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Health and Ethnicity in the Brussels region

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HEALTH AND ETHNICITY IN THE BRUSSELS REGION

Ofra Anson

1. Introduction

Health inequalities are present in all societies. In every instance individuals differ in their health status, health behavior and risks, and their accessibility to health services. Equality in health can not be achieved on the individual level, and the call for 'Health for All in 2000' should be interpreted in terms of equity rather than in terms of equality (Shuval, 1992). The important question which concerns health scientists and policy makers is whether health inequalities and inequity in the distribution and the accessibility to the available health services are patterned by social characteristics such as social class, gender, age, race, or ethnicity. It is to this question that we addressed in this report, focusing on ethnic groups in the Brussels region.

2. Data sources and the characteristics of Brussels' population

Data were taken from the national Health Interview Survey, conducted in Belgium during 1997. A the multi-stage stratified sampling procedure was employed to ensure, as much as possible, that the sample will represent the population of the three regions of Belgium - the Flemish, the Walloon and the Brussels region (Quataert et al, 1997). The data were collected using a closed questionnaire, with one adult member of the household personally interviewed while other family members filled a self-administered questionnaire.

2.1 The Brussels region sample

In the national Health Interview Survey of 1997 data were collected from 3,323 person residing in Brussels region, 1,615 men and 1,708 women. Of these, 2,323 Belgians, and the rest were either born outside of Belgium or had a foreign nationality. The distribution of the non-Belgians is presented in Table 1. Comparing this distribution with the 1991 Census data (Eggerickx et al, 1998) indicates that the sample is representative of the major ethnic groups in the Brussels region population: 69.9% Belgians, 10.7% Moroccans, 7.6% immigrants from Southern European countries, 5.3% North-American and Western Europeans, and 2.5% Turks.

Nevertheless, this data allow to compare the health status, health risks, and the utilization of health services of these five groups only. The rationale for collapsing Southern Europeans into one group and North Americans and Western Europeans into another group in the following analyses is twofold: first, despite cultural diversity, the countries included in each of these categories share quite similar level of economic development, an important health predictor. Second, all societies are characterized by a considerable degree of cultural heterogeneity, such as the distinction between rural and urban dwellers, migrants, religious observance, etc.

2.2 Socio-demographic background

The most consistent finding in epidemiology and medical sociology is that age, sex, and socio-economic status are strongly related to health status, health behavior, accessibility

to health services and its patterns of utilization. These characteristics need to be considered when the health and the health-related behavior of different ethnic groups are compared, and when health education programs and health services are planned.

In Brussels, a considerable variation in the socio-demographic characteristics of persons of different ethnic origin who participated in the Health Interview Survey were observed. First, Moroccan and Turkish men and women were significantly younger than any other ethnic group, while Belgian, North American, and Canadian men and women were significantly older than the other ethnic groups (Table 2). Persons of Southern European origin were in between these two extremes. In fact, almost one-quarter of the Moroccans and one-third of the Turks in the survey were under 15 years of age (Figure 1).

Second, as has been reported in previous studies (Lesthaeghe et al, 2000), there are dramatic differences between the socio-economic status of the different ethnic group residing in Brussels. Persons from North America and Western Europe have attained the highest level of education, slightly higher than that of persons from Belgian origin (Figure 2). The level of education declines steadily as we move to those of Southern European countries and Morocco, and the lowest education was obtained by the Turks. This is true for men and for women, but in all ethnic groups the highest diploma obtained by women was lower than that of men.

Occupational status is closely linked to the level of education, to opportunities in the labor force, and, thus, to employment patterns. The highest occupation held by over one in five Moroccan and two in three Turkish family members is skilled or unskilled manual worker (Table 3). With the increase in the share of white collar jobs in the occupational structure of industrial countries, the employment opportunities of blue-collar workers decrease.

Indeed, there are marked ethnic differences in patterns of labor force participation of men and women of different ethnic origin (Table 4). North Americans and Western Europeans of both sexes are more likely to be employed, followed by Belgians and Turks. Moroccan men, and Moroccan women in particular, are least likely to be in the paid labor force. Moreover, as has been shown in previous studies, Moroccans and Turks are concentrated in lower-prestige occupations compared with Belgians or immigrant from Western Europe and North America.

Of those not employed at the time they were interviewed, the majority of Belgian men and women were retired, while half of the Moroccan and Turk men and one third of the men of Southern European origin were unemployed (Figure 3). Among the women in the sample, unemployment rates were lower among Belgian women, and non-Belgian women were 2-4 times more likely to be full-time housewives than their Belgian counterparts.

Finally, differences in education and employment patterns result in differences in standard of living. North American and Western Europeans residing in Brussels have the highest income, Moroccans and Turks have the lowest income (Figure 4). Belgians and persons from Southern European countries are in between these extremes.

2.3 Mode of analysis

The size of the different ethnic groups in the survey, combined with the diversity in their health-relevant socio-demographic characteristics, seriously limits the analysis of health differentials and health needs of the Brussels population. The data do not allow us to extract reliable information on specific risks groups, such as children during their first year of life or the elderly. The lack of data is particularly disturbing regarding the Turkish residents in Brussels (and in all Belgium). Their social characteristics, both as reported above and in previous studies, expose them to health risks which may not be detected in the following analysis due to the small number of participants in general and in the most vulnerable ages in particular.

In the analyses that follows we shall focus on six age groups, each characterized by special health risks and needs: pre-school children, under five years of age; school children (5-14 years old); teenagers and young adults (15-24 years old); adults in the reproductive and productive stage of the life cycle (25-44 years old); older adults (45-64 years of age); and the elderly (65+). For each age group we shall look for ethnic differences in health status, health risks, and patterns of utilization of health services. We will first search for crude ethnic differences within each age group, than we will explore the degree to which the differences observed are related to sex, income, and level of education as much as allowed by the data available.

3. The health of preschool children

Two hundred and eight children under the age of five participated in the study (Table 5). Given the small number of the non-Belgian children in the sample, all findings should be cautiously interpreted, and used as a suggestions for further investigation.

3.1 Health status

Data on the health status of children, that is, disability, chronic health conditions, and recent acute health episodes was not available for over 20% of the children (for 46 children on disability, for 44 children on chronic conditions, and for 78 children regarding acute conditions). More alarming is the lack of data for half of the Moroccan and Turkish children, the two groups for which their socio-economic status puts them in higher health-risk group. Of those for whom data was available, there were no significant ethnic differences on health status.

3.2 Health risks

The most important finding in this section was that the growth of children varies by ethnicity (Figure 5). Though there were no ethnic differences in the height of children after controlling for age and sex, there was a considerable and statistically significant variation in Body Mass Index. Moroccan children are more likely to be overweight: 18.8% of them met the criteria of childhood obesity, compared with 0.9% among children of Belgian origin. In many cultures, body fat is perceived as a sign of good health, especially among children. Yet, obesity in childhood is not only associated with obesity in adulthood, but also with early cardio-vascular morbidity and diabetes. No less alarming is underweight, observed among 3 (27.3%) of the North American-

Western European children, and in one of the five Turkish children studied. Are North American-Western European mothers more concerned about the risks of overweight?

We could not find an explanation for the variation in body mass by looking at patterns of food consumption of the five groups. The preschool children who were covered in the National Health Survey in Brussels seem to have very similar diet and eating habits. This lack of variation could be the result of two factors. The first has to do with the small sample size and the high frequency of missing information that failed to capture the full range the diversity in diet. The second explanation has to do with the 'social desirability' effect, which could increase the tendency of mothers to report providing their children with the 'correct' diet and eating patterns, in order to present themselves as 'good mothers'.

3.3 Utilization of health services

All the preschool children in the study had medical insurance, two of the Moroccan children relied on 'pay desk for the needy'. However, 43% did not have a regular primary care physician: 35% to 40% of Belgian, Moroccan, and Turk children, but 73% of the North American-Western European children, and none of the Southern Europe children had a regular primary care provider. It is worth noting that a regular primary care physician is not only important for the quality of care, but also considered to have an important function in cost containment.

However, 46 children had visited a general practitioner during the two months before the survey took place. Inconsistent with the health status (chronic conditions and acute episodes) of the children in Brussels, 45% of them also visited a specialist during this period, 40% of Belgians and Turks, 60% to 70% of the other ethnic groups. Of these, the great majority (over 80%) turned to a pediatrician. It seems that mothers, and non-Belgian mothers in particular, prefer their children's health needs to be taken care of by a pediatrician rather than by a general practitioner.

No statistically significant ethnic differences were observed regarding the proportion of children hospitalized during the year before the interview. Of all the children surveyed, 17.6% were admitted to a hospital during this period, 14.9% of the Belgian children, and 36.4% of North American-Western European children. Since children of the later group are least likely to have a regular general practitioner, it is possible that the hospital replaces primary care services.

Only four children visited a dentist during the two months prior to the interview, only six to preventive care. Giving the recommended behavior of a bi-annual dentist checkup, this seems to be a rather low figure. In some cultures, dental care at this age is considered redundant, as children are likely to lose their first milk-teeth. Yet the data available did not allow to explore whether dental care is related to age or ethnicity.

4. The health of school children

Three hundred and seventy nine school children, ages 5-14, participated in the study, 265 Belgians, 55 Moroccans, 25 Southern Europe, 17 North American-Western European, and 17 Turks (Table 6). Again, the small number of non-Belgian children

seriously obstructs the possibility to reach reliable conclusions and recommendations, particularly with regard to the last three ethnic groups.

4.1 Health status

Almost one-quarter of the children surveyed reported suffering from at least one chronic health problem during the year prior to the interview, and 3.4% reported temporary health problem during the two weeks preceding the interview. Ethnic differences were found regarding chronic morbidity, the highest proportion of chronically ill was observed among Moroccan children (46.4%), the lowest among children from Southern Europe countries (8.3%). In the other ethnic groups, a chronic health problem was reported for 33.3% of children from North American-Western European origin, 22.2% of the Belgian children, 11.1% of the Turks.

The degree to which chronic health problems caused disability also varies by ethnicity. None of the North American-Western European children was impaired by his/her chronic health problem, but chronic disease interfered with the regular activity of all children of Turk and Southern European nationality, 86% of the Moroccans, and 42% of the Belgian children. At the same time, 25% of the chronically ill Southern European children, 15% of the Belgians and 14% of the Moroccans were officially recognized as handicapped.

The discrepancy between self- or family-defined disability and the official recognition of a handicap can stem from three possible sources. First, since health and illness behavior are culturally defined, families of different cultural backgrounds perceive the daily functioning consequence of their children's ill-health differently. Underestimation of the ability of a chronically ill child could lead to under-performance which may hamper the child's opportunities later in life, and thus deserve special attention. Second, parents of different ethnic origin have differential access to social services, and are thus presented with unequal prospects to benefit from the services and resources allocated for persons with special needs. Finally, it is possible that social services are more inclined to recognize handicaps in some ethnic groups than in others, as a result of communication difficulties or the penetration of negative attitudes, stereotypes, and stigmas from the broader society into the professional arena. The data available to us do not allow to distinguish between these social processes, each of which requiring specific intervention.

4.2 health risks

The dramatic differences in body mass, observed among preschool children, has not been observed in this age group, though Moroccan boys and girls, on the average, are heavier than other children in Brussels. In all ethnic groups, whoever, the Body Mass Index (BMI) increased with age. Looking at the eating habits of the school children in Brussels, the only explanation for the association between age and BMI is the increase in the frequency of between-meals snacks consumption with age in all ethnic groups, though girls tend to grow out of the habit sooner than boys.

Some ethnic differences were found with regard to the frequency of consumption of different food products. Children of Moroccan origin consume whole milk and

sugared drinks more often than other children, and consume low fat milk products less often. However, they also eat fish more frequently than children of other ethnicities. North American-Western European children consume brown bread more often, and white bread less often than other children, especially compared to children of Moroccan and Southern European origin. Turkish children consumed more eggs per week than other children.

4.3 Utilization of health services

Most children of this age (80.3%) had a regular general practitioner, but there were statistically significant ethnic variations: the lowest prevalence was observed among Turkish children (44.4%), the next lowest were Moroccan and Southern European children (64.3% and 70.8% respectively) while 83.6% of the Belgian and all North American-Western European children interviewed had a regular general practitioner.

One-quarter of the children (26.2%) visited their general practitioner during the two months preceding the interview. The last visit to a general practitioner took place, on average, 1.6 months before the survey. The last general practitioner visit of Southern European children took place 2.1 months prior to the interview, which is significantly longer ago than Belgian school children. Southern European children, however, consume significantly more specialized services: 37.5% during the two months before the survey compared with 13.7% of the Belgian respondents. Pediatric services counted for over half (55.5%) of the specialized visits, which could indicate that Southern European mothers prefer these services to general practitioner's. No ethnic differences were observed regarding hospitalization during the year before the interview: 6.3% of the children in the sample were admitted to a hospital during this period.

Dental care was used by 27.0% of the schoolchildren during the two month before the interview, and 12.6% had preventive dental care. However, none of the Turkish and the Moroccan children visited the dentist for preventive dental care during the two month period. This finding may suggest that dental care in these ethnic groups is related to perceived need rather than to preventive behavior.

5. Teenagers and young adults

In the aged 15 to 24, 387 persons, 190 young men and 197 women, were sampled for the study (Table 7). In all five ethnic groups, the mean age was close to 20 years, with a standard deviation of three years. Unfortunately, 28.5% of the persons in this age group were not interviewed, and the only data available for them are their socio-demographic characteristics. Those not interviewed were evenly distributed between ethnic, age and sex groups. The findings reported below, thus, are based only on 273 respondents, and should be considered accordingly.

In general, persons of this age (15-24) are healthy. However, the health-related developing tasks of this age are the acquiring of a healthy life style and avoiding health risks, in particular accidents, eating disorders, and sexually transmitted diseases.

