



## **INVESTIGATING SOCIAL, CULTURAL AND DEMOGRAPHIC FACTORS OF COMMUTERS' MODE CHOICES IN KUWAIT CITY & SURROUNDING URBAN AREAS**

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**Abstract:** Kuwait is one of the fastest growing developing countries in the Arabian Peninsula region and is undergoing challenging transportation issues. This rapid growth is expected to continue because of government initiatives aimed at transforming Kuwait into a financial and commercial global investment hub. Kuwait's rapid growth has already increased the pressure on the existing transportation system. The objectives were to 1) investigate Kuwaiti's awareness of transportation problems, 2) examine Kuwaiti's perceptions of daily traffic congestion and how it affects them emotionally and physically, and 3) study Kuwaiti's attitude towards using public transit (currently buses). The primary findings showed significant associations between the use of the public bus and users' nationality, gender, age, education, and income level. Men are 2.6 times more likely to use buses, and non-Kuwaiti residents are 6.4 times more likely to use it. In relation to the perceptions of daily traffic congestion, findings indicate that with an increase in travel time commuters, in general, developed more negative feelings such as exhaustion and stress. The sample population, by a great deal, is aware of current local transportation problems and future transportation projects. The results of this study fill a gap in the current knowledge of socioeconomic and cultural factors that may influence the success of sustainable transportation solutions to the traffic challenges in Kuwait. It is recommended that officials use this new knowledge on cultural factors to develop integrated land use and transportation plans of the urban areas in Kuwait and to develop more effective and sustainable transportation demand management policies.

Kuwait is one of the fastest growing developing countries in the Arabian Peninsula region and is undergoing challenging transportation issues. This rapid growth is expected to continue because of government initiatives aimed at transforming Kuwait into a financial and commercial global investment hub. Kuwait's rapid growth has already increased the pressure on the existing transportation system. Traffic congestion has risen to unacceptable levels, leading to degradation in both the quality of life and the environment. Therefore, there is a need for appropriate policies, plans, and projects to provide a safe, affordable, and efficient transportation system to attain sustainable environmental development objectives.

In reviewing related literature and reports, little in the way of public participation, social or cultural factors have been found. Current studies focus on increasing road capacity, whereas sustainable solutions must consider many interrelated environmental, social, cultural, and economic factors. Kuwait has used and continues to use foreign consulting companies to prepare its master plans. Often, those external consultants have recommended solutions and plans from their home countries that might be successful for a population with completely different characteristics than Kuwait. Therefore, it is important to open the discourse on the unique social, cultural, and demographic factors of Kuwait explicitly in order to provide the required information for local and international experts working on transportation projects in Kuwait. The research providing the basis for this paper is filling the knowledge gap surrounding the socioeconomic aspects for a comprehensive and sustainable solution. This provides a better understanding of public perceptions, culture, and status surrounding the transportation system in Kuwait, as well as a better understanding of the motivating factors behind users' choices. This study provides a primary database, which will help the Kuwaiti decision makers and foreign consultants towards implementing more efficient and effective public transportation solutions. The main objectives were to investigate 1) users' awareness of transportation problems, 2) users' perceptions of daily traffic congestion and how it affects them emotionally and physically, and 3) users' attitudes towards using public transit.

Like many developing Middle Eastern countries, Kuwait has a rapidly increasing and relatively unmanaged number of vehicles and levels of traffic congestion. Moreover, severe weather conditions (i.e., high temperatures, sandstorms, and dust), rapid unplanned population growth, high income per capita, and the reliance on foreign companies (with little local knowledge) to plan the urban area have resulted in the predominance of private vehicles. Other factors that encourage the use of private vehicles include the affordability of vehicles, low petroleum prices, door-to-door convenience, and the social status of owning a vehicle. These factors contribute to longer travel times, high congestion levels, low air quality, and significant safety problems.

Meanwhile, improved public transportation has the potential to reduce not only congestion in Kuwait, but also air pollution, health risks, and economic burdens. Kuwait has had a public bus system since 1962, but people continue to rely heavily on their privately owned vehicles for various reasons, leaving the bus fleet with limited users. The quality of the existing urban transit service in Kuwait is relatively poor and, as such, public transit in Kuwait is mainly used by the transit-captive, lower socio-economic level residents. Public transit in Kuwait is also widely criticized for being unreliable, which paralyzes the lives of a large number of service workers, further aggravating social inequity and congestion problems.

To undertake this research, several surveys were designed to better understand residents' underlying cultural and socio-economic factors related to transportation habits, attitudes, and preferences. The team conducting this research was comprised of Kuwaiti and non-Kuwaiti nationals and was based in North America with limited in-person travel to Kuwait. Therefore, the most appropriate research method was a web-based questionnaire to draw together perceptions on public transportation from various segments of the resident population. An online survey was used to examine the factors to be explored, and a sample of five hundred transportation system users was obtained.

