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The Satisfaction and Perception of Districts 2 Tehran Residents on Land Use and Transportation on Air Quality

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Abstract: The increase of Tehran population has multifold in the last decade and as a result more housing and other infrastructure forced to be developed. Land use and transportation have been documented to be contributed to the air pollution. Due to the ineffectiveness of the land use and transports services, traffic congestions contribute to the emissions of toxic, dust particulate and heat that pollute the air. This study attempts to investigate the degree of satisfaction and perception of the district 2 Tehran on the city land use and transportation. The study random sampled 3000 residents using the self-developed instruments; zone Attractiveness Questionnaire (D2AQ), Urban Land Use and Transportation Use and Policies (UTAQ) and Urban Land Use and Transportation Use and Policies on Air Quality (UTAQQ) to assess the residents' satisfaction and perception on the area air quality. Study found that the residents were satisfied with the city plans and policies and perceived the city actions as effective. Nevertheless, the residents want the city and the public to solve the traffic congestion problems, build more parking areas and allocate more green spaces and parks. The city and the experts may utilize the information for short term and long term plans of air pollution counter measures.

Key words: Population, perception, quality, residents, transportation, Malaysia

INTRODUCTION

The development of urban land results in different urban forms which in turn lead to consequences such as traffic generation and odd residential areas. High volume of traffic beyond the capacity of urban systems leads to environmental problems such as air pollution. Traffic generated air pollution has been a concern for urban planners and environmental managers in developing countries for decades (Holtz-Eakin, 2003; Keong, 2002). This is particularly due to the adverse impacts of air pollution generated by the traffic on human health. This study tries to explore the correlation among land use, traffic and their policies on air pollution in Iran district 2. In other words, it looks into the impacts of the activities and policies of land on urban physical mobility which will consequently affect urban air quality.

Transportation and urban development are important components required for urban development. All urban planners strived to provide the most effective urban design and transportation design and services. Consequently, both planned and unplanned urban development contributes to the increase of transportation needs. Therefore, there is a direct correlation between transportation and land use. The correlation has been investigated for a long time by urban planners as well as transport planners. Many descriptive and analytical models have been developed (Raza and Kainz, 2009), each providing a dimension of investigation and explanatory elements in the urban spatial structure (Grogan and Proscio, 2000). However, the correlation between transportation, land use and environmental parameters are less researched moreover in third world country like Iran. According to Gordon (2007), this is partly because environmental management stemmed by environmental issues is a more recent area of study compares to transportation or urban planning that is a more classical study. In developed and developing countries, urban growth is commonly associated with urban environmental problems and the issues have been studied for decades but not in developing and third world countries (Nelson *et al*., 2008).

As a critical urban environmental issue, air quality is the focus of this study. Air quality is generally the most pronounced urban environmental problem in developing countries as well as developed countries. However, developing countries are confronting with more pollution in general and air pollution in particular. This can be

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explained by Asadollahfardi *et al.* (2008) study on air quality and how it affects Iran's national economy (Nematimehr, 2009). The score explains that the level of environmental degradation will amplify up to a certain point of Gross National Product (GNP) of a country and then it will decline beyond that point when GNP increases. This phenomenon is valid in the case of air pollution as an environmental problem that impinges on a nation's economy.

Air pollution may be caused by industrial, transportation and construction activities. However, since there are no large industries in operation within the chosen study area of Tehran district 2 and there are no massive building demolition and construction in progress, vehicular emission is considered as the only source of urban air pollution (Asadollahfardi *et al.*, 2008). Vehicular emission is directly influenced by transportation which consists of three main components. Those are infrastructure (such as roads), modality (such as vehicles) and users (such as people). Any means devised to cope with air pollution problems due to vehicular traffics must deeply consider these three elements (Kooiker, 2008).

Firstly, from the transportation infrastructure point of view, the reduction of air pollution problems due to vehicular traffics can be attained through the provision of adequate capacity of roads to cater to the maximum traffic loads. With adequate road capacity, traffic congestion can be lessened, energy waste can be reduced, travelling time is optimum, emission can be minimized and air pollution reduced. This is particularly true since congested traffic with engines kept running create more emission unit of time than free flow traffic (Ardestani and Shafie-Pour, 2009; Holtz-Eakin, 2003). Thus, traffic management that improves traffic flow and reduces traffic congestion will also help to improve urban air quality. The choice of material for road surface may also help to lessen air pollution by reducing road-generated particulate matter provided that routine maintenance of the road surface is undertaken.