5.1 Health status

As expected, between 80% and 90% of the respondents evaluate their own health as 'very good' or 'good', with no statistically significant ethnic differences. There were also no ethnic differences in the overall self-evaluated physical functioning of the young men and women interviewed. Congruently, there were no ethnic differences in the way participants of different ethnic groups evaluated their own psychological well-being and social functioning.

In this age group, 39.2% reported experiencing at least long term health condition during the year before the survey. The highest proportion (42.9%) was observed among the North American-Western European interviewees, the lowest (18.2%) among Turk interviewees. Again, these findings should be considered cautiously, as only seven North American-Western European youngsters and 11 Turks participated in the study.

Thirty-six respondents (12.3%) reported long-term health problem, with no ethnic variation. One thirds of these individuals reported that this problem interfered with their daily activity, 20% of the persons with functional limitation were officially recognized as handicapped. No ethnic variation was observed on any of these variables.

5.2 Health risks

Teenagers and young adults are at high risk for adopting unhealthy behavior. The transition to adult roles is often associated with taking on 'manly' or 'womanly' behavior that will satisfy the perceive images and stereotypes of masculinity and femininity. Substance use is one such behavior, more common among males than among females; eating disorders is another, more frequently adopted by females than by men.

Smoking cigarettes is one such health-risk behavior. Over one-third (35.1%) of the Brussels youth were smoking at the time of the survey, 26.4% smoked daily, the others occasionally. Just about half (54.5%) never smoked, and some 10% used to smoke in the past but stopped by the time they were interviewed. The prevalence of smoking was very similar among the young men and women interviewed, yet among the Moroccans and the Turks women were less likely than men of their age to consume cigarettes.

Alcohol consumption is more prevalent than cigarettes smoking among the Brussels youth, except for the Moroccans and, to a much lesser degree, Turks. Consistent with Islamic teaching, only 3% of the Moroccans and 40% of the Turks have consumed an alcoholic drink during the year before the interview, compared with 80% of the youth from all European and American origins. When the weekly number of alcoholic drinks was examined, similar ethnic differences were observed, with North American-Western European reporting higher consumption than any other group (Figure 6). The consumption of alcohol appeared to be more prevalent among women than among men, and tended to decline with age ($F=6.6$ and 4.3 , $p<.05$, respectively).

Heavy drinking episodes were reported by 13.3% of the Belgians, 10.3% of the Southern Europeans, but by 3 of the 5 North American-Western European youth. As may have been expected this behavior is three times more common among young men than among women their age, but, surprisingly, it was not associated with age.

Physical activity, is an important health promoting behavior. Unfortunately, data was missing for 43-46% of the persons in this age group. Of those who did provide

information regarding their exercising habits, the majority (74.7%) performed sufficient physical activity, as recommended for the prevention of cardio-vascular impairment. However, this tendency was not evenly distributed among the ethnic groups explored (Table 8). Non-Belgian youth were less likely to perform a sufficient level of physical activity, particularly these from Moroccan origin (the results regarding North American-Western European and Turks are unreliable as they are based on five and eight respondents, respectively). In all ethnic groups women are less likely to exercise regularly than men.

Concern for weight and dieting are health attitudes and health behaviors of particular importance for women in this age group. Starting with BMI, Moroccan and Turkish young men and women are significantly heavier than their Belgian counterparts. Ten men and seven women met the medical criteria of obesity, four men and 12 women met the criteria of anorexia. The small number of youth with abnormal weight does not allow for a meaningful analysis of ethnic differences, but one should note that 11 of the 12 anorectic women were Belgian.

Almost 2/3 (62.2%) of the women, compared with one-third of the men expressed a desire to slim or maintain weight, with ethnic differences observed only among the women: Moroccan and Turkish young women were less concerned about their weight, though, and as reported above, these women were, on the average, heavier than women of all European and North American origin.

Adolescents and young adults of different ethnic groups in Brussels reported similar eating habits, except for the frequency of eating breakfast. This healthy habit was more prevalent among Moroccans and Turks. There were some ethnic differences in the type of food consumed by the different groups. North American-Western European reported more frequent consumption of both whole and low fat milk products, and more sugared drinks. Turkish youth consumed less frequently low fat milk, brown bread, and sugared drinks. Moroccan and Turkish youth consumed more potatoes and eggs, Moroccan children also consumed more white bread and fish.

HIV: knowledge, attitudes and behavior related to HIV are extremely important among teenagers and young adults who begun or about to enter sexual activity. At the same time, HIV could tap a more general access to knowledge, attitudes and behavior regarding health. In this sample, considerable ethnic variation in HIV knowledge and behavior was observed, as presented in Table 9. Under one-third of the respondents knew the HIV risk of blood transfusion, yet that knowledge hardly reached persons from Southern European countries. Adequate knowledge of non-contaminating factors was held by almost 70% of the respondents, but only by half of the Moroccan youth. Most importantly, just 62% of the Belgians and less than half of the non-Belgian population had adequate knowledge of preventive measures. Only one in four persons underwent a diagnostic blood test, and a particularly lower proportions were observed among Moroccans and Turks. Further analysis (logistic regression) indicated that age and gender were not associated with adequate HIV related information, though the proportion of youth who underwent a diagnostic blood test increased with age.

Accidents are another risk factor for teenagers and young adults. Thirteen respondents (4.8%) had had an accident during the two months prior to the interview,

with no obvious ethnic variation. Yet, an ethnic variation in the degree to which Brussels youth adopt road-safety behavior had been observed (Figure 7). North American-Western European were most compliant with safety recommendations, Moroccans and Turks are least likely to adopt such behavior. Health educators should be aware of the low proportion of youth who use the back-sit safety belt - 13% only. Moreover, 6.9% of the respondents reported that their cars have no such safety belts at all.

5.3 Utilization of health services

Four respondents were not affiliated with any social service, two Belgians and two Moroccans. Close to three-quarters of the respondents this age had a regular general practitioner, yet a statistically significant ethnic variation emerged. Moroccans and Turks were least likely to have a fixed primary care provider, 45% and 55%, respectively, compared with 82% of the Belgians and 71%-74% of youth from other European and North American origin.

About one-quarter (26%) of the respondents had contact with a general practitioner and 18% with a specialist during the two months prior to the interview, and 10% were admitted to a hospital during the year before the interview took place. In none of these ethnic variation has been observed. Similarly, there were no ethnic differences in the utilization of curative dental care facilities. Of the youth interviewed, 17.3% visited a dentist during the two months before the survey for curative purpose, and an additional 5.7% for preventive care. Although no statistically significant differences were observed, none of the Turkish and the Southern European youth utilize preventive dental care, and only 2.8% of the Moroccan youth used such care compared with 7.3% of the Belgians and 14.3% of the North American-Western Europeans who took part in the survey.

6. The adults

Persons in the 25-44 age group, are in their productive and reproductive stage of the life cycle. Except for pre- and post- natal care, they are not characterized by special health needs, but their health-related behavior is extremely important for future health status and health care needs in old age.

In this age group, 952 persons were interviewed, 483 men and 469 women. The mean age was 34.5 (± 5.7), with no differences between the five ethnic groups.

6.1 Health status

Forty-five persons in this age group experienced at least one chronic condition during the year prior to the interview. No ethnic differences were observed, probably due to the small number of the chronically ill interviewed. At the same time, 167 individuals reported suffering from long-term disability, 28.9% of the Turkish respondents, 12.7% of the North American-Western European, and 16%-18% of the other ethnic groups. There was no association between ethnicity and the degree to which the reported long term disability interfered with the daily activity or the proportion of disabled persons officially recognized.

At the same time, Moroccan men and women evaluated their own health and

their physical functioning as being significantly poorer than did Belgians and persons from North American-Western European origin. It should be noted, that the subjective evaluation of general health is not just the result of an 'objective' health status, but of a comprehensive perception of one's well-being (Idler and Benyamini, 1997). Indeed, the differences in subjective evaluation of health and functioning were reduced to a non-significant level after controlling for the level of education or monthly income. There were no ethnic differences in the mental health and the social functioning of the respondents, though in both cases the expected gender differences, with women reporting poorer mental health but better social functioning, were observed.

6.2 Health risks

One of the most important health issues in this age group is cardio-vascular prevention and, for women, mother and child health. This has to do with smoking, alcohol consumption, obesity, low saturated fat diet, and physical exercise. For women, screening for early detection of breast and reproductive organs cancer are recommended.

Smoking was significantly more prevalent among Turks: 46.7% of the men and 10% of the women were heavy smokers, and an additional 10% of the men and 20% of the women were daily smokers. In the total Brussels population, the respective figures are 20.6% and 15.0% for men and 12.8% and 15% for women. Of the other ethnic groups, North American-Western European men and women were less likely to smoke.

Alcohol consumption varied by ethnicity, as shown before. In this age group too, very few Moroccans (1.9%) and a relatively small proportion of Turks (21.7%) consumed any alcohol. Three quarters of the North American-Western European respondents, however, consume alcohol on a daily basis, compared with 62.9% of the Belgians and 44.5% of the Southern Europeans. In all ethnic groups women consumed less alcohol than men, and the weekly quantity increased moderately with age. In all ethnic groups, except the Moroccans, 14% to 19% of the respondents reported heavy drinking episodes.

Physical activity also varied by ethnicity, 59.2% of the Moroccans and the Turks were sedentary, compared with 18% of the North American-Western Europeans, 32.2% of the Belgians, and 49.4% of the Southern Europeans. However, when the data was examined by the medical recommendation of moderate physical activity of at least three times a week, ethnic differences largely narrowed: 89.5% of the Brussels interviewees did not meet this criterion. The performance of such physical activity tended to decline with age, and women were less likely to exercise regularly than men.

Obesity seemed to be a more prevalent health risk among women of Turkish and Moroccan origin. The BMI of women of these two groups was significantly higher than the BMI of all interviewees of European or North American origin (Figure 8), six of the 11 (54.5%) Turkish women and 15.5% of the Moroccans women met the criteria for obesity, compared with 4.8-6.5% in the other three groups. At the same time, Turkish and Moroccan women are less interested in weight control than the other ethnic groups (statistically significant at $p < .01$).

Anorexia was less prevalent in this age group, 5.7% among women and less than 1% of men. Yet, even in this age group, anorexia was more prevalent among Belgian

(6.1%) and North American-Western European (8.1%) women than in the other three ethnic groups.

Statistically significant ethnic differences in eating patterns emerged in this age group, though the differences were not systematic in terms of 'healthy' eating behavior and food consumption. Thus, Moroccans stood out in their habit of eating breakfast, Southern Europeans tend to have hot meals which include vegetables less frequently than the other ethnic groups, and Belgians and North Americans-Western Europeans had snacks between meals more frequently than any other ethnic group.

Statistically significant differences were found in the frequency of consumption of the 13 products included in the questionnaire. In particular, the consumption of products that are considered to be unhealthy according to the current scientific knowledge was particularly obvious among Moroccans. This group consumed more whole milk products, white bread, sugared drinks and eggs than most other ethnic groups, especially when compared with Belgians and North American-Western Europeans. Potatoes and white bread were consumed by Moroccans and Turks alike and significantly more often than by the other ethnic groups: this could provide some explanation for their higher BMI.

HIV related knowledge was not equally distributed among Brussels ethnic groups (Figure 9). First, only 35% of the men and 28% of the women knew that HIV may be transmitted through blood transfusion. Belgians and North American-Western Europeans were most informed, Turkish men the least. Among women, who are the primary health agents for their families, particularly poor knowledge was observed among Moroccans and Southern European women. More alarming is the lack of knowledge about HIV prevention, particularly among Moroccan men and women and among Turkish men. Congruently, fewer Moroccans and Turks took an HIV diagnostic blood test. Though better educated respondents were significantly better informed and more likely to undergo a blood test, the ethnic differences observed largely persisted after controlling for level of education. As persons of this age are both sexually active and in the reproductive stage of the life cycle, such a lack of knowledge, particularly regarding prevention, should concern public health personnel.

Knowledge about *road safety* in this age group is important not only for their own safety, but also because they are socialization agents for the younger generation. Yet, as shown in Table 11, safe road behavior was not highly observed in Brussels, and it was unequally adopted by persons of different origin. Thus, 40% of the respondents reported **not** using safety-belts when riding in the front of the car, and this figure increased to about one-half for the Moroccans and Southern Europeans and to three-quarters for the Turks. Back seat safety belts were used by even fewer persons, by less than 20% of the population, with similar ethnic differences. About 60% of the population were familiar with the permitted alcohol level while driving, with Southern Europeans being least knowledgeable.

6.3 Utilization of health services

Ten individuals reported not belonging to any of the available health insurance organizations, four Belgians (0.7% of the Belgians in the study), four North American-

Western Europeans (5.6%), and two Moroccans (1.4%). Eleven individuals were dependent on social services to the needy, with 3.6% of the Moroccans respondents, 3.2% of the Southern Europe, 1.4% of the North American-Western European, and 0.3% of the Belgian interviewees.

Three-quarters of the respondents had a regular primary care provider, yet there were statistically significant differences by ethnic origin ($\chi^2=15.4$, $p<.01$). The least likely to have a regular general practitioner were the Turks (50%), the most likely were persons from Southern European countries (81.9%). In-between these extremes were North American-Western Europeans (66.2%), and Moroccans and Belgians with 74.3% and 76.5% respectively. There were no statistically significant ethnic differences in the incidence of general practitioner visits during the two month prior to the interview, 28.9% of the respondent reported such visit. As expected, more women than men utilize primary care services, 34.8% of the women compare with 23.2% of the men. Compared with the whole Brussels population, however, fewer Turkish men and women visited their general practitioner: 18.8% and 27.3% respectively. Turkish men, but not Turkish women, seem to replace primary care services by those offered by specialists. Thus, 23.5% of Turkish men consulted a specialist during the two months before they were interviewed, compared with 14.1% of all the men in the survey. Yet, just 9.1% Turkish women consulted a specialist during the same period, compared with was 35.0% of the women in the survey (statistically significant at $p<.05$). No statistically significant ethnic differences were observed regarding hospitalization.