The research results show that the dominant work trip mode used in Kuwait is driving private cars at 67.1%. Combined with an additional 22.3% of trips made by cars as passengers, a total of 89.5% of all

commuting trips are made by car. On the other hand, the combined percentage of commuters choosing public bus or active modes (walk and bike) is around 10.5%. Females are less likely to use public transit (the opposite case of North America), walk or bike options, and show some interests in telecommuting. The characteristics of the typical Kuwaiti bus traveller were found to be non-Kuwaiti resident, male, age between 24-29 years, monthly income between 251 - 750 KD, and graduate degree (Master degree or higher). The rate of non-Kuwaiti public bus usage is 6.7 times higher than that of Kuwaitis; males use public buses 2.4 times as much as females. Both users and non-users of public buses agreed that all system elements need improvement, which is likely a contributing factor explaining the trend for Kuwaitis to commute via private cars and for non-Kuwaitis to shift also to drive cars.

Concerning the perceptions of daily traffic congestion, commuters develop more negative feelings, such as exhaustion and stress, especially in males. It is well known in the transportation field that the increase in travel time would increase the use of private cars. Which will lead to an adverse effects on family finances, quality of life, health, and well-being. Other non-previously explored factors that showed significant association with the likelihood of using public buses locally are: 1) using public transportation abroad, and 2) the number of years that non-Kuwaiti residents have been living in Kuwait. First, the exposure to a positive experience of using public transportation abroad increased the acceptance of using the local public bus system; residents that had been living in Kuwait for one to five years were willing to use the system. Second, the longer (+5 years) a non-Kuwaiti stays in Kuwait, the less willing they become to use public buses; over time non-Kuwaiti residents shift to commuting via private cars due to the inefficiency of the bus service. These observations suggest latent demand for future transit use if improvements to the local transit system are made.

When asked about the cultural aspects behind their transportation decisions, 22% of respondents indicated that the first barrier to using the bus system, even after improvements, is social acceptance. In Kuwait, a poor social image has been attached to bus system users for some time, which leads locals to favor the use of private cars. On the other hand, it appears that a positive image is attached to the proposed Kuwait Metro Rail Transit (KMRT) metro project based on the 56% of survey respondents that would consider using it in the future. This could, however, be possible due to its relative novelty. For those not considering the use of the metro system, the social image was not their primary concern, as only 7% consider it a barrier. Respondents ranked the top three reasons for not using the metro as improper route, available car, and car preference. Last, it appears that awareness of the negative impacts associated with private cars is enough to convince higher educated travellers to overlook any social perceptions and use public transit. Consequently, the success of public transit improvements in Kuwait will depend significantly on service quality, route convenience, and a positive image.

A more sustainable and efficient transportation system in Kuwait will require improved transit and land use planning that carefully addresses cultural factors. To this end, we recommend the following:

First, the history of outcomes observed following the adoption of each Kuwait Master Plan provides lessons for transportation planners and officials to set clear, precise, adaptive and ongoing long-term goals. These goals must incorporate sustainable environment theory, population growth, and improved public transit.

Second, understanding the psychological, social, economic and cultural determinants of the behavior toward transportation is a key factor to successful planning for public transportation in Kuwait. The results of this research show a tendency for non-Kuwaiti residents and males to use the public buses more than other categories. Any reforms to the transportation system should be based on a proper assessment of the target group (nationality, gender, age, education, and income level), including barriers to changing behavior. Barriers might include family size, weather conditions, quality of buses, drivers' professionalism, social, and cultural aspects. A good starting point to change the negative image that people associate with buses and encourage their use might be a media campaign.

Third, participants of the online survey highlighted the deteriorating condition of current public buses in Kuwait. The small number and poor condition of public buses, and inadequately trained drivers need to be addressed. Results also indicate that improving the quality of buses will encourage their use.

Fourth, to reduce the frequency and severity of traffic collisions, injuries, and congestion, metro passenger rail is needed as soon as possible. The vast majority (86%) of respondents support the metro project, as the solution to transportation problems in Kuwait city and its surrounding urban area. Furthermore, 40% of respondents have stated that they would use metro on a regular basis for both commuting and non-commuting purposes.

Finally, these results are preliminary and have significant limitations including a less than ideal completion rate (many incomplete surveys due to its length) and demographic differences between the sample respondents and Kuwaiti population (likely due to summer vacation leave). Given these limitations, the results and inferences may include some bias; however, the sample provides a significant initial dataset and demonstrates that surveys can be an effective aid in decision-making. This preliminary dataset provides the Kuwaiti government with an important foundation for future work toward sustainability-oriented solutions (e.g., metro planning). It also provides valuable insights to international planners and engineers wishing to understand the Kuwait culture and provide value-added services in GCC and Middle Eastern contexts. We recommend that prior to finalizing transportation and development plans in Kuwait (specifically Kuwait Fourth Master Plan), further research will be required along with more comprehensive survey efforts, likely an in-country effort, to confirm results and build on this initial research. Research on Kuwaiti land use patterns and has only just been initiated by authors.