Secondly, from the modes of transport point of view, the reduction of air pollution through transport modal management can be achieved by using vehicles that generate less pollution (Holtz-Eakin, 2003; Intikhab and Huapu, 2007; Qadir, 2002). Vehicles with catalytic converters; solar, electric or battery-powered vehicles or vehicles that use compressed natural gas generate less air pollution (EPA, 2001). Another means of reducing air pollution is by encouraging the use of mass transportation system which will generate less pollution per passenger compared with the use of private vehicles. Generally, well planned public transportation operates more efficiently and reduces traffic congestion (Nematimehr, 2009). Retrofitting more efficient engine in public transportation vehicles is less costly than retrofitting private cars. Reducing air pollution can also be achieved through reducing the motorized transport dependency by promoting non-motorized transport such as bicycles (Central Arkansas Regional Transportation Study, 2011).

Thirdly, from the road users point of view, the modification of users' behavior can be accomplished by modifying their travel pattern and travel practice. This can be achieved for example by reducing needs of motorized travel, creating proximity of origin-destination up to the walking distance and discouraging private car ownership by providing efficient mass transport system etc. Several countries have attempted to practice carpool with positive results and some do not. Proper planning of highways and roads with residents area may also reduces congestion. Inter-categorical links of land use has proven to indirectly minimize the impact of air pollution.

These approaches will probably be achieved through the modification of land use. From the above description, it is revealed that there can be a linear causality between air pollution, transportation and land-use (Nobelist and Vickrey, 2009). To verify this linear causality, this study used two methods; one using existing of land use and transportation data and two using a self developed questionnaire to survey the residents perception and feedback on the land use and transportation in D2 Tehran. Urban air pollution has been a persistent problem in many cities, particularly in large cities in developing countries. The major sources of urban air pollution are industries, vehicles and massive construction (Rosenbaum and Koenig, 1997). There are at least seven pertinent air pollutants which cause significant impacts on human health. They are Sulfur dioxide (SO_x), Nitrogen dioxide (NO_x), Carbon monoxide (CO), Hydrocarbons (HC), Plumbum (Pb), (O_3 and Particulate Matters (PM) such as dust and sands. Their health impacts have been recognized by numerous researches undertaken among others by EPA (2001) and McDonald-Buller *et al.* (2009).

MATERIALS AND METHODS

The study utilized three self developed questionnaires; Zone Attractiveness Questionnaire (D2AQ), Urban Land Use and Transportation Use and Policies (UTAQ) and Urban Land Use and Transportation Use and Policies on Air Quality (UTAQQ) distributed to 3000 random selected residents of D2. The sample consists of men and women who were citizens of Iran. The instruments were distributed in Farsi language for a period of 2 weeks. Data were collected, input in the computer and

analyzed using SPSS Version 18th. Descriptive and correlation analyses found that residential buildings constitute majorly the land use (33.9%) and serve the greatest area of land use for a person (26.69 m^3 per person). Unfortunately in the district the residential buildings are the hardest to control and regulate based on the reasons that most buildings are old-constructed without permit and with the license have many ownership and construction with poor planning and design that disregard health and comfort factors. The buildings are design mostly to get the most livable function in an area. This coupled with poor water and other amenities systems that were constructed for >50 years and used the cheapest technology available. The area for recreational and green areas only constitutes 0.28 and 8.17% of the total land use.

Current land use and air quality: Pearson correlation one or two tailed showed high correlations between the land use and air quality. The result shows that the area the respondents live have all facilities needed (p = 0.306) that either attracts more residents to live in the area or prevent the residents from moving which impacted the level of pollution in the area.

The result shows that the correlation between land value either expensive or decent (p = 0.328) and air quality is significant. The land is expensive and is also expected to increase in price in 1-5 years time which is a significant factor to deter people from moving in (p = 1.77). This will maintain the air quality level in the area. The result shows that the correlation between air quality, level of pollution and air quality (p = 0.241) significant which signifies the quality of air in D2 is exceptional and can be improved. The result also shows that most residents do rent a low-rise apartment with poor maintenance, own (p = 0.37) and thus reflects the potential for poor air quality. On the other hand, majority of the respondents own one property that reflects the most land use in for residential single family housing (p = 1.72) that affects air quality at a low level. The findings help answer research question 1. The study supports H_1 that there is a significant relationship between poor air quality and land use in district 2, Iran (H_1).