No ethnic differences were found regarding the utilization of dental services during the two month preceding the interview. North American-Western Europeans were twice as likely to use preventive dental care than any other ethnic group. Indeed, the time interval between the last dentist curative visit of North American-Western Europeans and the interview was significantly longer compared with the other ethnic groups: an average of 8.02 month compared with 5.14 month in the whole Brussels sample ($F=4.14$, $p<0.01$).

Turkish men and women, and to a lesser degree Moroccans, are also least likely to make use of the available preventive health measures. This has been observed with regard to cardio- and cerebro-vascular prevention (control of blood pressure and cholesterol), immunizations, and early detection of cancer among women (Figure 10). All differences were statistically significant, except for vaccination against influenza. Multi variate logistic regression showed that socio-demographic and socio-economic characteristics had little effect on the ethnic differences observed. Thus, blood pressure and cholesterol control significantly increased with age, but did not reduce the ethnic differences below level of statistical significance. The level of education was positively associated with utilization of cancer early detection services, but did not eliminate the differences between Moroccan and Belgian women for early detection of cancer of the cervix and between Turkish and Belgian women in early detection of breast cancer. Moreover, having a regular general practitioner increased the prevalence of preventive health, but did not decrease the gap between the different ethnic groups. Policy makers should take note of these findings, especially since there were no ethnic differences in the prevalence of hypertension or high levels of cholesterol.

7. Older adults (ages 45-64)

In this age group, 690 persons participated in the National Health Survey in the Brussels region: 333 men and 357 women. However, only three men and three women of Turkish origin were interviewed, and had to be excluded from the analysis (Table 12).

The mean age of the respondents was 53.8, and 37.5% of the men and 57.3% of the women were not in the paid labor force. As expected, more men than women were currently married (72.4% compared with 59.6%), with statistically significant ethnic differences for women which largely reflect both the different socio-economic status and culture. Thus, 22.7% of the Moroccan women were widowed, 18.2% divorced compared with 6.7% widowed women and 25.4% divorced among Belgians. This put Moroccan women of this age in particular risk, especially as they are the poorest in this age group.

The main health challenge in this age group is coping with the increasing prevalence of chronic health problems and changes in family and household composition. Indeed, 31.7% of the respondents live alone (25.6% of the women and 7.3% of the men), with a statistically significant variation between the four ethnic groups: 34.9% of the Belgians, 26.1% of the North American-Western European, and some 20% of the Moroccans and the Southern Europeans ($\chi^2=11.6$, $p<0.01$).

7.1 Health status

Over two-thirds (68.7%) of the respondents evaluated their health as 'very good' or 'good'. Yet, over half of the Moroccan respondents (55.3%), evaluated their health as 'reasonable' or 'poor' (statistically significant at $p<0.01$). This difference, however, was strongly related to their lower socio-economic status, and was no longer statistically significant after controlling for the level of education.

As expected from previous research, more women than men reported having at last one chronic health problem during the year prior to the interview (71.1% vs 60.9%, $p<0.01$). The lowest proportion of chronic morbidity was observed among the North American-Western Europeans, 44.4% among men and 42.1% among women (significantly different from the Belgians at $p<0.001$). This difference persisted after controlling for the level of education and monthly income.

The highest prevalence of disability was found among Moroccans (51.2%) and the lowest among North American-Western European (21.7%), compared with 35.2% in the whole sample ($\chi^2=9.6$, $p<0.05$). This difference declined to a non-significant level after controlling for socio-economic status, that is household monthly income and level of education. Among the disabled, the daily activity of Moroccans had been more affected by their handicapped than among any other ethnic group. There were no ethnic differences in the proportion of the disabled formally recognized.

No ethnic differences were observed regarding mental health, though the expected patterns, i.e. poorer mental health among women and a decline in mental health with age, were observed. Nor were there ethnic differences detected regarding the social functioning of the respondents.

7.2 Health risks

The health risks facing this age group are quite similar to those in the younger age group

25-44. Yet, their older age dictates more attention to the prevention of vascular disease, and control of chronic conditions that are associated with cardio- and cerebro-vascular conditions. Close to one in five persons of this age (19.5%) was already treated for hypertension, 5.1% for diabetes. Both conditions increase the risk of vascular morbidity and mortality.

Smoking was less prevalent among Moroccans. Over half of the Moroccan respondents never smoked, compared with 36.6% of the Brussels participants. By the time they were interviewed, one-third of the population this age (32.9%) smoked, 13.6% of the respondents are heavy smokers who consume 20 or more cigarettes a day. The highest proportion of heavy smoking was observed among Southern Europeans respondents (22.8%), the lowest among Moroccans (5.8%). At the same time, there were indications that people of this age tend to give up smoking. Of the 393 persons (63.4% of all respondents) who ever smoked, 201 still smoke. In other words, 46.3% of those who were smoking when they were younger, no longer do so. The above patterns were found among men and women alike, though fewer women than men ever smoked or were heavy smokers.

Alcohol was consumed daily by 42.5% of the interviewees, with statistically significant ethnic variation (Figure 11). The highest prevalence was observed among North American-Western European (56.8%), the lowest, as expected, among Moroccans (5.8%). Of the Belgians, 45.3% report drinking on weekdays, 29.1% of the Southern Europeans ($\chi^2=29.4$, $p<0.001$). This pattern was found among men and women, though fewer women than men report daily alcohol consumption. Compared with other ethnic groups, North American-Western Europeans were also more likely to report heavy drinking moments, 34.6% of the men and 26.3% of the women, compared with 26.6% and 12.3% respectively in the total sample.

Physical activity tend to decline with age. Indeed, only 8.2% of the respondents exercised at least three times a week as recommended, and 20.6% did so at least once a week. More women than men were sedentary, and fewer persons from Southern European countries practiced physical activity.

Obesity, a risk factor for hypertension and diabetes, is a health problem encountered by 11.9% of the respondents, but by 57.1% of the Moroccan women and by 17.2% of Southern European women (Figure 12). This patterns persisted after controlling for socio-demographic and socio-economic characteristics. Moroccan women, however, were less concerned with their weight than women of other ethnic groups: 56.3% of them expressed a desire to slim or to maintain their weight, compared with 74.9% of Belgian respondents, and 85% to 90% of women from North American-Western European or Southern European origin.

There were few significant ethnic differences in *eating habits*. Persons from Southern European origin had fewer hot meals with vegetables per week and Belgian women consume snacks between meals more frequently than other interviewees. The Moroccans consumed significantly more frequently products which are considered unhealthy: whole milk, white bread and sugared drinks. Respondents from Southern European origin consumed more often eggs compared with Belgians.

HIV knowledge and behavior: Compared with Belgians, North American-Western

Europeans were significantly more informed, and more of them took a diagnostic blood test, while Moroccan respondents, and to a lesser extent persons of Southern Europe countries in this study, were clearly less familiar with the risk and fewer of them underwent HIV detection tests (Figure 13). Sex differences were found only in relation to screening behavior, adopted by significantly more men than women. As may have been predicted, the better educated present better knowledge and screening behavior. The level of education counted for the differences between Moroccans and Belgians, but not for the differences between Belgians and Southern Europeans.

Road safety behavior and knowledge varied by ethnicity in this age group too. Moroccans of this age were most compliant with road safety behavior, whereas persons from the Southern Europe are least compliant (Table 13).

7.3 Utilization of health services

Ten persons (1.5%) were not member of any health insurance agency, of them four were North American-Western European (4.5% of the North American-Western European sampled). An additional six person were dependent on services for the needy, 4.5% of the North American-Western Europeans, 3.5% of the Southern Europeans, and 2.1% of the Moroccans. The majority (83.6%) of the respondents had a regular general practitioner, but there were significant ethnic differences: over 85% of the Belgians and the Moroccans had a regular primary care provider, compared with 74.9% of the Southern Europe and 71.7% of the North American-Western European ($\chi^2=10.1$, $P<0.05$).

No ethnic differences were observed regarding the utilization of curative health services. During the two months prior to the interview, 26.9% of the respondents visited a general practitioner, 11.2% a specialist, 16.3% have utilized both general and specialized services, and 13.7% were admitted to a hospital during the year preceding the interview. As expected in this age, no gender differences were observed.

There were no ethnic differences in the proportion of respondents who had anti-tetanus vaccination during the ten years before the interview (65% of all those sampled), or against influenza (28.8% of the sample during the past year). However, Moroccans were less likely to enjoy the cardio- and cerebro-vascular preventive measure available. Over 80% of respondents from other ethnic groups had their blood pressure measured during the years prior to the interview, as recommended by the WHO, but only 54.5% of the Moroccans, even after controlling for age, level of education and having a regular general practitioner. In fact, only two-thirds of the Moroccan interviewees had undergone blood pressure control during the five years prior to the interview, compared with almost all (93.4%) respondents from other ethnic origins ($\chi^2=44.3$, $P,0.001$). In a similar manner, only 44.1% of Moroccans had a blood test for early detection of cholesterol, compared with 75.1% in the whole of Brussels ($\chi^2=22.5$, $P,0.001$), a difference that persisted after controlling for sex, level of education and having a fixed primary care provider. One should note that there were no ethnic differences in primary care utilization rates, so that general practitioners had an equal opportunity to conduct these procedures for Moroccans as for the other groups in the study, and that Moroccans run higher risk related to the higher prevalence of obesity. The positive association between the level of education and these two cardio- and cerebro-vascular preventive measures

indicates that two processes could be at work. First, these procedures were performed on patients' request, with the better educated being better informed and more demanding to undergo these tests. Second, general practitioners offered these preventive procedures selectively.

This pattern emerged again in the form of ethnic differences in clinical examination for early detection of breast cancer and cancer of the cervix. During the two years prior to the interview, 33.3% of the Moroccan women underwent clinical breast examination, compared with 63.6% of Belgian women and slightly over 70% of the two other ethnic groups ($P < 0.05$). Cervix cancer examination was performed on 26.7% of Moroccan women, compared with 65.6% of all women respondents ($P < 0.01$). Both differences declined below the level of statistical significance after controlling for education. This is another indication that general practitioners have unequal standards of practice, depending on the ethnic origin and the level of education of their patients.

8. The elderly

Five hundred and seventy three of the Brussels elderly participated in the study, 91% of whom were Belgians (Table 14). Only five Turkish elderly were interviewed, and had to be excluded from the analysis. Moreover, the Moroccan elderly in the survey were, on the average, almost six years younger than the Belgian respondents ($F = 4.9$, $P < 0.01$). This distribution imposes serious limitations on the effort to explore ethnic variation in health status, health risks, and patterns of health care utilization.

In most developed countries, aside from gradual deterioration in physical well-being and functioning, the elderly are often facing problems of poverty and loneliness. These are associated with negative health implications and are more characteristic of women than of men. The Brussels elderly are no exception (Figure 14), and a considerable ethnic variation was detected (Table 15). Moroccan women are the poorest among the elderly, North American-Western European women are only slightly better off. Among the elderly men, Moroccans are the poorest, while North American-Western European men are the wealthiest. Though not statistically significant, it seems that fewer Moroccan men lived alone, and the proportion of widowed women was higher among Moroccan and Southern European women.

8.1 Health status

As mentioned earlier, the subjective evaluation of health represents a comprehensive perception of one's well being, and is one of the best predictors of longevity. Among the elderly interviewed, Moroccans evaluated their health significantly poorer than Belgians and were more likely to feel that their health deteriorated during the year prior to the interview ($P < 0.05$). Both these differences were no longer significant after controlling for either educational level or monthly income, which means that poorer Belgians are not better off.

Four in five elderly persons reported at least one chronic disease, with no ethnic differences. However, persons from a Southern Europe origin reported significantly more chronic conditions than Belgian and North American-Western European elderly; moreover, women reported more chronic conditions than men and the number of

chronic conditions increased with age. No ethnic differences were found in the prevalence of disability, which was experienced by 55.7% of the elderly respondents. Yet, while there were no ethnic differences in the severity of the disability, in terms of interference with daily functioning, fewer Belgian elderly were officially recognized as disabled (22.1% compared with 40.0% Southern Europe, 33.3% of the North American-Western European, and 37.5% of the Moroccans). As expected, disability increased with age and was less common among the better educated.

There were no ethnic differences in the psychological well-being of the elderly. Nor were there ethnic difference in the incidence of temporary, acute, health problems.

8.2 Health risks

Smoking was largely given up by the elderly. By the time they were interviewed, just 3.3% of the elderly interviewed were heavy smokers, another 7.4% were daily smokers. In their past, however, 75.1% of the men and 32.0% of the women used to smoke. At the same time, 16.7% of the Moroccan men and 20.0% of the Southern European men and women were currently consuming more than 20 cigarettes a day.

Alcohol consumption presents a special risk for the elderly, by depressing normal sensation and balance, which tend to decline with age. Thus, consumption of alcohol increases the risk of falls, and of home and out-doors accidents. There is some evidence that elderly consume alcohol to overcome loneliness, pain, and amnesia (Weiss, 1992). Congruent with Islamic teaching, the elderly Moroccans did not consume any alcohol, while in the other ethnic groups 47.6% of the men and 30.1% of the women drank during the week with no significant differences in the quantity consumed. Heavy drinking moments were reported by 6.7% of Belgian and North American-Western European elderly, without gender differences.

Physical activity is important for the elderly, who are generally less likely to be employed and tend to reduce their out-doors activity. Indeed, only 5% of the elderly interviewed take their exercises three times a week, and 11.8% exercise at least once a week. Although none of the differences observed were statistically significant (probably because of the small number of respondents), it is worth noting that none of the Moroccans were performing any physical activity.

Obesity, as observed before, is more prevalent among Moroccan women: 42.9% met the criteria of obesity. Obesity was also prevalent among Southern European elderly men and women, 33.3% and 40.0% respectively met the medical criterion for obesity. Yet, there are no ethnic differences in the desire to lose or maintain weight.

