SOCIAL EXCLUSION AND TRANSPORTATION: PLANNING FOR ACCESSIBILITY

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ABSTRACT

In this paper, the effect of transportation based difficulties on social exclusion was studied via conducting a survey which includes people who lived in the district of Avcilar on the European side of Istanbul, Turkey. In the survey a questionnaire were utilized. People were asked about their regular social, cultural, sports and voluntary activities in their leisure times and if they limited these activities due to transportation based difficulties such as high travel (out-of-pocket) cost, long distances, travel and transfer times, low safety and comfort. People included in the study were between 20 and 45 years old, worker and middle-income class, living approximately 27.3 km away from the city center of Istanbul in Merkez, Ambarlı and Denizkoksler neighborhoods. The main survey question asked was whether they felt socially excluded due to transportation related difficulties. The survey study was performed before (2005) and after (2009) when the new bus rapid transit (BRT-called Metrobus in Istanbul) line was opened (the first section, opened in September 2007, of the line was 18.3 km between Avcilar and Topkapi and the line was extended first to Mecidiyeköy-Zincirlikuyu and then to Söğütluçeşme in the Anatolian side of the city by crossing the Bosporus Strait over Bogazici Bridge in 2009). This before-after study is expected to disclose whether the new BRT line helped to ease some of the travel discomfort along the corridor (between Avcilar and the city center, Mecidiyeköy-Zincirlikuyu).

Key Words: Social Exclusion, Transportation Difficulties, Planning, Istanbul, Turkey

1. Introduction

1.1 The Problem

Social exclusion, as one of the most important topics in social sciences, may have some different parameters, like cultural, economic, racial, and so on. In this paper, the effect of transportation based difficulties on social exclusion was studied for people living in the district of Avcilar on the European side of Istanbul, Turkey. The population of Avcilar was 333,944 in 2008 census (tuik.gov.tr, 2009).

Since Avcilar was approximately 27.3 km away from the city center of Istanbul, which is one of the biggest metropolitan city of the World (European Capital of Culture in 2010), it has been observed that people are socially excluded from the entire social life of the city because of transportation difficulties, based on time, cost, safety and comfort. In other words, this study presents the peoples’ current and possible future limitations in their social activities caused by transportation.

1.2 General Information

Turkey has witnessed the movement of migration, especially from small cities to larger ones for the sake of joining the social and cultural facilities easily and profiting much more from the public services as hoping better business capabilities, and desiring much more quality residences since 1950s (Bayhan, 1997; Akkur, 1996). Istanbul is one of the best examples for the areas which were affected so much from that migration movement (Gorgulu et al, 2006). People who live in this metropolitan area come face to face with imperfections in the case of social activities—which would make their lives better-- because of the transportation difficulties.

In the study, the life standards of people who live in the city, their hopes in connection with modern capabilities and leisure activities were considered. Then, cost, time, place were examined, which are necessities for these activities, and also their relations with transportation capabilities. There is no doubt that transportation has both positive and negative effects on them (Litman, 2003 (2)). In addition to these effects, this study focused on the living conditions of the city-dwellers, centering their social and cultural activities, and their attitudes. When the concept of the social activities have been analyzed deeply, every movement can be called as a social activity which is completely about traveling, fun, visiting and recreation without aiming any trade, work or study (Shepley, 2005).

The target sample population of the study is people of worker and middle class, young and middle
aged, without any physical disabilities, and has enough time for social activities in their routine life while this study was in process. Determining the young and middle-aged group is about the interest of joining the social activities, and it is important influencing cause and effect relationship based on the implementing accessibility in general and survey results (Morwitz, 2004; ).

There are a lot of facilities for people like advertising fun, traveling and recreation in Istanbul. When it is thought that the people improve their behaviors according to the existing capabilities (Butz et al, 2003), there is no doubt that the travel demand in big cities would be shaped according to this situation. In the case of social activities, transportation demands were classified as attending theatres, movies, concerts, sports and recreational activities, visiting historical, social, cultural places and also visiting friends and relatives.