Current transportation and air quality: Analysis on the current transportation and air quality shows that Pearson correlation one or two tailed showed high correlations between the transportation use and services on air quality. The result shows most residents do own at least one car (p = 0.306) and drives to work (p = 0.367). The results reflects the amount of vehicles that fleet the road everyday, the behavior of the drivers and degree of public transport use which contribute significantly to the air quality (pollution level) in D2 area. The high correlation on traffic conditions tell us that the traffic is highly congested (p = 0.41) and significantly contribute to air pollution. Based on literature reviews, traffic congestion not only waste time, energy but also affect health condition of the respondents where most complaints of headache and tiredness (health economical cost).

Investigation on vehicle types show that most respondents own a car (p = 0.481) and most studies noted that these cars are mostly >20 years old. Most of these cars are inefficient and cannot be retrofit with new engines which highly harm the air quality in the area. Most respondents earn high income of more than the average Iranian and thus spend >1000 IR day^{-1} for traveling. Despite the high cost, the respondents still drive individually to work. The result is highly correlated (p = 0.395) to the air pollution level. Majority of the residents do drive frequently outside the D2 area either for work or leisure. The result significantly (p-0.377) contributes to air pollution based on the amount travel, distance travel and vehicle conditions. Majority of the respondents were also not satisfy with the current transportation system and claimed that the system can be better. These findings help answer research question 2. The result proved that there is a significant relationship between air pollution and urban transport system in district 2, Iran (H_2).

Current land use and transportation on air quality: The analysis on the current land use and transportation shows that Pearson correlation one or two tailed showed high correlations between the land use and transportation use and services on air quality. The first result shows that majority of the respondents that the city is clean but needs improvements (p = 0.328) which signifies that there is a relationship between cleanliness as bi-product of land use and transportation and air pollution level. When asked the condition of the air, the respondents simply rated the air quality level as average (p = 0.367) suggesting that the condition can be improved meaning that there is a relationship between air pollution and the land use and transportation use bi-products (pollutants and dust, etc.).

The majority of the residents took an average trips to work and limit the trips for leisure showing a weak correlation (p = 0.571) and thus reflecting that the residents attitude of not driving unless necessary for work purposes. The result shows that land use effectiveness by the city is rated very high showing no correlation (p = 0.241) to the air quality. The respondents

also do not drive far unless to work and limit the driving round the 10 km distance perimeter which explains the low correlation (p = 0.279) between the distance travel to air quality. The vehicles release emission but low. Moreover, the respondents perform less outside activity and most choose walking (p = 0.146) reflecting the no correlation with air pollution. The results help answer the research question 3 and proved that there is a significant relationship between air pollution, urban transport system and land use in district 2, Iran (H_3).

Pearson correlation one or two tailed showed high correlations between the land and transportation policies on air quality. The first result for this section asked the respondents whether the city is effective in using the land and majority stated the city is very effective in using the land which explains the low correlation (p = 0.241) between land use effectiveness and air quality. Land use effects air quality but in this case it is low.

Further analysis shows even though the city provide enough facilities and effective in using land, many stated that they need more and better facilities (p = 0.481) such as green parks, bus stations and public toilets. The city policies were seen as effective (p = 0.511) and although, the city policies were transparent but the respondents stated that the policies and transparency level can be better that contributes better to air quality.

The respondents also stated that the city mostly implement effective city planning and effective in spending (p = 0.341) that contributes to better air quality and lastly, the respondents indicated that the traffic is good and the road is in a good condition that correlated low (p = 0.315) with air quality. The results help answer research question 3.

Residents satisfaction and perception on land use and transportation impact on air quality: The results showed that most respondents do not think that the air quality in the district is at a dangerous level indicating the population that was questioned was quite well informed. The air pollution level in D2 is only at an unfit level and not harmful. Nevertheless, literature reviews stated that the air pollution in Tehran needs to be curbed down. There were also many reports stating that the air quality is at a dangerous level causing schools and government agencies to be close down.

Most respondents said that the facilities and services in their living area were not satisfied and many planned to move to another area. The transportation infrastructure and services were also not satisfying. Thus, the study concluded that the current transportation and urban land use were not up to the satisfying level and may have contribute to the environmental problems like air pollution. Descriptive analyses of current land use and transportation factors indicated the effect of them on air quality.