Skipping meals is a prevalent problem among the elderly, especially among those who live alone. In Brussels too, unmarried elderly reported skipping breakfast and hot meals more often than married respondents. Ethnic differences, however, were observed only with regard to breakfast: more North American-Western European elderly tend to skip this important meal ($F=3.0$, $P<0.05$). As observed among younger persons, Moroccans tend to consume more whole milk products and sugared drinks, but also more fresh fruit. North American-Western European elderly consume more fresh vegetables but also more eggs.

Road safety patterns in old age resemble those of the younger age groups (Figure

15). Compared with Belgians, Moroccan elderly, and to a lesser degree Southern European elderly, were less likely to wear safety belts. Moroccan elderly, who refrain from consuming alcohol, were also less familiar with the permitted alcohol level while driving.

8.3 Utilization of health services

Two elderly, both Belgians, did not have medical insurance. The great majority of the elderly (91.3%) had a permanent general practitioner, and 65.5% of them visited their general practitioner during the two months prior to the interview. Though there were no statistically significant differences, only two of the eight elderly Moroccan men interviewed visited their general practitioner during this period, compared with 58.9% of the men in the whole sample. There were no ethnic differences in the proportion of the elderly who saw a specialist prior to the interview (31%).

Significant differences were observed in hospitalization rates of the different ethnic groups. The rate of North Americans-Western Europeans were significantly higher than these of Belgians (43.8% compared with 19.5%, $P < 0.05$).

As observed for the previous age group, Moroccans were less likely to enjoy the available preventive health measures. Fewer of them had their blood pressure measured during the year before the interview: 60.0% compared with 90.0% of the other elderly in the sample ($P < 0.05$). Almost one-third (30.0%) of elderly Moroccans reported that their blood pressure was never measured, compared to 3.3% in the total sample; 40.0% never had their cholesterol measured compared to 13.7% among the all the elderly in the study. None of the Moroccan women had early detection cervix cancer examination during the past three years (compared with 75% of North American-Western European women and with 38.0% of old women of Belgian and Southern Europe origin). Furthermore, no Moroccan woman had a clinical breast examination during the past two years (compared with 50% of North American-Western European and 34% of Belgian and Southern Europe women).

Moroccans were also least likely to receive vaccination for influenza, as recommended for elderly persons. Just 25.0% of Moroccan elderly received such immunization any time in the past, and 18.8% during the past year. The equivalent figures for Belgians and Southern Europeans are 50.0% and 62.0% respectively, and 62.5% and 81.3% for North American-Western Europeans. Yet more Moroccan elderly were vaccinated against tetanus (69.2%) than Belgians (45.0%), North American-Western Europeans (33.3%), and Southern European elderly (18.8%). None of these differences disappeared after controlling for age or educational level.

Although there were no ethnic differences in utilization of dental care services, such differences were observed regarding the availability of false teeth. Moroccan elderly were less likely to have false teeth even when they have lost all their teeth. Thus, 55.6% of Moroccans without any teeth had prostheses, compared with all North American-Western European, over two-thirds of Southern Europeans, and over 80% of the Belgian aged.

9. Discussion

In the above analyses, we compared the health status, health risks, and the patterns of utilization of health services of Belgians residing in Brussels with these of persons who immigrated to the Brussels region from four major countries of origin: North America and Western Europe, Southern European countries located around the Mediterranean Sea, Morocco, and Turkey. Health is not an absolute concept, and the health status of any population or any sub-group within a population acquires its meaning only on the basis of comparison with another society or a group. Similarly, health behavior, health risks, and the utilization of the health and other social services available in a given society is not evenly distributed, and one important question is whether this distribution is patterned according to socio-economic and demographic characteristics. The present analysis focused on immigrants, and our research question was the degree to which the health status, health risks, and the utilization of health services of migrants from four different origins is similar to these of Belgians.

As reported in previous studies, the socio-economic status and the socio-demographic characteristics of persons in these five groups who participated in the Health Survey differ considerably. In general, in terms of education, occupational status, and, thus, monthly income, North America and Western Europeans are better off than Belgians. Moroccans and Turks concentrated in the lowest socio-economic strata. Moroccans and Turks are least likely to hold paid work, the absence of Moroccan women from the labor force particularly stands out.

All these characteristics are resources associated with health, and ethnic differences in these respects lead us to expect ethnic differences in health, health behavior and risks, as well as in the accessibility to the available health services. Education is strongly associated with exposure to health related knowledge; and labor force participation is related to health not only as a vehicle to increased standard of living, but also as an important source of social support and health related information.

The previous sections were devoted to the search for ethnic differences in health status, health risks, and utilization of health services within six age groups, each of which facing specific developmental tasks and health challenges. In the following section we would like to draw more general conclusions regarding patterns of ethnic differences on the bases of these analyses. Yet any conclusions should be considered extremely cautiously, as there are serious data constraints. Over 90% of the participants in the National Health Survey were Belgians, and, as a result, there were very few respondents of the other four ethnic groups analyzed. Particularly Turks were under-sampled, and this is all the more regrettable since their socio-economic characteristics are indicative of high health risks. Moreover, in some age groups a relatively high proportion of missing data has been encountered. The small numbers often did not allow for a thorough examination of the role of social class differences in health differentials. These data limitation, unfortunately, also forced us to largely neglect our initial intention to focus on women as their families health agents.

9.1 The Moroccans

Health Status

The Moroccans who participated in the National Health Survey evaluated their health status as poorer and felt more disabled than Belgians. These unfavorable health perceptions were most obvious among adults (over the age of 25), but had also been observed among school children, probably reflecting the attitudes of their parents. Yet the differences were reduced to a non-statistically significant level after controlling for socio-economic characteristics, that is level of education and monthly income. As noted above, subjective health evaluation represents a comprehensive perception of one's well-being, and is the best available predictor of mortality. Thus, although there were no differences between Moroccans and Belgians on the specific measures of morbidity, mental health, and social functioning, the poor socio-economic position of the Moroccan residents of Brussels was reflected in an overall perception of poorer health.

Health Risks

On some measures, the Moroccan residents of Brussels run lower health risks than their Belgians counterparts, while they run higher risk on others. In general, Moroccans consume less alcohol than any other group, smoke somewhat less (except for the elderly), eat breakfast more regularly, and consume more fish and fewer snacks in-between meals. At the same time, they run several health risks that call for intervention.

First among these is the risk for cardio- and cerebro-vascular diseases. In all age groups, *Moroccan women are outstandingly overweight*, and they are least interested in watching their weight. Both men and women consume more whole milk products, eggs, potatoes, white bread, and sugared drinks - all are not recommended by current public health knowledge. At the same time, Moroccans perform less physical exercise than Belgians.

Second, *Moroccan adults (age 25 and over) are less informed regarding the etiology and prevention of HIV*, and fewer have undergone an HIV diagnostic blood test compared with Belgians. The differences in HIV related knowledge and diagnostic behavior is only partially explained by the differences in the education attainment between Moroccans and Belgians.

Finally, *Moroccans are less likely than Belgians to comply with road safety recommendations*. Fewer of them use safety belts both in front of the car and in the back, and fewer are familiar with the permitted alcohol level while driving. Though Moroccans do not, in general, consume alcohol, this knowledge is important when riding cars as passengers.

Utilization of Health Services

No differences were found between the patterns of utilization of curative health services by Moroccans and by Belgians. However, consistent differences were observed in the accessibility to preventive health care. In all age groups, fewer Moroccans use preventive dental care. In adulthood, fewer of them enjoy the available screening for early detection and prevention of vascular diseases, cancer, influenza and, and, in working ages, tetanus. These findings are independent of level of education, income, having a regular

primary physician, or the utilization of curative health services. As many of these preventive measures are available on the primary care level, and given the prevalence of obesity among the Moroccans, the specific barriers of the accessibility to these services deserve special attention.

9.2 The Turks

As mentioned, the small number of interviewees of Turkish origin seriously impaired the analysis. The comparison was limited to respondents under the age of 45, when the prevalence of long term health problems increases and preventive health practices are particularly recommended.

Health Status

From the little data available, it appears that, compared with Belgians, adult Turks suffer more long-term health conditions, and tend to perceive them as disabling.

Health Risks

In many ways, the differences between the Belgian and the Turk residents of Brussels resemble the differences between Moroccans and Belgians. Turks consume less alcohol than Belgians, but *more adult Turkish men smoke* (though fewer Turkish than Belgian women smoke). They also run greater risk for cardio- and cerebro-vascular diseases.

More Turkish adults than Belgians are overweight, particularly women. Yet they are less interested in weight control. While their eating habits are similar to these of Belgians, Turks tend to consume more eggs more frequently and brown bread less frequently. Very few Turks exercise three times a week as recommended for cardiovascular protection.

Compared with Belgians, *Turks are less informed about HIV* contamination and protection measures. Fewer of them had performed diagnostic HIV blood test.

Fewer Turks than Belgians follow road safety regulations.

Utilization of Health Services

Compare with Belgians, Turks utilize fewer curative and preventive health services. Fewer Turks have a regular general practitioner, and they utilize primary health care services less often than Belgians.

Turks are also less likely than Belgians to enjoy preventive care, that is preventive dental care, vaccinations, blood-pressure and cholesterol control, and cancer screening. These differences persisted after controlling for socio-economic characteristics (education attainment and monthly income), and the utilization of health services.

9.3 Southern Europeans

Southern European residents of Brussels, as a group, enjoy a similar health status as Belgian residents, and share similar patterns of utilization of health services. Yet, some important differences were observed between the health behavior and the health risks of the two populations, particularly among the adults.

First, Southern Europeans run a greater risk for cardio- and cerebro-vascular conditions.

More Southern Europeans than Belgians over 45 years of age smoke, and fewer of them are regularly involved in physical activity. Overweight is more frequent among Southern European elderly than among Belgians their age. Southern Europeans also eat hot meals with vegetables less frequently.

Southern Europeans are less informed than Belgians about the etiology and prevention of HIV. More Southern Europeans than Belgians comply with the road safety rules.

9.4 North Americans and Western Europeans

On the average, this group is better educated and have a higher income than Belgians residing in Brussels. As a result, they enjoy better health and are less disabled than most of the other ethnic groups in the region.

This is also the group that conducts the healthiest life style, *except for alcohol consumption*. Compared with Belgians, fewer North Americans and Western Europeans smoke, more of them exercise, they are most compliant with road safety regulations, are most informed regarding HIV and more of them have undergone HIV diagnostic blood test.

The patterns of utilization of curative health services of North Americans and Western Europeans are similar to these of Belgians. Yet, North Americans and Western Europeans utilize dental preventive care services more than Belgians, while fewer of them have a regular general practitioner.

10. Policy implications

The differences in health status between the four larger ethnic groups in Brussels and Belgians residing in the same region were largely the result of differential socio-economic status. Thus, Moroccans and, to a lesser degree Turks, evaluate their health poorer than Belgians, North-Americans and Western-Europeans enjoy better health status than Belgians. No differences were found in mental health, chronic and acute morbidity, and social well-being. This findings are congruent with previous research, which showed that differences in these aspects of health are typical to the first few years after migration and tend to disappear thereafter (Anson et al, 1996).

At the same time, significant differences were found between the four groups' access to preventive health services, health behavior, and the health risks encountered by them. These differences call for intervention among care providers as well as among the Moroccan and the Turkish residents of the Brussels region.

1. *The most important finding of our analysis is that Moroccans and Turks have less access to the preventive health services available to other residents of Brussels.* There were indications that these services are not provided universally, and better educated individuals and persons who had a fixed general practitioner were more likely to enjoy preventive care. These, however, did not explain the differences between Moroccans and Turks as compared with Belgians. In other words, even better educated non-Europeans and non-North-Americans who have a fixed general practitioner are less likely to enjoy preventive health care. Preventive medicine is one of the corner stones of family practice, most procedures are easily

performed in the general practitioner's office. The findings of this study strongly suggest the need for intensive intervention among preventive care as well as among primary care providers.

2. *Moroccans, and to a lesser degree Turks, run higher risk for cardio- and cerebro-vascular diseases.* There is a need for health education programs aimed at decreasing the consumption of high-fat food products, promote physical activity, and encouraging weight control particularly among women.
3. *Moroccans and Turks are less informed than Belgians in issues related to HIV.* Hitherto, behavioral change is the **only** way available to control the HIV epidemic. Knowledge is a necessary, though rarely sufficient, condition for behavioral change. Culturally adjusted health education programs, which take into consideration the centrality of the family and the taboo over promiscuity in Oriental cultures and the Islamic teaching, should be developed.
4. *Moroccans, Turks, and immigrants from Southern Europe are least compliant with road safety regulations.* An intervention based on a combination of education and law enforcement could enhance compliance.

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Table 1: Distribution of Nationalities in Brussels, by sex, 1997

Nationality	Men	Women	Total
Belgian	1,094	1,229	2,323
Morocco	188	169	357
Southern Europe ¹	135	118	253
Western Europe and North America	87	88	175
Turkey	41	40	81
Former Communist countries ²	13	19	32
Other Moslem countries ³	14	5	19
Far East ⁴	6	12	18
Black Africa	4	4	8
Others	33	24	57

¹ Including: Italy, Greece, Spain, Portugal

² Including: Poland, Yugoslavia, Checks, Bulgaria

³ Including: Egypt, Algeria, Jordan

⁴ Including: Hong Kong, Thailand

Source: Health Interview Survey, 1997.

