to be in the poorer health category. Household income reduces also the probability of reporting a poor health status. As previously stated, all social integration indicators are associated with the risk of poor health status. Individuals who do not have any collective participation, who disagree that they have autonomy at work and who have suffered from loneliness are more likely to be in the poorer self-assessed health category.

**Table 10. Influence of migratory status, origin and social integration on the risk to report a poor health status  
Breaking down migrants coming from SEM countries: Turkey versus North Africa or Middle East**

Characteristics	Poor self assessed health			Poor self assessed health			Poor self assessed health		
	Model 1			Model 2			Model 3		
	Mfx	p-value		Mfx	p-value		Mfx	p-value	
<i>Male</i>	<i>Ref</i>			<i>Ref</i>			<i>Ref</i>		
Female	0,03	0,00	**	0,00	0,91		0,00	0,95	
<i>Age</i>	<i>Ref</i>			<i>Ref</i>			<i>Ref</i>		
Age	0,01	0,00	***	0,01	0,00	***	0,01	0,00	***
<i>Migratory status: French</i>	<i>Ref</i>			<i>Ref</i>			<i>Ref</i>		
<b>First migrant generation</b>									
<i>From SEM countries</i>									
Turkey	0,40	0,00	**	0,24	0,08	*	0,21	0,13	
North Africa and Middle East	0,24	0,00	***	0,13	0,00	**	0,09	0,02	**
<i>From all other countries</i>	0,12	0,00	***	0,07	0,01	**	0,03	0,26	
<b>Second migrant generation</b>									
<i>From SEM countries</i>									
Turkey	0,37	0,01	**	0,30	0,04	**	0,24	0,10	*
North Africa and Middle East	0,08	0,09	*	0,02	0,66		0,00	0,99	
<i>From all other countries</i>	0,04	0,05	*	0,05	0,03	**	0,04	0,07	*
<i>Post-secondary education</i>									
Without certificate				<i>Ref</i>			<i>Ref</i>		
Primary				0,19	0,00	**	0,16	0,00	**
1st level of secondary school				0,09	0,00	***	0,07	0,00	**
2nd level of secondary school				0,05	0,01	**	0,03	0,06	*
Other level of education				0,02	0,45		0,01	0,80	
				0,05	0,54		0,03	0,71	
<i>SES: Executive</i>									
Agricultural employee				<i>Ref</i>			<i>Ref</i>		
Self-employed				0,01	0,72		0,02	0,52	
Intermediary occupations				0,00	0,98		0,01	0,86	
Administrative employee				0,01	0,69		0,01	0,76	
Business employee				0,07	0,01	**	0,06	0,04	**
Skilled worker				0,08	0,01	**	0,06	0,04	**
Unskilled worker				0,07	0,02	**	0,05	0,06	*
Non-working				0,08	0,01	**	0,06	0,06	*
				0,01	0,90		0,00	0,95	
<i>Occupation : Actif</i>									
Non-working				<i>Ref</i>			<i>Ref</i>		
Retired				0,19	0,00	***	0,17	0,00	***
Unemployed				0,02	0,43		0,02	0,39	
				0,16	0,00	***	0,14	0,00	***
<i>Income: 5th quintile</i>									
1th quintile				<i>Ref</i>			<i>Ref</i>		
2nd quintile				0,18	0,00	***	0,16	0,00	***
3rd quintile				0,11	0,00	***	0,10	0,00	***
4th quintile				0,05	0,03	**	0,04	0,06	*
Unknown				0,05	0,03	**	0,04	0,06	*
				0,06	0,01	**	0,05	0,04	**
<i>Household composition: Couple with child</i>									
To be alone				<i>Ref</i>			<i>Ref</i>		
Single-parent				0,06	0,00	**	0,05	0,00	**
Childless couple				0,07	0,00	**	0,06	0,01	**
Other household composition				0,04	0,02	**	0,04	0,03	**
				0,06	0,10	*	0,04	0,23	
<i>French language</i>									
French and other language							<i>Ref</i>		
Other language							0,03	0,07	*
							0,02	0,40	
<i>Collective Praticipation</i>									
No collective participation				<i>Ref</i>			<i>Ref</i>		
To have autonomy at work							0,05	0,00	***
To have no autonomy at work							<i>Ref</i>		
Not applicable							0,04	0,00	***
							0,03	0,18	
<i>To not have suffered from loneliness</i>									
To have suffered from loneliness							<i>Ref</i>		
No answer							0,14	0,00	***
							0,00	0,85	
N	6555			6555			6555		
Pseudo R <sup>2</sup> (Mc Faden)	0,12	0,00	***	0,19	0,00	***	0,20		***
Log L	-3381,0			-3130,6			-3090,7		