The results of this study involve planning a discipline to show importance of accessibility of social facilities and mobility of people who live in metropolitan area. In general, accessibility is the ability to reach goods, services and activities (Litman, 2008). It is obvious that those are main purposes of most of the transportation investments. In this study, the ability to reach goods has been excluded from the interpretation based on accessibility perspective. While there are many factors which affect accessibility (Litman, 2008), only transportation based elements are included in this study.

1.3 Hypotheses, Research Questions and Data

Main hypotheses of the study were:

a) People, who live in at least 25 km away from the city center of a metropolitan area, are socially excluded because of the transportation difficulties.

b) New public transportation system called “bus rapid transit (BRT)” has most likely helped society to include them into their desired social life.

Based on these hypotheses, two main research questions are asked:

a) How are people excluded from social life of the city by effects of transportation?

b) How efficient is it to use the new BRT system to support social inclusion of a part of the society?

The study was basically built on two street surveys which were applied to people who live in Avciyar (as population) and age group like 20 – 45 years old (as sample), one in 2005 (before BRT) and second in 2009 (after BRT). As subject, people were asked about their regular social, cultural, sports and voluntary activities on their leisure time and if they limit these activities due to transportation based difficulties such as high travel costs, long distances, travel and transfer times, low security and comfort. The questionnaire also included some personal questions like, age, place of birth, car ownership and monthly income as independent variables of the interpretations.

Some digital data of the area have been used to identify and visualize transportation systems, how easy or hard it is to reach public transportation lines and stops, how much of the area is within the walking distance from the transport lines and finally what new system offers to society in the case of accessibility and mobility.

2. Literature Review

The cities that were improved quickly and crookedly connected because of the fast migration which occurred in the metropolitan areas at the time (Hogan et al, 2001; Yazgi and Dokmeci, 2007). The complex morphology, improved in these cities, the difference of the social-economic characters, the complicated and dense buildings occurred because of the difficulties with transportation itself (Medda et al, 2003, Church et al, 2000). Church also mentioned that being deprived of social activities, even if you have no financial problems, is a situation occurring because of the effects of unreliable transportation. Istanbul is one of the best examples of those kinds of metropolitan areas, since it has attracted many national and international immigrants, especially after 1950s (Duran et al, 2005).

2.1 Social Exclusion

Although social exclusion has existed since the 1970s, as Glenn Loury (1999) mentioned earlier, this has become an extremely important topic in the last decade. There are a lot of articles which have been published about socially excluded communities or groups of people, by reasons of economic, cultural, racial, ethnical and gender. However, this study focused on the effects of transportation difficulties on social exclusion of people. There are also many studies showing the relationship between social exclusion and transportation. The theory of social exclusion is related to inequality and social rights of the people (Schonfelder and Axhausen, 2003). In this study,
inequalities of the people who live in the same city but cannot get same benefit from social events and attractions have been searched and discussed.

Being socially excluded is not completely clarified on an academic level (Miller, 2003; Klasen, 2002). Furthermore, the general explanation is: a person who cannot get the benefit of social capabilities of the area where he/she lives in geographically because of the effects which are not under control even he/she wants to do it. One of the other straight and clear identification of social exclusion made by Duffy (1995) is that “Social exclusion is a broader concept than poverty, encompassing not only low material means but the inability to participate effectively in economic, social, political and cultural life and in some characterizations alienation and distance from mainstream society”. Being deprived of social activities and being excluded must not be put in the same category with poverty and being economically inadequate (Schonfelder and Axhausen, 2003). As we mentioned before, being deprived of social activities, even when you have no financial problems, is a situation that occurred by the effects of the transportation; eventhough very first usage of the social exclusion as a term in the 1970s, was standing with poverty and inequality (Evans et al, 1995).

As a figure for the subject is necessary for our study, Istanbul is a great metropolitan area which is hosting lots of social-cultural activities and has a lot of functions in it, but not everyone who lives in Istanbul can benefit from all of these activities and opportunities on the same level. For example, even though the historical peninsula (the Sultan Ahmet Square and its surroundings) is in a populated area, most of the residents can only have chance to visit there a few times in a year. Transportation difficulties such parking problem, accessibility and long travel time can be listed as some of the main reasons of this conditions.