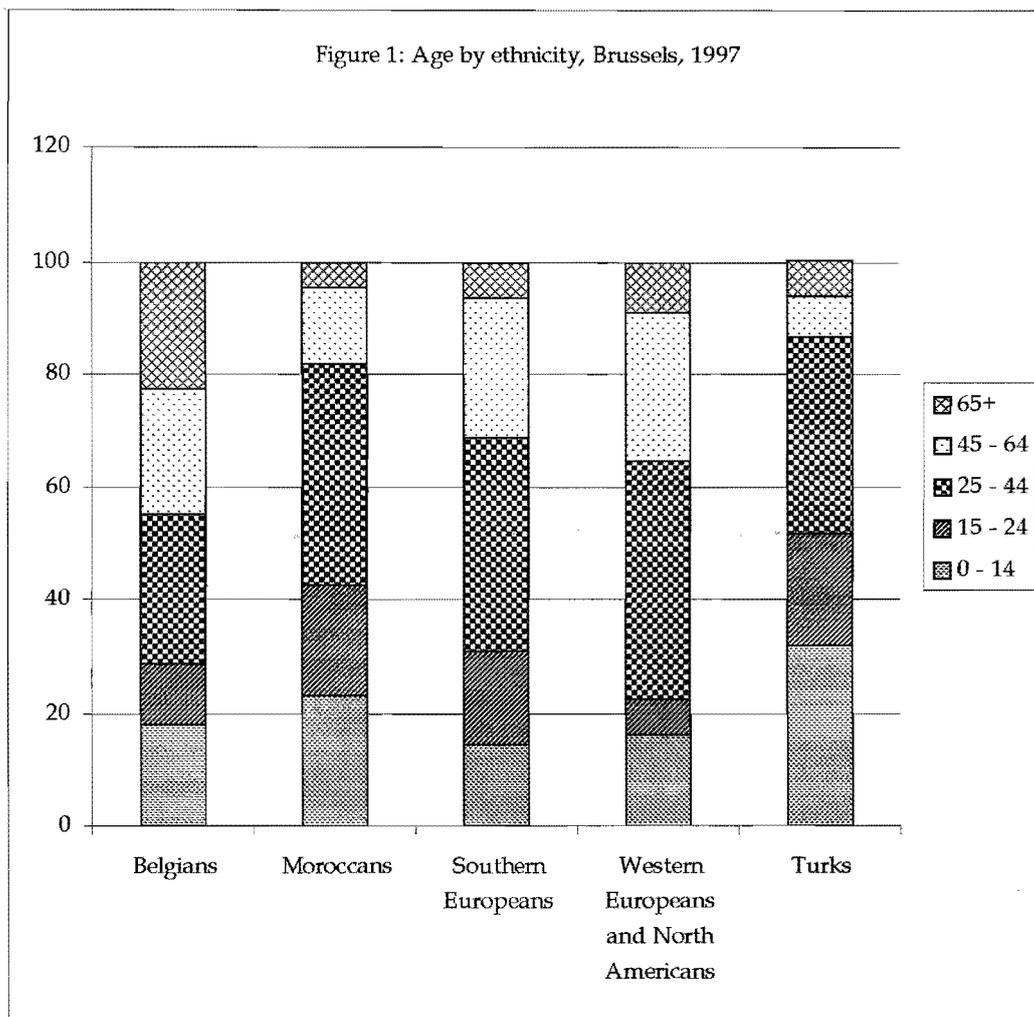
Table 2: Mean age by ethnicity and sex
(standard errors)

<i>Nationality</i>	<i>Men</i>	<i>Women</i>	<i>Whole Brussels</i>
Belgians	40.2 (0.7)	42.5 (0.7)	41.4 (0.5)
Moroccans	29.1 (1.7)	29.5 (1.8)	29.3 (0.9)
Southern Europeans	34.1 (2.0)	37.4 (2.1)	35.6 (1.2)
Western Europeans and North Americans	38.1 (2.5)	35.9 (2.4)	37.0 (1.5)
Turks	26.5 (3.8)	24.6 (3.2)	25.6 (2.0)
<i>Statistics (F)</i>	<i>13.4*</i>	<i>17.2*</i>	<i>30.9*</i>

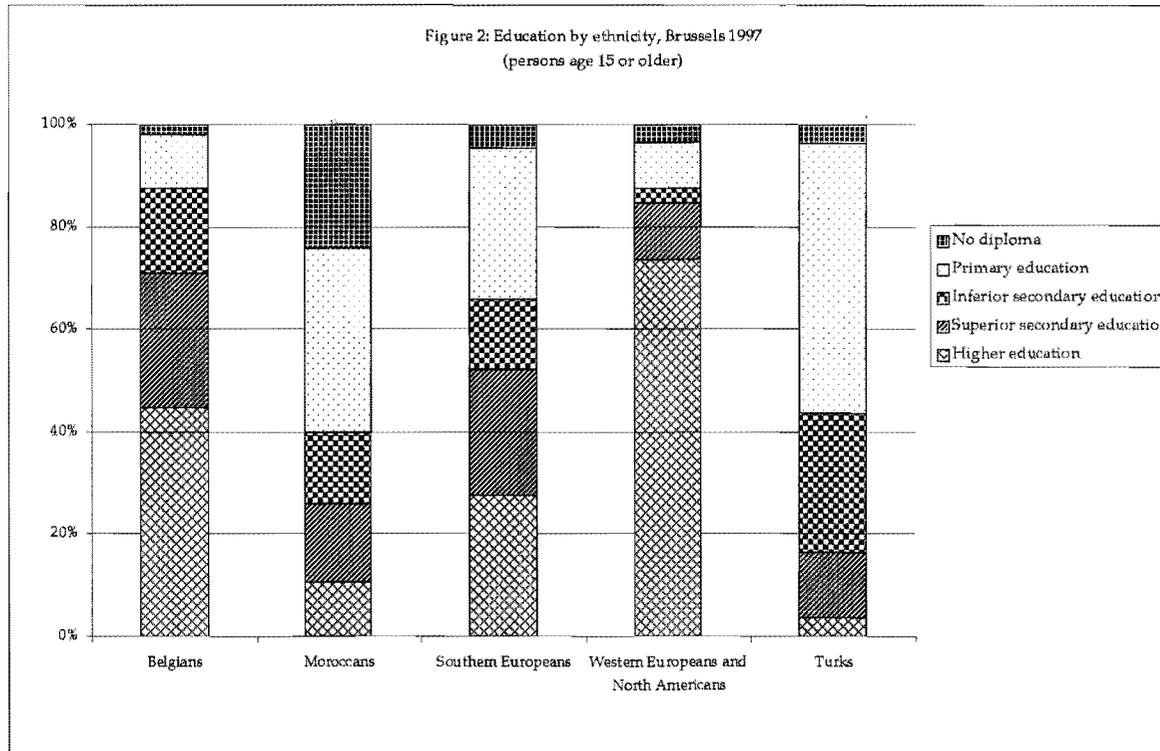
*P<0.001

Source: Health Interview Survey, 1997.

Figure 1: Age by ethnicity, Brussels, 1997



Source: Health Interview Survey, 1997.



Source: Health Interview Survey, 1997.

Table 3: Highest occupation held by a member of the household by ethnicity,
Brussels, 1997
(percent)

<i>Nationality</i>	<i>Professional</i>	<i>Clerkship or services</i>	<i>Skilled Worker</i>	<i>Unskilled Worker</i>
Belgians	60.2	24.1	6.7	9.0
Moroccans	15.6	18.4	36.1	29.9
Southern Europeans	32.5	23.5	23.9	20.1
Western Europeans and North Americans	74.8	17.2	5.3	2.6
Turks	8.6	6.9	34.5	50.0
<i>Whole Brussels</i>	53.4	22.7	11.4	12.4

*Chi-squar=547.3 P<0.001

Source: Health Interview Survey, 1997.

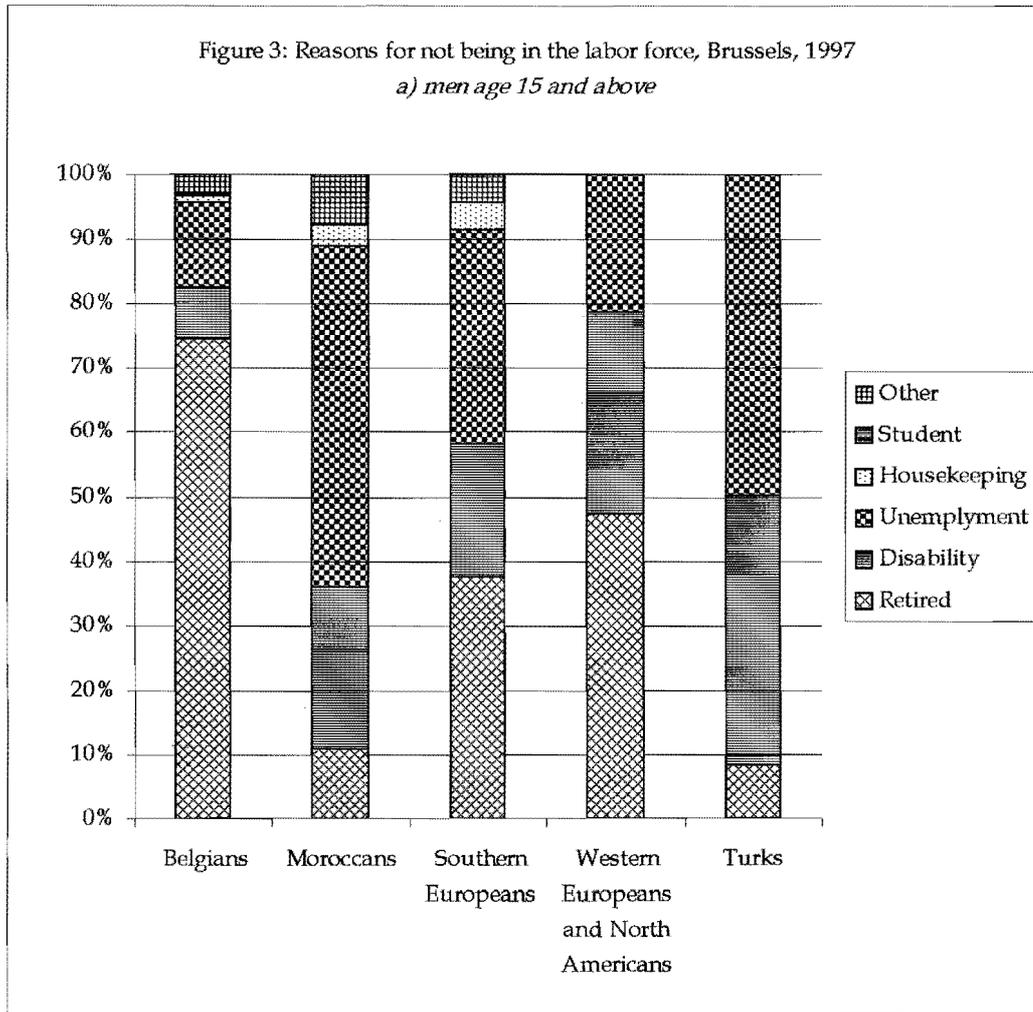
Table 4: Employment by ethnicity and sex, Brussels, 1997
(percent of persons 15+ years old currently in paid work)

<i>Nationality</i>	<i>Men</i>	<i>Women</i>	<i>Whole Brussels</i>
Belgians	54.3	39.7	46.5
Moroccans	41.6	11.4	27.1
Southern Europeans	72.3	45.7	59.0
Western Europeans and North Americans	71.6	52.4	62.3
Turks	48.0	33.3	41.9
<i>Statistics (χ^2)</i>	<i>29.4*</i>	<i>41.2*</i>	<i>58.9*</i>

*P<0.001

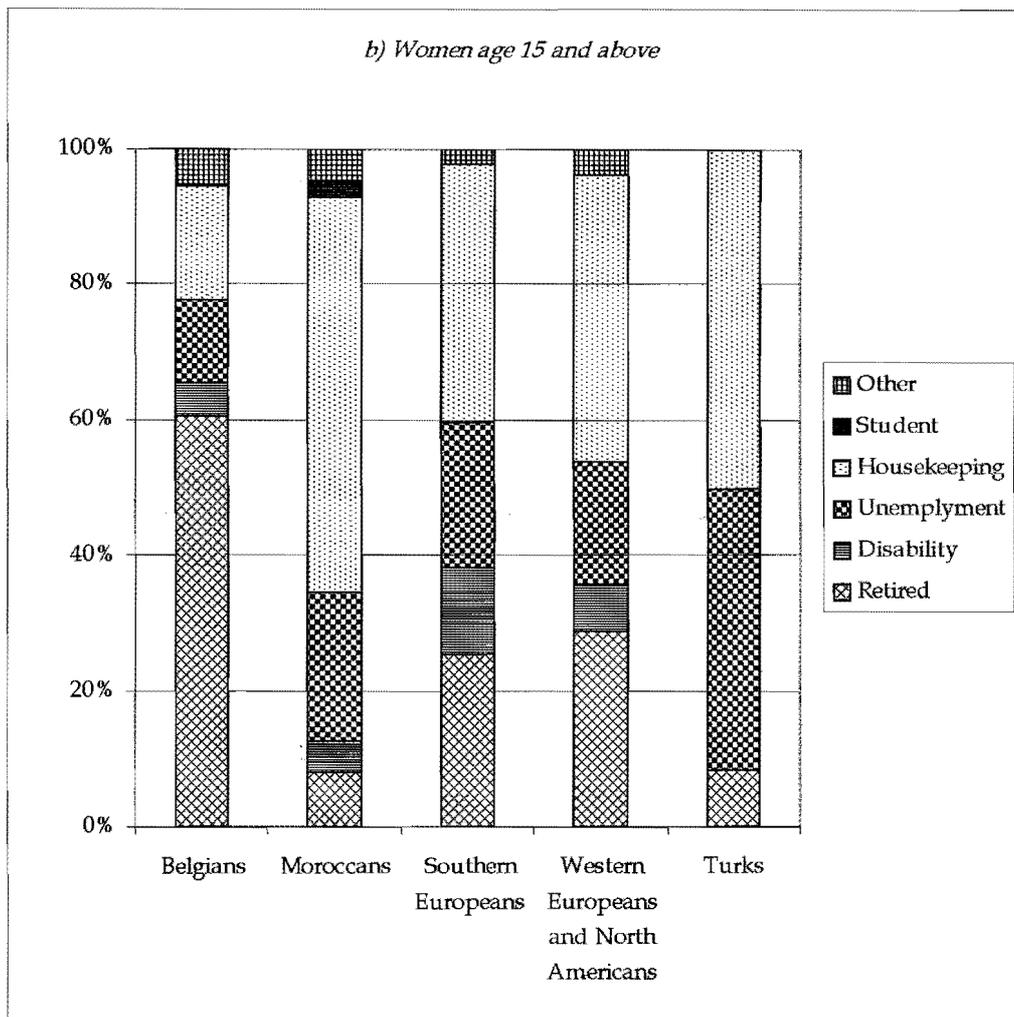
Source: Health Interview Survey, 1997.