Legend :\* p<0,1; \*\* p<0,05; \*\*\* p<0,01

#### **4. Conclusion:**

This study provides empirical evidence of the link between migratory status, country of origin and health status, controlling for other usual health determinants, such as age, gender, socio-economic conditions and psycho-social resources. Our results are consistent with several previous studies since we have shown that the migrant population (first and second generation) are more likely to have a poorer health status than the native French born population (Attias-Donfut & Tessier, 2005 ; Lert & al., 2007 ; Jusot & al., 2009). The “healthy migrant effect” is therefore not supported in France and people who are descendents of immigrants are dissimilar to native French born population with regards to health status.

Introducing origin into the analysis enables us to confirm the health heterogeneity within both groups of migrants. The effect of migratory status is actually different and not homogeneous among native countries. Without any control for socio-economic condition or social integration indicators, individuals coming from SEM countries are more likely to report a poor health status than the native French born population (whether they belong to the first generation group or the second one) and this risk seems higher for individuals coming from Turkey.

Among first-generation migrants, there is a detrimental effect of being born in North Africa or the Middle East on health which is independent of their economic situations and their social integration. Conversely, for second-generation migrants we have shown that the effect of migration is adverse for those whose parents have emigrated from Turkey and from countries other than the SEM countries. These results suggest that some other hidden factors may explain the health status of these subgroups of migrant population. These factors may be related, for instance, to cultural habits or to understanding the French health care system.

Apart from these subgroups of the migrant population, our findings indicate that socio-economic situation, along with social integration; largely explains the health of the immigrant population as it was proven by previous studies (Newbold & Danforth, 2003; Attias-Donfut & Tessier, 2005; Jusot & al, 2009). These results are not surprising since a number of studies have shown that an immigrant’s economic conditions are on average poorer than native population’s. The immigrant unemployment rate for instance is double the native French born population and a large part of this sub-population in France is unskilled workers.

When we replicated the analyses separately among men and women, we found different associations between origin and health. Migratory status and origin do not have the same effect on men or women. The poor health status observed for each migratory status with regard to men is entirely explained by their more unfavourable socio-economic conditions. Unlike among women, health status is not entirely explained by socio-economic conditions but also by social integration and similarly we found that migration and origin had a

detrimental effect on first-generation migrant women who had emigrated from SEM countries. These results confirm that migration among the male population is mainly motivated by the search for better employment opportunities and that is why their health status is more related to socio-economic conditions. On average, they have less access to employment and poorer working conditions than the native French born male population.

Our empirical results corroborate previous studies as we have also shown that psycho-social resources are strongly associated with health status (Sirven, 2006; Folland, 2007; Islam, 2007; Jusot & al., 2008). A lack of civic engagement, social support or autonomy at work is associated with the probability of reporting a poorer health status. Furthermore, it seems that access to these resources is uneven across the population and strongly influenced by socio-economic conditions, migratory status and origin. Therefore, further investigations should prove the causal pathway between socio-economic conditions, access to psycho-social resources and health of the migrant population for the definition of relevant public health policies. Indeed, discrimination based on ethnicity or immigrant status may be an important factor of unequal access to psycho-social resources in France and could potentially explain the poor health status of this sub-group within the population.

However, our research suffers from some limitations. Firstly, our sample includes solely the immigrant population who belong to ordinary households. The data does not permit us to analyse the marginalised or illegal migrant population and in this way, we may have overestimated the general health status of the migrant population. Additionally, the use of self-assessed health to measure health status could be criticised as this variable may suffer from individual reporting heterogeneity (Bago d'Uva & al. 2008) and its comparability among the native and immigrant populations may be questioned. Despite its subjectivity, this indicator has been found to be a good predictor of mortality (Idler & Benyamini, 1997) and several studies have validated its utilisation among ethnic groups (Chandola & al., 2000; Molines & al., 2000; Jenkinson & al., 2001).

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