Pearson correlation one or two tailed showed correlations between residents' satisfaction and perception on the current land and transportation use and their policies on air quality. Most respondents were very economical in spending on commuting focusing mainly on work and not much on leisure which explains the low correlation (p = 0.037) between degree of commuting and air quality. Results show that traffic congestion do exist but the residents rate that the road conditions are good indicating the no relationship (p = 0.239) between road conditions and air quality. The focus of the problem is on the road system and not on the physical road condition. The traffic condition in D2 is good but not on the highway connecting the districts according to the respondents indicating the no relationship between D2 traffic and the air quality (p-0.214). However, inquiry on the improvements for the transportation, responses tell us that many residents want more and better parking and road system including their services (p = 0.534) that correlates high with the air quality. The respondents saw that these factors are important to them and also the air quality.

Transportation policies of D2 municipal are good according to the respondents (p = 0.648) which explains the high correlation between the effectiveness of the municipal policies to the air quality. This stemmed from the transparency and cost effectiveness as perceived by the residents. Several plans were documented as slow in their implementation and some failed but perceived oppositely by the residents. The city municipal must take effective actions before the residents perceived differently. The findings help answer the research questions number 4. The study proved that there is a significant relationship between air pollution, urban transport system, land use resident's satisfaction and perception in district 2, Iran (H_4).

Residents' satisfaction and perception on the current land and transportation use and their policies on air quality: Pearson correlation one or two tailed showed correlations between residents' satisfaction and perception on the current land and transportation use and their policies on air quality. Most respondents stated that the current law is effective that explains the no correlation (p = 0.172) with the air quality. The result also shows that most residents will support better transport system which shows a high correlation (p = 0.395) with the air quality. Future transport that is better and more effective will continue to satisfy the residents and they will continue support any positive initiatives. Although, many do not use public transport to work, majority wants better public transport and its services (p = 279) and they will support

future plans that will better the public transport system (p = 341) thus, shows that future policies must better the public transport system and with better system, the pollution level can be cut down. The last section assessed the residents' perception on the city plans of replacing Paykans' carburetors with better ones and distributes unleaded petrol. The correlation as expected is high (p = 0.648) reflecting the residents strong support to the city initiatives especially in getting free unleaded fuel. Of course the plan did not go well as documented which tell the city to reviews the plan focusing on strategy that is much more cost effective. The respondents also strongly agree (p = 576) that the city needs to further increase to public awareness, training and education to educate people to better use transport and curbing air pollution in the D2 area. Overall the residents were satisfied with the current and future land use and transport initiatives and policies even there were few failures and hurdles. The study concludes that either the residents were not fully known about the exact progress of the city plans and actions or the residents were very loyal to the city (sense of localism). The findings help answer research question number 4 and supports H_4. The results are very important for the ministry of transport to utilize when mapping the traffic and air pollution counter measure plans. One of the counter measures is to install parking meters estimated of $7.7 million by early 2001. However, the plan does not include the construction or better planning of parking and its system. If similar study was done prior to the development of the Tehran Counter measure plans, the ministry perhaps may took a different steps and the result may be different. The study concludes that the current and future land use and transportation affect air quality in the district 2 area. The future impacts of land use and land policies on the air quality in Tehran district 2 in relation to zoning, land use and facilities will be high. The future impacts of transportation and its policies on the air quality in Tehran district 2 in relation to road condition, road system and public transport will also be high. Based on the results and discussion presented the impacts of the relationship between current land use and transportation interaction on air quality in Tehran district 2 in relation to land use and transportation, toxic emission, ozone concentration and population metric are significant and the future impacts of the relationship between current land use and transportation interaction on air quality in Tehran district 2 in relation to land use and transportation, toxic emission, ozone concentration and population metric will be significant.

There will be so many hurdles the public and the city will face to plan and implement an effective land use and transportation policies. Nevertheless, the city has a strong confidence from the public and most residents support the initiatives to curb the problems. The city must carry out preliminary studies that look into the exact cause of the problems and mitigate the problems effectively without wasting cost. The solution can be done but not in a short time.

The study concluded that there is a strong significant relationship between poor air quality and land use in district 2, Iran and the relationships are multidimensional. The study also concluded that there is a strong significant relationship between air pollution and urban transport system in district 2, Iran. Descriptive analyses consistently showed the significant relationship between air pollution, urban transport system and land use in district 2, Iran.

RESULTS AND DISCUSSION

The study investigated the impact of current and future land use and their policies on the air quality in the Tehran district 2. D2AQA, UTAQ and UTAQQ were distributed to 3000 residents that live in D2 area. Descriptive analyses performed on the available data and the results showed.