Figure 3: Reasons for not being in the labor force, Brussels, 1997
 a) men age 15 and above



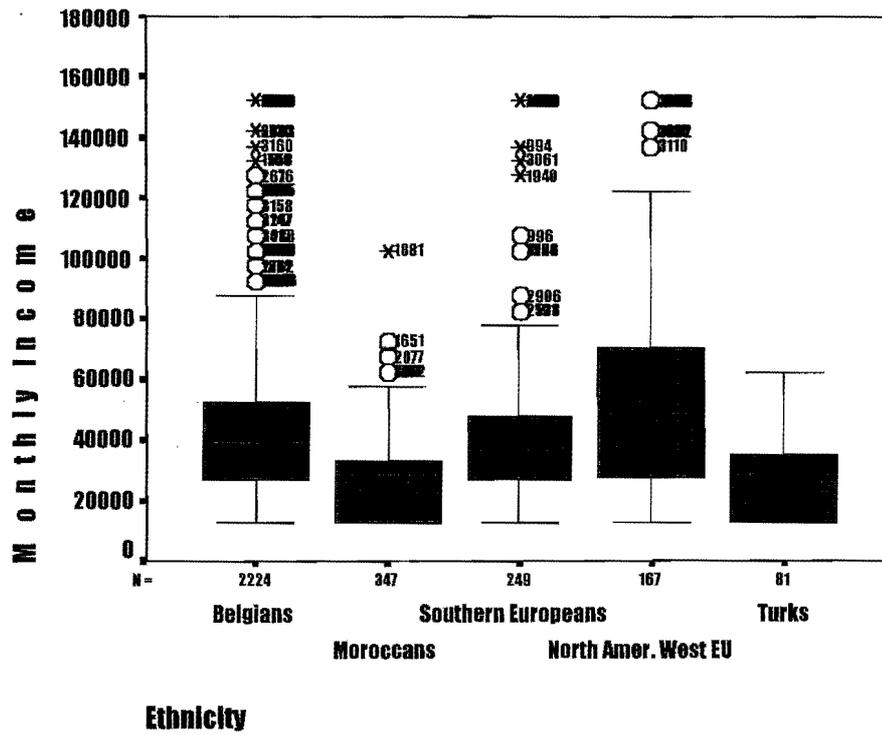
Source: Health Interview Survey, 1997.

b) Women age 15 and above



Source: Health Interview Survey, 1997.

Figure 4: Distribution of monthly family income by ethnicity, Brussels, 1997



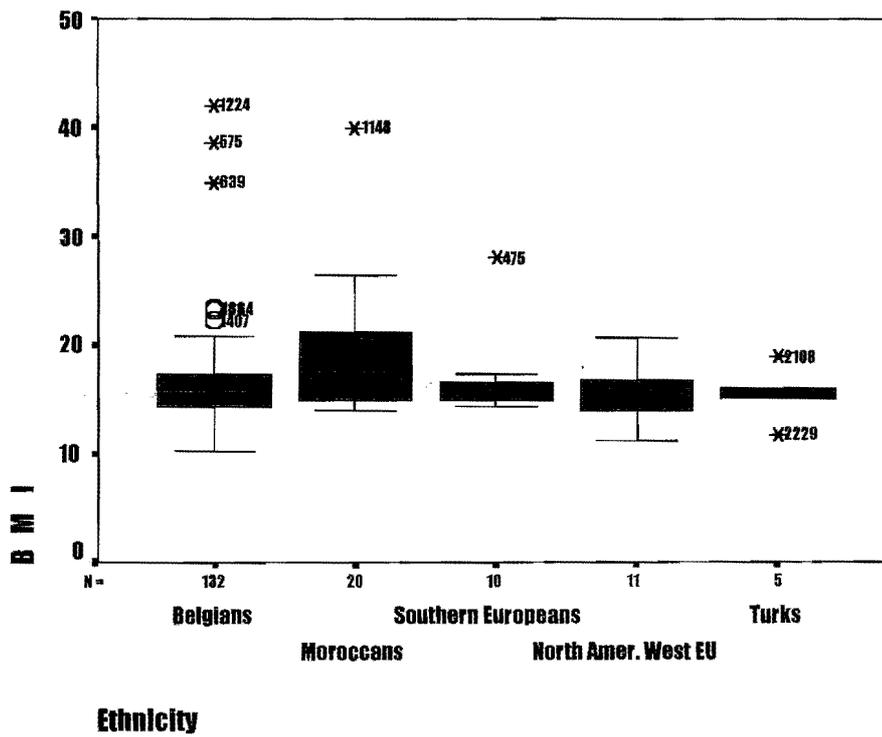
Source: Health Interview Survey, 1997.

Table 5: Preschool children by sex and ethnicity, Brussels, 1997

<i>Nationality</i>	<i>Boys</i>	<i>Girls</i>	<i>Total</i>
Belgians	82	67	149
Moroccans	15	13	28
Southern Europeans	6	5	11
Western Europeans and North Americans	7	4	11
Turks	2	7	9
<i>Whole Brussels</i>	<i>112</i>	<i>96</i>	<i>208</i>

Source: Health Interview Survey, 1997.

Figure 5: Distribution of Body Mass Index by ethnicity (children age 0-5), Brussels, 1997



Source: Health Interview Survey, 1997.

Table 6: School children by sex and ethnicity,
Brussels, 1997

<i>Nationality</i>	<i>Boys</i>	<i>Girls</i>	<i>Total</i>
Belgians	112	153	265
Moroccans	32	23	55
Southern Europeans	17	8	25
Western Europeans and North Americans	8	9	17
Turks	11	6	17
<i>Whole Brussels</i>	<i>180</i>	<i>199</i>	<i>379</i>

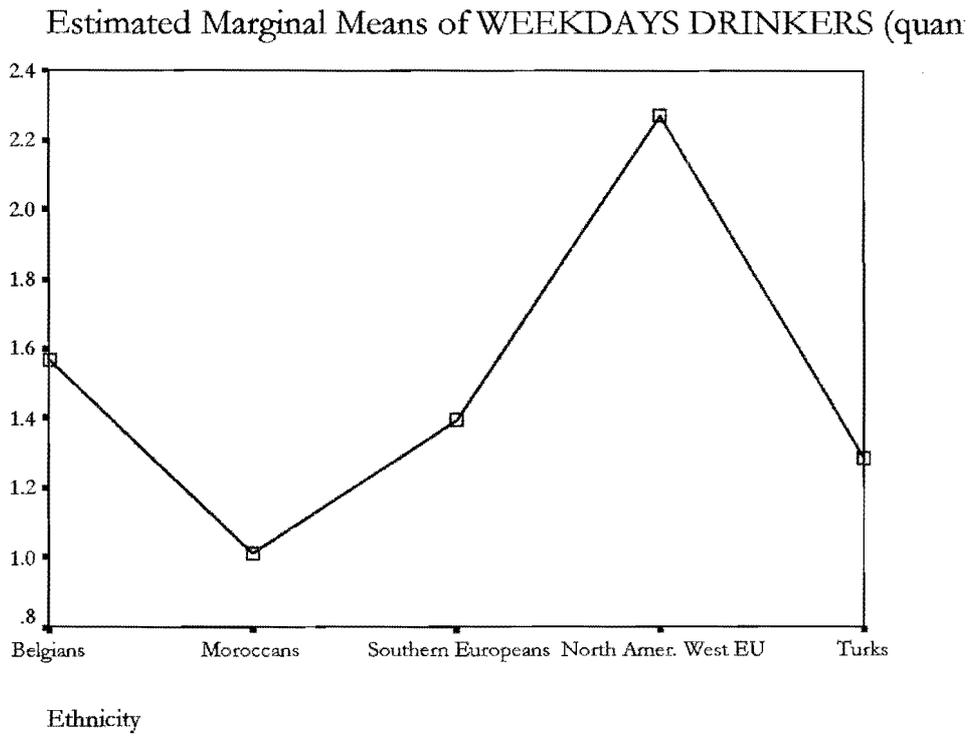
Source: Health Interview Survey, 1997.

Table 7: Adolescent and young adults (ages 15-24) by sex and ethnicity, Brussels, 1997

<i>Nationality</i>	<i>Boys</i>	<i>Girls</i>	<i>Total</i>
Belgians	125	124	249
Moroccans	30	39	69
Southern Europeans	24	18	42
Western Europeans and North Americans	5	6	11
Turks	6	10	16
<i>Whole Brussels</i>	<i>190</i>	<i>197</i>	<i>387</i>

Source: Health Interview Survey, 1997.

Figure 6: Mean number of drinks per week of adolescents and young adults (age 15-24),
Brussels, 1997
(means adjusted for age and sex)



Source: Health Interview Survey, 1997.

Table 8: Exercise patterns of teenagers and young adults
by ethnicity and sex, Brussels, 1997
(percent *at* cardio-vascular *risk*)

<i>Nationality</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Belgians	15.3	20.5	18.1
Moroccans	33.3	50.0	42.9
Southern Europeans	18.2	42.9	32.0
Western Europeans and North Americans	50.0	--	60.0
Turks	50.0	75.0	62.5
<i>Whole Brussels</i>	<i>20.4</i>	<i>29.7</i>	<i>25.3</i>

$\chi^2=18.5****$

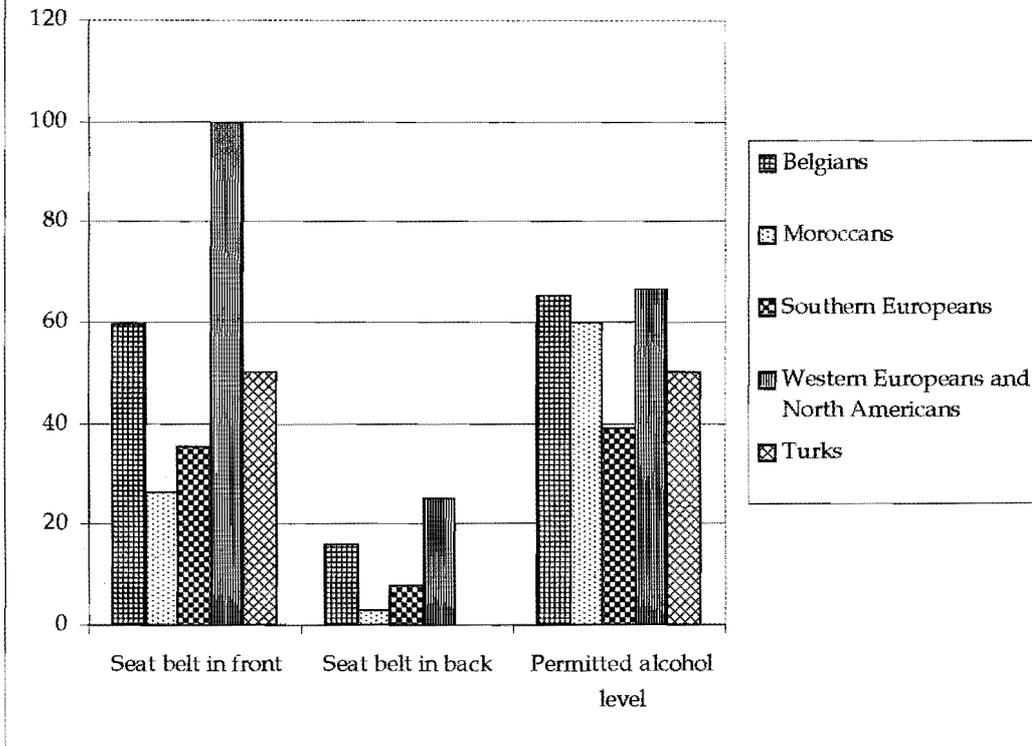
Source: Health Interview Survey, 1997.

Table 9: HIV: Knowledge and behavior of teenagers and young adults by ethnicity,
Brussels, 1997
(percent correct knowledge and took blood test)

<i>Nationality</i>	<i>Correct knowledge re transmission with blood transfusion</i>	<i>Correct knowledge re non contamination</i>	<i>Correct knowledge re protection</i>	<i>Undergone blood test</i>
Belgians	35.4	72.0	61.9	25.7
Moroccans	24.3	52.4	43.2	8.8
Southern Europeans	12.9	71.0	53.3	34.5
Western Europeans and North Americans	20.0	80.0	40.0	40.0
Turks	45.5	63.6	45.5	0
<i>Whole Brussels</i>	<i>31.5</i>	<i>68.9</i>	<i>57.4</i>	<i>23.7</i>

Source: Health Interview Survey, 1997.

Figure 7: Road safety among 15-24 years old,
Brussels, 1997
(percent of proper behavior and knowledge)



Source: Health Interview Survey, 1997.

Table 10: Distribution of adult respondents (aged 25-44)
by ethnicity and sex, Brussels, 1997

<i>Nationality</i>	<i>Men</i>	<i>Women</i>	<i>Total</i>
Belgians	310	304	614
Moroccans	76	64	140
Southern Europeans	48	48	96
Western Europeans and North Americans	32	42	74
Turks	17	11	28
<i>Whole Brussels</i>	<i>483</i>	<i>469</i>	<i>952</i>

Source: Health Interview Survey, 1997.