While we are focusing on relationships between transportation and social exclusion, literally classified as physical, geographical, public facilities, economic, time and fear excluded (Church et al, 2000). Physical exclusion is used to determine natural disabilities of people, such as very young and old age groups, see, hearing or movement disabled people. Geographic exclusion is defined as existing transportation facilities of the area and form of people’s mobility based on these systems. Public facilities, schools, hospitals, recreational areas, commercial places are generally randomly distributed in developing countries. Therefore, some certain part of the city might have difficulties reaching those facilities when needed because of the lack of public transportation or the inability to handle private transport. Unlike general definitions, economic exclusion based on transportation is entirely about the absence or existence of job opportunities in a surrounding area and working far from the home. Time based exclusion differs based on income, but still does matter, especially for the residents of metropolitan areas. Fear based exclusion is directly related to crime potential, types and frequencies of the area. In the conclusion part, types of exclusions of our sample population on the study area are discussed.

2.2 Transportation

Urban transportation is such an important and intensive issue in every metropolitan city (McGlynn, 2008). Rapidly increasing population, urban growth and spatial development have caused increasing demand for urban transportation facilities and services in these areas (Qureshi, 2007). The transportation system has the duty of providing access between a lot of different property usages in urban areas for individuals and groups. The important parts of the city networks are business areas, health and education centers, and public services (McGlynn, 2008). The transportation services also have an important role in providing people with service connections so that they may meet with their relatives and friends (Miller, 2003).

There are two types of transportation effects on social exclusion: first is the lack of access as an economic, social, or cultural limitation. Second is the physical effects, such as traffic jams, accidents, crimes, weather and noise pollution (Hine, 2003). In this study, transportation was examined based on cost, time, access, safety and comfort.

When examining cost, three elements need to be present: First, cost can never be the certain index or a measure of the transportation service afforded or the movement capabilities supplied. Second, the effects of cost change according to the age group and social identity. Lastly, it does not always show persons’ proper income level, as it does not determine whether they can afford or not afford transportation costs, also the different reasons may have a role in this situation.

Time has much more importance on the daily activities of people especially in big cities. People’s transportation preferences change based on the issue of time (Wu and Miller, 2001). Safety is a factor which mostly influences elderly people, kids and women (Evgenikos et al, 2009; FERCI/ECTRI, 2009). This is not only about the preferred vehicle
for transportation, but also about the social crimes which occurred over time. It has a great role on the preferences for accessing the transportation systems or desired places to go. There might be some natural and human made blocks, like huge parking lots, walls of industrial institutions or rivers and hills between distance of walking interval and the stations. Comfort is also taking part as a preference, because in the places where there are more than one transportation preferences have close relationship with each other. They are all dependent on one another, it is almost impossible to interpret one of them without paying attention on another.

In the Todd’s article (2003), elements to multi model level of service include public transportation with evaluation factors of service coverage, frequency, speed (particularly compared with driving), vehicle and waiting area comfort, user information, price, safety, prestige. Based on these criteria, transit level of service of new bus rapid transit system (metrobus) of Istanbul can be considered as “A” which refers to equal and more than 90 percent demand met, especially in the case of frequency, service coverage, speed and price.

In the case of the accessibility of the transit system, according to another survey 80% of people can walk up to 400 meter in 6 – 10 minutes which is considered a comfortable walking distance in mixed used urban area to reach stations and stops of public transportation (Ewing, 2000). Dittmar (2004) mentioned that “optimal walking distance between a transit station or stop and a place of employment is 500 – 1000 feet (150 to 300 meter)”. Regional Planning Association defines transit friendly communities as intensively developed areas within ¼ - ½ mile (400 to 800 meter) of rail stations. I think, any other public transportation system facility can be added into this definition. They also mentioned that general features of these areas are mixed used, pedestrian based and traffic calming design. All of them make people encourage walking, it generally takes 5-10 minutes to reach any station or stop (Regional Plan Association, 1997).