Tehran does not have zoning law and does not practice zoning and in the urban planning design. There seem to be an initiative and talks about to start future development and consider zoning but the study has not found any official documentation and plan from the city yet. For any urban and land use, zoning is an important aspect to consider to separate the different areas residential, commercial, industrial and highways. Hazardous toxic emission and high concentration of air pollution released by heavy industries are controlled from the place where people live. Zoning safe lives and assure healthier living.

Most of the land use in D2 is for residential and residential complex and based on the feedback, most residents live in low-rise apartments and semi detached houses. There are some sections that have villa and bungalows but the number does not exceed 10% of the total residential type. Other land use is for store and transport (25.37% of total area) and others like manufacturing (25.37% of total area). On the other hand, recreational and green space area only constitutes 0.28 and 8.17% of the total area. Feedback from the residents show that there were not enough green space and gardens (private and public) and the residents want more green spaces. The results indicate that the residents are aware of the important of green spaces and clean air.

The study also found that there was no formal buffer zone in the area and the small undeveloped areas acts as buffer zones. Tehran lies surround with mountains that

limit air movements and the status is worsened with no large body of water like sea or ocean to reduce and move away the heat and pollution from the city thus increased the development of heat islands. Improper city planning, illegal building construction mainly houses in the suburb area, lack of zoning law, weak land use laws contribute to the ineffectiveness of land use in the area. Commercial and household used 32.6% of the energy in the form of Liquid Natural Gas (LNG) and Liquid Petroleum Gas (LPG). The consumption for these gases is 40.8% of the total energy in Tehran and the use of gas is not so healthy for the health and contributes to toxic of air. Overall the current zoning, land use, buffering, ventilation, vegetation and green spaces, energy environmental sustainability and natural resources show that there were many weaknesses in the design, plan and implementation of the activities and thus, reflecting that the current activities (land use) is detrimental to the air quality in the area. Moreover, there were no greater plan and actions done that consider land use and transportation to curb pollution level and thus, promote environmental sustainability.

The analysis shows that private owned vehicles contribute the most to air pollutant by emitting the most volume of CO_2, carbon hydroxide, NO_2, SO_2 and dust particles. The levels of the pollution in some area are at unsafe level and the Tehran air pollution counter measures plans and actions were proved slow and ineffective. Inspection centers, Intelligent Traffic System (ITS), use of filtered and catalyst engine and use of gas-fuel system and unleaded petrol cost the city millions of dollars and have proved slow in the implementation and in some areas failed. The problem is made worst by the lack of public parking and almost non existence of road services. Feedback from the respondents showed that more and better public and private parking are needed and the city has to provide better road system and road services to clear the traffic movements. The study summarizes that the increase in the volume of pollutants in the D2 air is attributed from the current land use and transportation ineffectiveness.

The study again and again found that the residents acknowledge the main reason for traffic congestion is lack of parking and parking is a big problem in D2. The residents also want the city to construct more parking and better the current parking system. Unfortunately, this will be a major problem because most of the old buildings do not have underground parking, most of the buildings are privately owned and there is not much government land available to construct parking spaces. Needless to say, a long term plan in restructuring the parking system is needed and the implementation may be slow but progress needs to be made. The problem becomes bigger with the increase number of private vehicles. According to the most recent statistic, every person in Tehran has at least one car. Implementation of stronger parking laws and design of buildings to include public parking will help curb the traffic problem. Tehran municipality air pollution countermeasures must include the construction of sufficient parking spaces to accommodate the population. One of the air pollution counter measures noted in the Tehran Municipality Plan in 2000 includes construction of park and ride parking areas. This includes the production of parking policies and introduction of parking restrictions and increased parking fees that suppose to be completed by the year 2000. Illegal parking causes traffic congestion and dissatisfaction of local residents. Traffic congestion at the end endorses the increase level of air pollution. Effective public parking system also involves proper parking management and stringent parking offenders' penalties. Other counter measures include installation of ITS and change gas-oil fuel to oil gas for public transportation vehicles and replacing the Paykan's carburetor for cars aged of >10 years with fixed nozzle carburetor, use of catalyst in gas fuel used in taxis and changing the fuel system to run only on LPG and to install catalyst for motorbikes. The plan went into stall after faced may obstacles. Such obstacles include the unwillingness of car manufacturers to participate fully with the program producing cars below acceptable standard, >70% of the motor vehicles are old and extremely difficult to bring the cars to the emission standards and lastly the reduction of the air pollution without having enough specialized and scientific back-up. The plans for the installation and operation of the ITS were without investigation. Most of the ITS were installed at areas where the traffic are assume mostly congested but the plan did not consider the areas that produced the most pollutants. Overall the residents are happy with the current policies, city transparency in the plans and the effectiveness of spending the city money, budget allocations and the road conditions. However, the residents were not happy with the effectiveness of the city plans. Thus, the results tell us that the residents have a high confident with the city and how the city manages. But the residents want the city to have a much more effective city plans and actions. The city needs to maintain this self confidence and not loosed them by showing that the plans do work especially in curbing the air pollutants. Any success in the plans, the public needs to know.