Table 11: Road safety behavior among adults (aged 25-44)
by ethnicity, Brussels, 1997
(percent reported *unsafe* behavior)

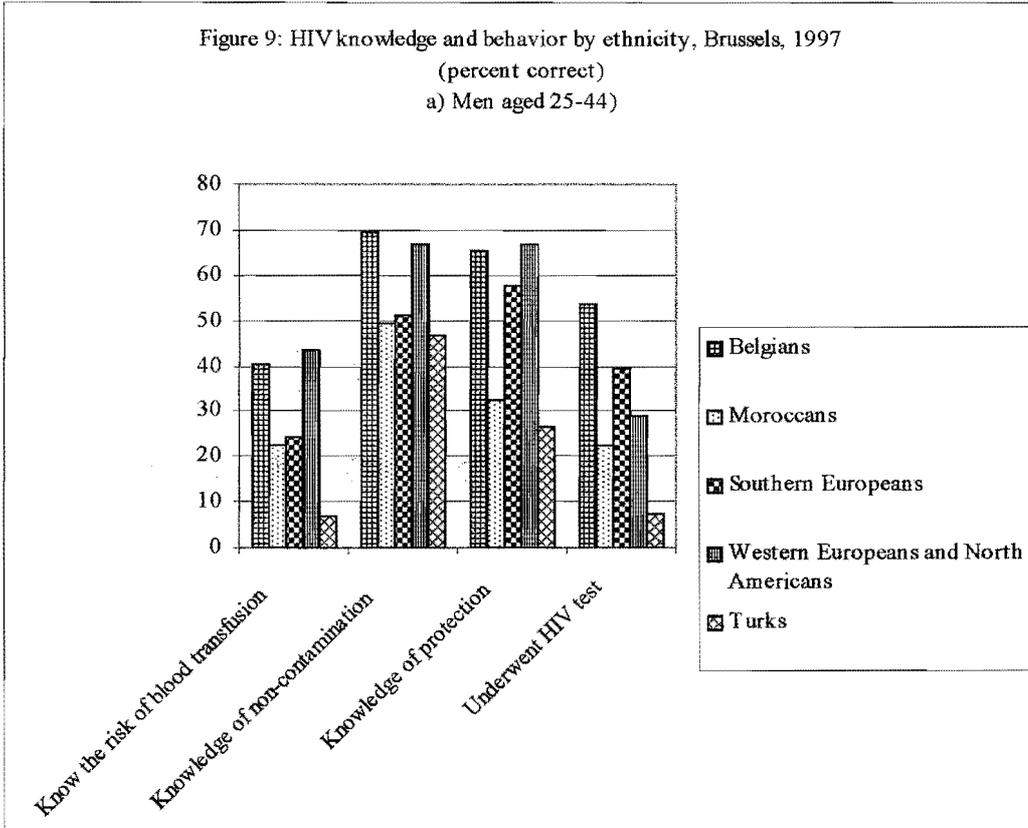
<i>Nationality</i>	<i>Seat belt in front</i>	<i>Seat-belt in back</i>	<i>Permitted alcohol level</i>
Belgians	37.5	78.4	39.2
Moroccans	47.9	76.7	45.9
Southern Europeans	52.7	89.0	44.8
Western Europeans and North Americans	18.2	73.0	58.1
Turks	75.0	100	37.5
<i>Whole Brussels</i>	<i>40.0</i>	<i>79.4</i>	<i>41.7</i>
χ^2	35.9**	18.7*	6.9

*p<.05

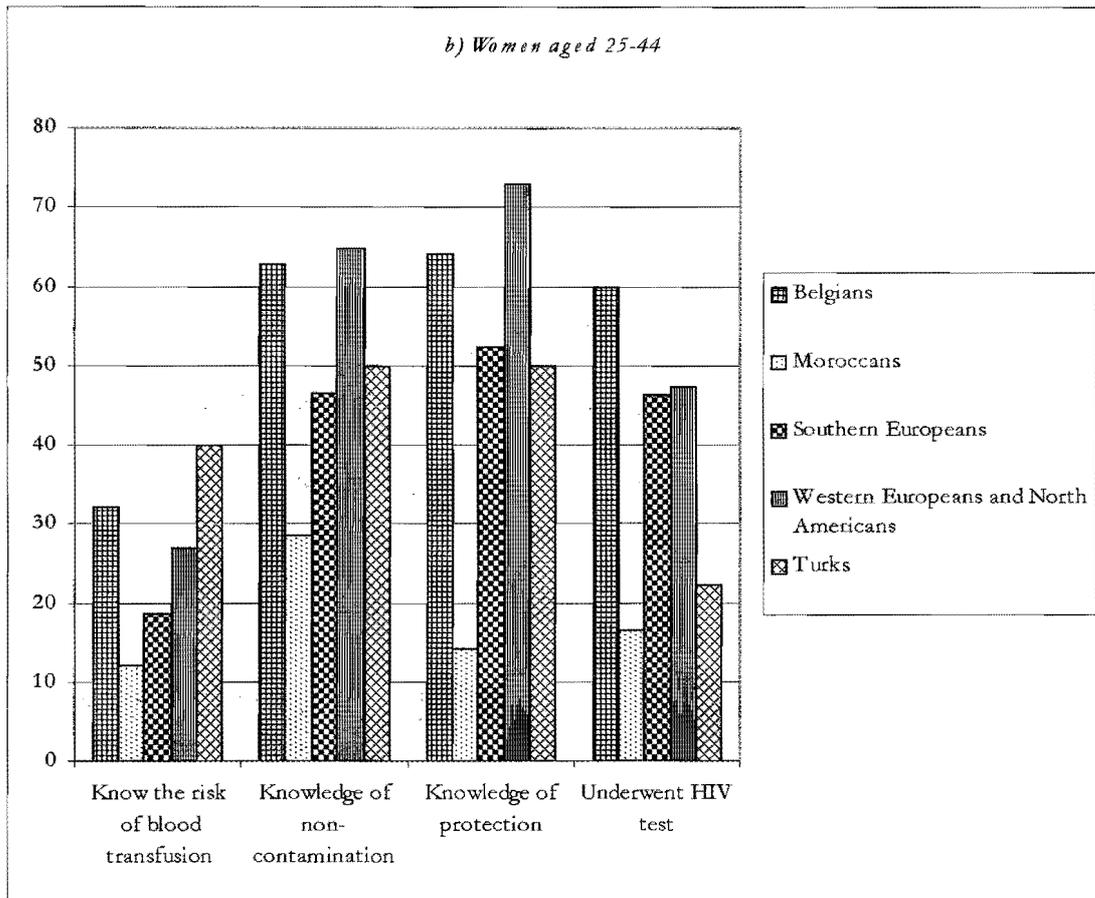
**P<.01

Source: Health Interview Survey, 1997.

Figure 9: HIV knowledge and behavior by ethnicity, Brussels, 1997
 (percent correct)
 a) Men aged 25-44)

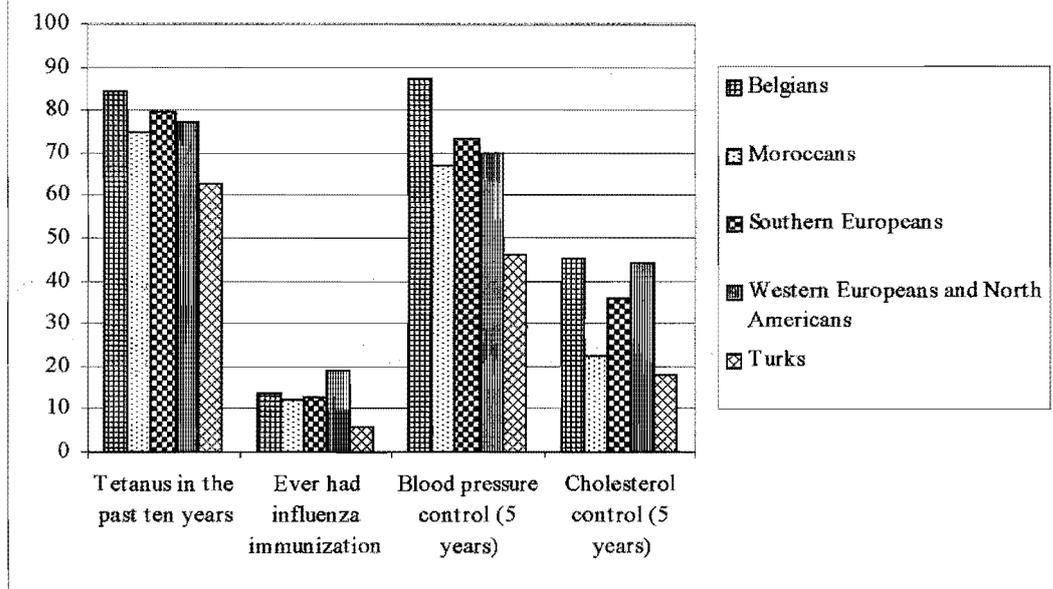


Source: Health Interview Survey, 1997.

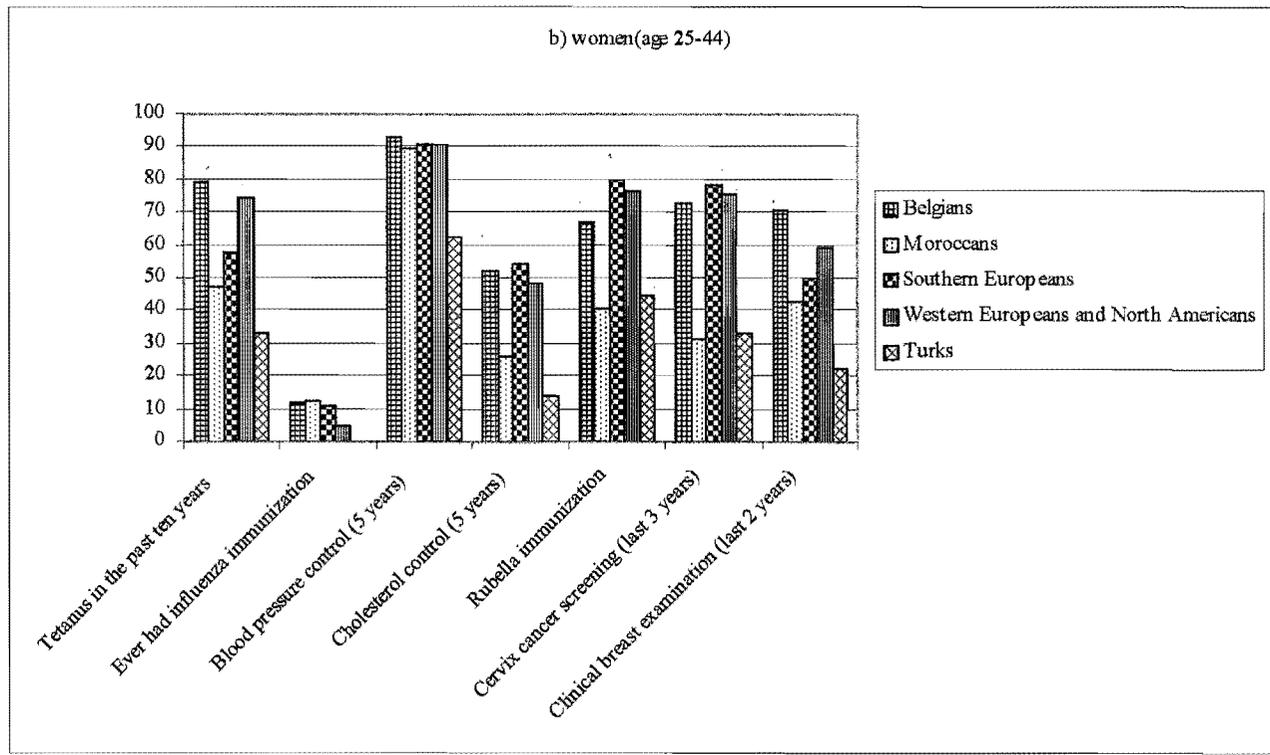


Source: Health Interview Survey, 1997.

Figure 10: Utilization of preventive health by ethnicity, Brussels, 1997
 (percent utilized)
 a)men(age 25-44)



Source: Health Interview Survey, 1997.



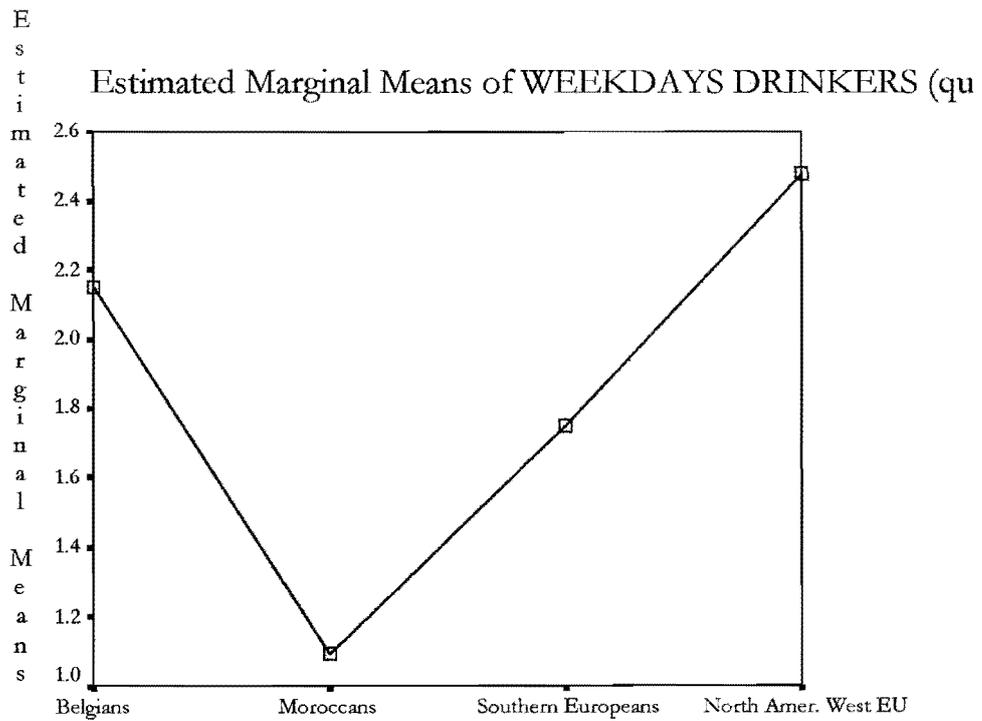
Source: Health Interview Survey, 1997.