2.3 Local Transportation Systems of the Region and Metrobus

There are public buses belonging to Istanbul Public Transportation Authority (IETT) and private public buses which operate from Avcilar to Mecidiyekoy, Taksim, Esenler Domestic Bus Station, Bakirkoy, Yenibosna and other settlement and commercial areas which is on this line throughout the E-5 highway, with 15-20 minutes departure frequency. Additionally, there are minibuses lines as Avcilar - Kucukehrmece (39 vehicles), Avcilar – Topkapi (210 vehicles), Firuzkoy, Esenyurt and Tokat neighborhood to Topkapi. There is also a sea bus line between Avcilar and Bostanci. It had only one departure early in the morning and one in evening hours, during the week days. Currently one more line has been added, which goes to Pendik, however departure frequencies still remain as they were.

Since Metrobus started to operate as a new public transportation system all along the E-5 highway, minibuses routes have been taken from E-5 to internal arterials. The purposes were to provide more transits for inner areas and more places on the road for private vehicles. Also, private public buses have been converted to public buses by IETT to have more organized departures and frequencies.

Metrobus is the name of a “bus rapid transit” system which has a special route that is only used by specific vehicles of this line between Avcilar (in European Part of Istanbul) to Sogutluceme (in Anatolian part of Istanbul). The route provides easy accessibility to many important centers in Istanbul, such as Bakirkoy, Topkapi, Sisli, Mecidiyekoy and Kadikoy. It provides almost an hour shorter travel time than before, between the first station to the last one.

Metrobus provides better opportunities to move around the city, based on time and comfort. Recently it has 42 km long route with 32 stations. There are 274 special vehicles operating in the system. Each one approximately has the capacity of 230 passengers and departure frequency is changing from 1 minute to 30 seconds in the day time. It is in service for 24 hours, midnight time departure frequencies range from 30 minutes to an hour. Approximately, 800,000 people use the system on a daily bases (Anadolu Agency, 2009). Therefore, it can be assumed that people who live in Avcilar feel most comfortable and flexible to travel all along around the city.

3. Study Area

Avcilar is one of the more rapidly improving and developing areas of Istanbul, located at west bound of the Kucukehrmece Lake, approximately 27.3 km away from the city center (Eminonu), on the European side of the Istanbul (Figure 1). Its population has significantly increased in last 10-15 years. While it was 235,000 based on the 2005 census, it has now reached 333,944 in 2008 (Table 1). Its first group of residents arrived after World War II by a population exchange between Turkey
and some of the Balkan countries, such as Greece and Bulgaria.

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Table 1: Population of Avcilar based on the Census Data

Avcilar has 10 sub-districts. There are approximately 350 industrial foundations, different types of commercial institutions, a university campus, social and recreation areas. Even Avcilar is not a rich place based on social activities; it supplied the facilities of building the various social foundations due to the effect of increasing population potential. After Istanbul University moved some faculties to Avcilar, it has got a new excitement and creativity, and also it made the social life richer in the area. There are now a lot of cafeterias, tea gardens, restaurants, clubs, especially in the coastline of Ambarli and Denizkoskler districts.

4. Methodology

The method of the study is basically woven by the analysis of the two surveys data. Also, GIS based analyses and interpretations were included.

The surveys have been applied randomly to residents of Avcilar in two selected times, based on before and after the Metrobus started to operate (first 2005 – second 2009). Since the topic is completely related to people and their activities, survey results are the most effective way to get direct information and to figure out whether residents are really excluded because of transportation problems or not. Success of a new transportation system (metrobus – bus rapid system) in the case of increasing mobility of people has been discussed and interpreted by comparisons of survey results. The questionnaire was designed to seek how these people behave, what their behavioral characteristics are and how new bus rapid transit system effect their behaviors based on the social activities.

In 2005, the survey questions were asked by questioners to the age group 20-45, which has the tendency to participate heavily in social activity. First, the social activities that people possibly would participate in were classified as sport, movie, theatre, shopping, courses, concert, visiting historical, cultural and social places, picnic and recreational activities, visiting friends and relatives. The main reasons which stop people from traveling outside of Avcilar were asked. Options were given for this question as cost, lack of time, difficulties and safety. Moreover, it was asked to the individuals whether they canceled or not any planned activity, which was going to be at outside of Avcilar, because of these effects. The last question was asked about their transportation preferences for travel to inside and outside of Avcilar. There were no determinant personal questions, except age, sex, place of birth,
profession, education, income level, and vehicle ownership. These were used as independent variables of the study.