All throughout the study, findings show that land use and transportation are closely related are one of the main factor that contributes to air pollution in greater Tehran area. The main factor is the traffic congestion that caused residents to be angry, pressure and stressed when

they are stuck in the traffic affecting their mood and their work. The traffic also directly affecting their mental health and the end product of the air pollution affect the residents' health also. Some of the symptoms cited were headache, easily angry, hard to sleep and tired. Thus if there is no fast action done quickly to lower the traffic problems and the level of pollution in the area, the disorders will continue and as more drivers fleet the roads, more cases of health and mental disorder will surface. As discussed that the impact of ineffective land use and transportation policies on the air quality is deep and the impact is predicted to be worst or at the same level. As a result of this air quality in the D2 will get worst and more people will be dissatisfied with the air quality.

The study on the affect is seen as very important to the residents in D2 and thus, the city must conducts more studies that look in detail of the problems and especially the root of the problems. Simple study like this can direct planners and environmental agencies to know where and what the problems are and use the information to develop an effective plan as well as implement the plan on where the problems are.

The city may want to review the current land law to make it more effective as the study found out that some of the respondents were not satisfied with the current land law. Future land laws may want to consider zoning, environmental impact, use of a more clean gas and petrol, awareness, training and stronger penalties.

Tehran as capital of Iran has today encountered with rapid urban growth, scattered and spread and this phenomenon has had very undesirable effects on environmental, social and economical dimensions. One of its most important undesirable environmental effects is air pollution in this city such that today. Tehran is one of the most polluted cities in the world (Asadollahfardi *et al*., 2008). The relationship between three main variables, land use, transportation and air pollution in this study is considered as three enormous dimensions. In this study land use in Tehran is defined as the increased length of land expansion, a desirable public means of transportation in this city has not been implemented and ineffective land use has causes more and more use of private cars, in other words, this has prevented a desirable public transportation being implemented in this city, settlements and towns in the periphery and suburban of Tehran are the kinds of dormitories and satellites settlements and because of this much transportation and traffic in early and ending hours of work between city center, towns, surrounding areas and settlements are taking place.

These three major factors cause the increase of fossil fuels used in motorized vehicles and the increase of many pollutants emission in the air of this city air and this causes air pollution of Tehran city.

Result of this research can help to urban planners to gain urban sustainable development. Consequences of this study may be conducted to modify the physical pattern of urban development for reducing urban growth. Some strategies such as compact city, urban smart growth, increasing population and building density are used to controlling this phenomenon as an efficient approach.

Studies about the share of modes of transportation in Tehran traffic show that >50% of urban travels are met by private vehicles. But the share of bus and minibus is around 15%. Underground is one of the best modes of transportation in cities because of its high speed and lesser pollution. According to data of studies conducted by Tehran transportation organization, the ownership rate of private car used to be 19 for one hundred families in 1971 but it reached 42 in 1996 (Tang, 2000; Ubbels and Verhoef, 2005). According to transportation and traffic studies in Tehran greater area of the whole petroleum products used in the country in 2001, around 24% is used in Tehran.

CONCLUSION

There are few main points to be learned from this study. First is the need for more and better facilities like parking and public transport station and green spaces for recreational activities. Simply future studies want to look into how the limited land can be used fully to serve these needs. Architects, urban planners and landscapers should know how to make full use of the lands suggesting the city needs to work closer with not only public but also private professionals. Secondly, the residents want the city to solve the traffic problems by providing more parking, stringent laws on offenders and most importantly solve the road system networks. The public is highly supportive to the initiatives and have high trust and respect to the city. Thirdly, the public were satisfied with the city and how the city runs its actions and policies. The public also have positive perception about the laws and the initiatives. Nevertheless, the city must be careful not to fail too many times and loose the respect and trust.

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