Table 12: Older adults by sex (aged 45-64),
Brussels, 1997

<i>Nationality</i>	<i>Men</i>	<i>Women</i>	<i>Whole Brussels</i>
Belgians	243	284	527
Moroccans	26	22	48
Southern Europeans	34	29	63
Western Europeans and North Americans	27	19	46
Turks	3	3	6
<i>Whole Brussels</i>	333	357	690

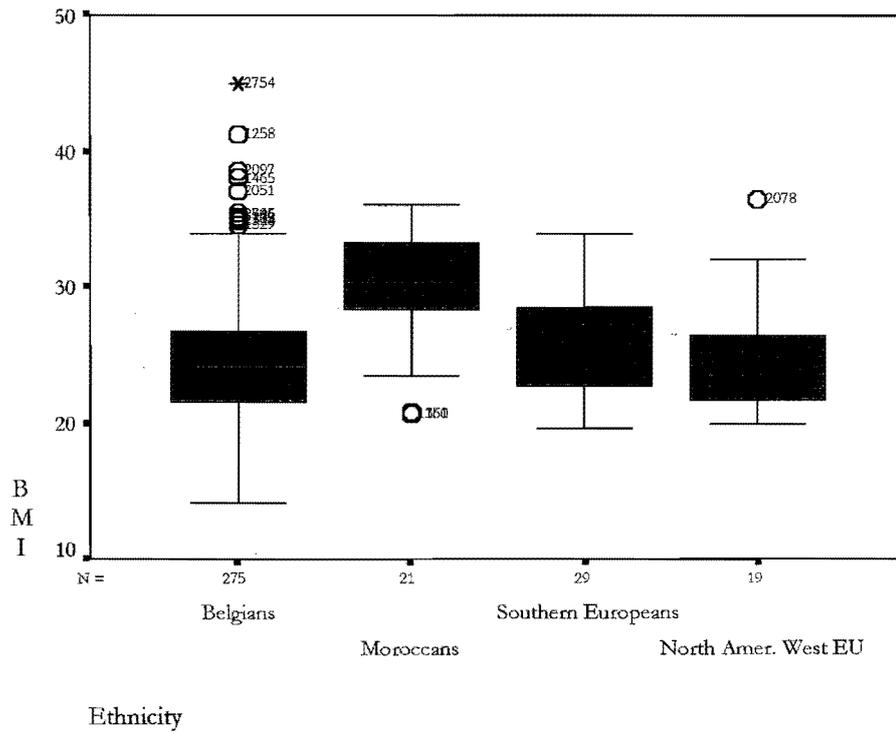
Source: Health Interview Survey, 1997.

Figure 11: Weekly alcohol consumption of older adults (aged 45-64) by ethnicity, Brussels, 1997
 (mean quantity adjusted for age and sex)



Source: Health Interview Survey, 1997.

Figure 12: Distribution of BMI of women aged 45-64 by ethnicity, Brussels, 1997



Source: Health Interview Survey, 1997.

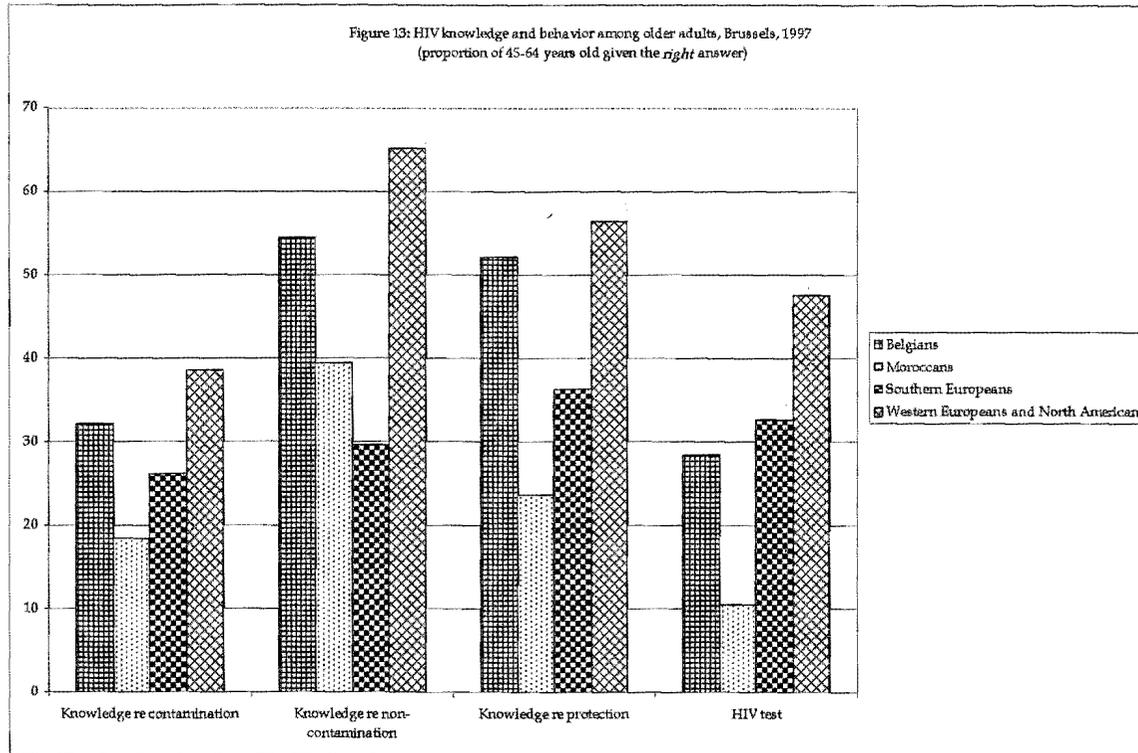
Table 13: Road safety among older adults (aged 45-64), Brussels, 1997
(percent)

<i>Nationality</i>	<i>Always wears belt in front</i>	<i>Always wears belt in back</i>	<i>Knows permitted alcohol</i>
Belgians	66.5	32.1	61.8
Moroccans	76.5	31.3	41.2
Southern Europeans	50.9	7.8	55.2
Western Europeans and North Americans	74.4	23.1	58.6
<i>Whole Brussels</i>	66.2	29.2	60.4
χ^2	8.7*	49.9**	3.3

* P<.0.05

** P<0.001

Source: Health Interview Survey, 1997.



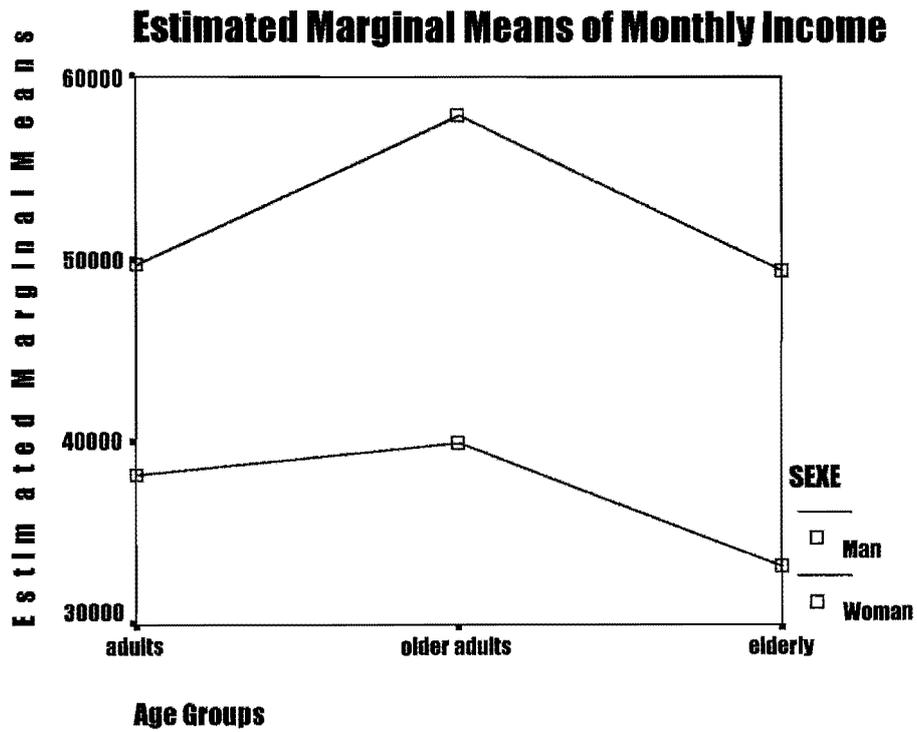
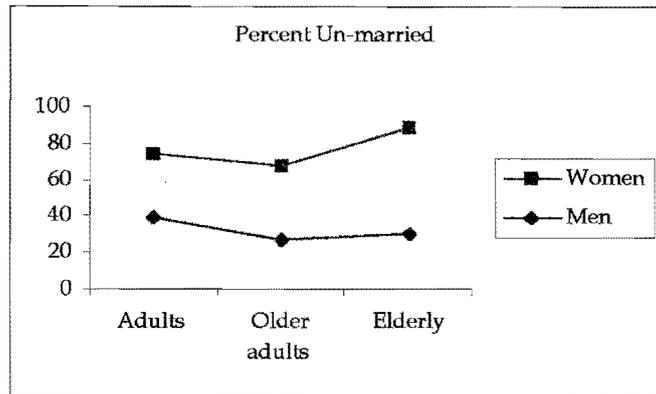
Source: Health Interview Survey, 1997.

Table 14: The elderly by sex (aged 65+),
Brussels, 1997

<i>Nationality</i>	<i>Men</i>	<i>Women</i>	<i>Whole Brussels</i>
Belgians	233	257	520
Moroccans	8	8	16
Southern Europeans	6	10	16
Western Europeans and North Americans	8	8	16
Turks	2	3	5
<i>Whole Brussels</i>	<i>247</i>	<i>326</i>	<i>573</i>

Source: Health Interview Survey, 1997.

Figure 14: Marital status and mean monthly income by age and sex, Brussels, 1997



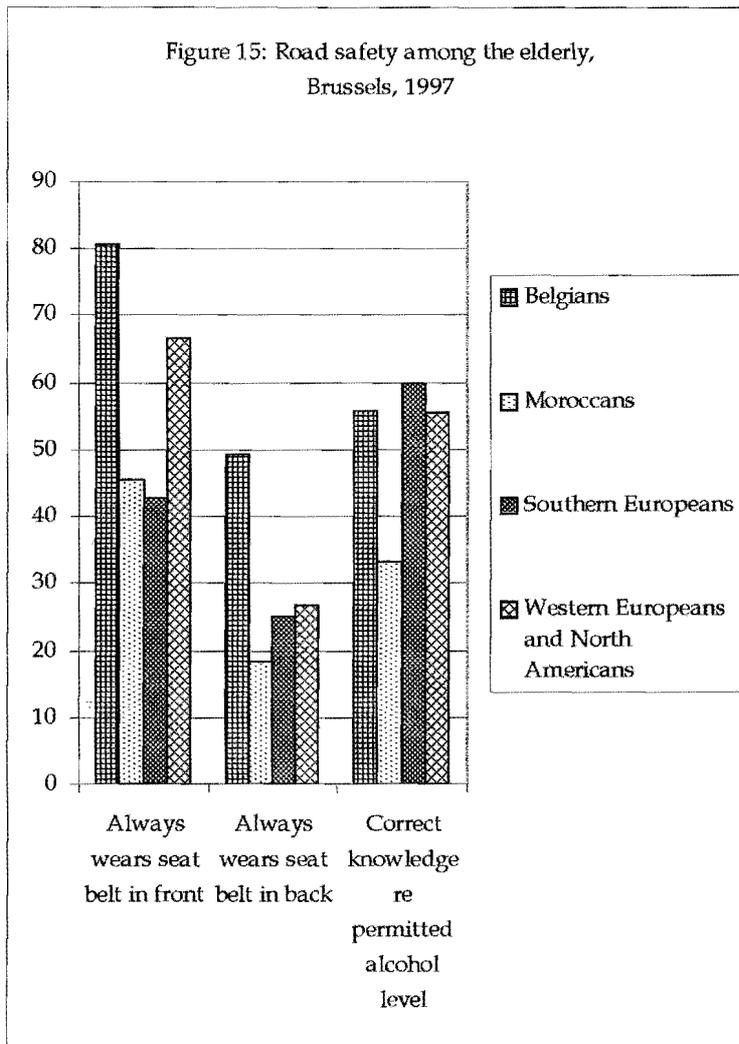
Source: Health Interview Survey, 1997.

Table 15: Socio-economic characteristics of the elderly
by ethnicity and sex (aged 65+)
Brussels, 1997

<i>Nationality</i>	<i>Monthly income (mean, 1,000 BF)</i>		<i>Marital status (% not married)</i>		<i>Living arrangements (% living alone)</i>	
	Men	Women	Men	Women	Men	Women
Belgians	50.3	34.3	30.0	58.9	29.1	55.2
Moroccans	27.6	18.9	25.0	75.0	12.5	50.0
Southern Europeans	32.5	30.1	50.0	70.0	50.0	60.0
Western Europeans and North Americans	65.0	21.5	25.0	50.0	25.0	50.0
<i>Whole Brussels</i>	<i>43.8</i>	<i>26.2</i>	<i>30.2</i>	<i>59.4</i>	<i>29.0</i>	<i>55.1</i>
<i>Statistics</i>	<i>F=10.8, P<0.001</i>		<i>NS (P>0.05)</i>		<i>NS (P>0.05)</i>	

Source: Health Interview Survey, 1997.

Figure 15: Road safety among the elderly,
Brussels, 1997



Source: Health Interview Survey, 1997.