In 2009 survey questioners added three different questions to figure out the success of Metrobus based on the ability to support people’s participation in social activities in addition to the other questions that are already mentioned above. Those three questions are directly asked: a) Is there any increase for their social activities in the inner part of the city after Metrobus started operating? b) How often do they use Metrobus? c) What is their main purpose of travel by Metrobus? The results of these questions are providing information about how metrobus plays a role on the mobility of people who live in the defined area.

GIS was used as a tool to identify how much of the residential area is within the walking distance of public transportation route, and was also used for visual interpretation of the new bus rapid system. Basically, district borders, buildings and roads were taken out of whole city database. Both metrobus line and inner public transportation route in Avcilar were created by the road’s and highway’s data. 250 meters buffer zone was created by using public transportation line and area within the buffer was analyzed based on the building’s data. 2006 IKONOS images of European and Anatolian part of Istanbul were used as base map and digital data adjustment. Building, district and road data were provided by GIS Department of Istanbul Metropolitan Municipality.

Visiting friends/relatives and recreational activities are the most common activities done outside of the Avcilar. Shopping based travel outside of the county declined to 97 responses out of 188 from 149 responses out of 163 samples, which means

5. Results

As we mentioned before, it is obvious that there is supposed to be more than one factor leading to the cause and effect of social exclusion. Variety of current capabilities in different social areas causes occurring different behaviors for different groups of people (Butz et al, 2003). The results of surveys are also supporting this judgment. Results were listed and interpreted based on two different survey applications and comparative outputs.

In 2005, 44 percent of the people who were involved in the study owned a car; while in 2009 the results have dropped to 42 percent. The monthly income of 57 percent of our sample population was equal or less than one thousand dollars in 2005, this amount increased to 67 percent in 2009. Only 3 percent of people mentioned that their monthly income is more than two thousand dollars per month in 2009, while it was 12 percent in 2005. Education and gender distributions of 2005 survey results are 31% female, 69% males, 42% university degree or still college student, 23% high school degree and the rest graduated from primary schools. Based on the 2009 results, 71 percent of our population is male and 29 percent was female; 31 percent of the people graduated from university, 42 percent of them have high school degree and the remainder graduated from primary schools. Since the 2005 survey was conducted during fall semester and 2009 survey was in semester holiday, there is a remarkable difference between the percentages of participants who have earned a university degree.

there is a 40 percent difference one from the other. Visiting historical, social and cultural places’ records were excluded from the study results because there are incoherent differences between two survey results based on these activities.

According to attendance of movie, concert and sports activities outside of the Avcilar, in 2009 records higher than 2005 records (Figure 2).
Figure 2: Social activities in and outside of Avcilar

Most common social activities within the county are sports, movie, recreation, visiting friends and relatives. Most of the people preferred to stay at home while they do not go outside of Avcilar for any social activity depends on both survey results. When we look at the 2009 survey results, it is easy to realize decreasing of movie, theater, shopping and sports while visiting friends and relatives, picnic and staying at home rates are increasing.

Figure 3 shows the 71 percent of those, who answered survey questions in 2005, they have canceled their planned activities, which would be outside of the Avcilar, because of the transportation time, difficulties, costs and safety. When we look at the 2009 survey results, this amount decreased to 53 percent and there is nobody who has canceled his/her plans because of safety. Apparently, time is still covering the big portion of being a reason to cancel plans. However, while it was 33 percent in 2005, it was recorded as 39 recently. When we examine the 2005 survey results, 29 percent of those, whose answers are “no”, are also the 55 percent who own private vehicles. 47 percent of samples’ answers is “no” for canceling social activities plans in 2009 and the amount of private vehicle ownership is 42 percent.

Figure 3: Percentages of responses for cancelation planned activities based on the given reasons.

In 2005, when it was asked which factors affected them not getting outside of the district for social activities, 48 percent’s answer was time, and 34 percent’s answer was difficulty. In 2009, while difficulties amount as a reason not to go outside of the county is decreasing from 34 percent to 13 percent, time amount increased from 48 percent to 72 percent. There is almost no transportation based safety problem based on the 2009 data. Apparently, expenses are higher than as it was 4 years ago (Figure 4).

Figure 4: The reasons which mostly stop people not to go outside of the Avcilar

As it mentioned before, 2009 survey questions included three additional questions about metrobus. When people were asked directly if their participation in social activities had increased, 78 percent of them said “yes”, 41 percent of those who answered the questions use metrobus several times per week and 31 percent said they use metrobus several times per month. Interestingly, only 17 percent of the involved people use metrobus every day, including the weekend. Almost 50 percent of
the people use metrobus for back and forth travel from home to work/school trip. 24 percent of them use it for social activities and 17 percent of them use it for visiting.

In this study, walking distance was taken as 250 meter by being aware of old people and kids. The map below (Figure 5) shows the 250 meter buffer zone (green) which was created by using transportation line. While there are 4980 dwelling and industrial units over the three study neighborhoods, buffer zones just cover 1976 of them. This means almost 60 percent of the area is not within walking distance of public transportation line. Northern part of the district also has another transit line which is excluded from the study, since that part of the district was out of study area. 90% (4478 units) of 4981 building in whole study area are residential buildings. 80% of residential buildings have equal or more than 4 floors, so this is indicating how dense this area is. There are 62 manufacturing factories and 50 official buildings including schools. There are 1797 residential units out of 1997 total buildings in buffer zone. This area includes 12 manufacturing factories and 28 of the official buildings and schools. Both visually and numerically more than half of the total area has been left unattended in terms of accessibility of public transportation services.

![Figure 5: Public transportation route with 250 meter buffer zone](image)

6. Conclusion
First of all, we can simply accept the existence of social exclusion of people who live at least 25 km away from the city center because of the transportation difficulties. We can also mention success of new transportation systems in terms of helping people to include themselves into desired social life.

Based on the results it is obvious that new bus rapid system most likely helped to enhance peoples’ attendance to social activities in entire city. Basically, 78 percent of the people mentioned that they have attended social activities more often than before the new transportation system. Increasing attendance to movies, concerts, sports and recreational activities outside of the Avcilar are remarkable, and the results show the effects of a new transportation system on social behaviors. Based on the activities in Avcilar, there are decreasing shopping, movie, theater and sports activities which mean people more often leave the county for these activities. Besides these, the percentage of people using the public transportation
to go outside of the district increased from 58% to 76%. Cancelation planned activities percentages also decreased by 20%. While difficulties are 24 percent less important than 4 years ago, time is still a remaining factor as to why the cancellation of planned activities is at 39%.

The distance of the defined area to the Istanbul’s CBD, and the time spent to travel there, as well as traffic jams during a specific time of the day play an important role on people’s decision to travel. That is why time is the most effective reason to stop 72% of people from leaving the district. There is another situation which plays a role, which is being far away from the public transportation line and stops. There are only two main roads where the public buses can pick up and drop off the passengers in Avcilar, and as it mentioned in results almost 60 percent of the settlement areas are far away from the stops when we get average walking distance as 250 meters.

Another result shows the relationship between the private vehicle ownership and transportation preferences. Based on the 2005 results, the 95% of people whose answers are “no” about the cancellation for the plans, have private vehicles. On the contrary, there are also the ones who cancel their plans even if they have vehicles, but their reasons were mostly due to the time and difficulty based on the traffic jam rather than expenses, comfort or safety. In 2009, 53% of people have mentioned that they have canceled their plans and 41% of those have a private vehicle.

43% of samples in 2009 mentioned that they use metrobus for social activities (including travelling), 78% of the people reported an increase their social participation. The map below (Figure 6) shows how the study area connects an entire city, with the new system. There used to be other buses and minibuses in operation, some of them still remain, but travel time has become shorter, vehicles much more comfortable and safe, expenses are moderate and departure times are more frequent, making waiting time shorter. There are 32 stations in 42 km long route, which means there is a station within nearly every 1.3 km.

So, it is not only helping Avcilar, but is also providing sufficient public transportation service to part of the city which is lying along the E-5 highway corridor.

Figure 6: Current metrobus line and study area
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