Discovering the Potential for Intelligent Subscription Bus Services

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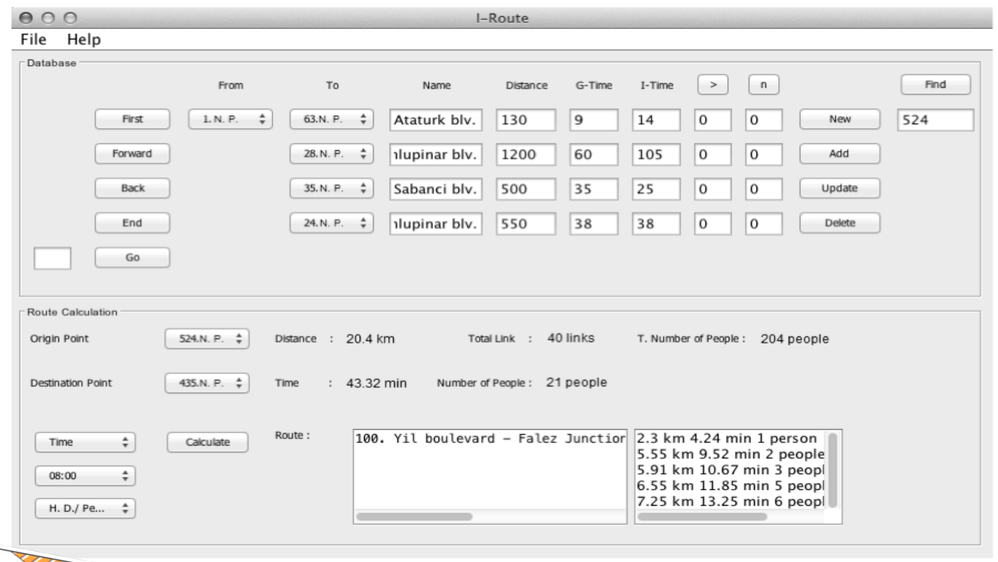
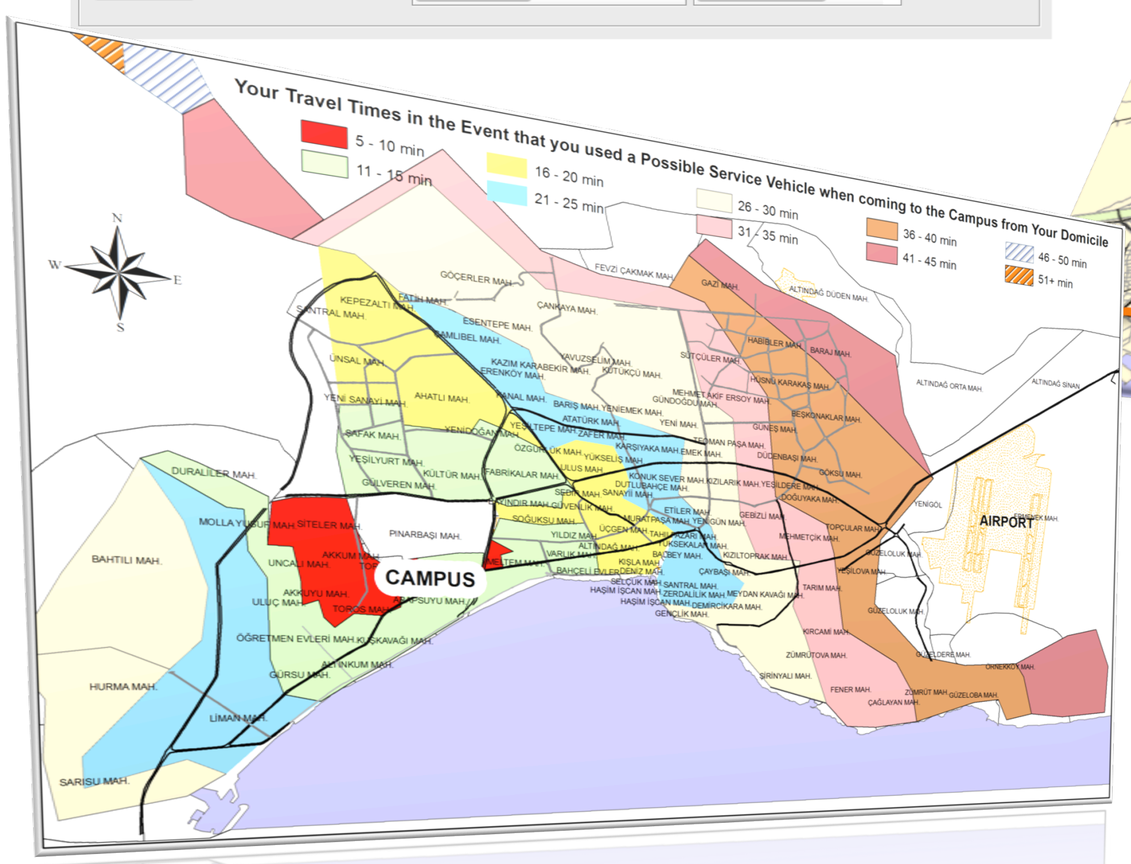
Introduction

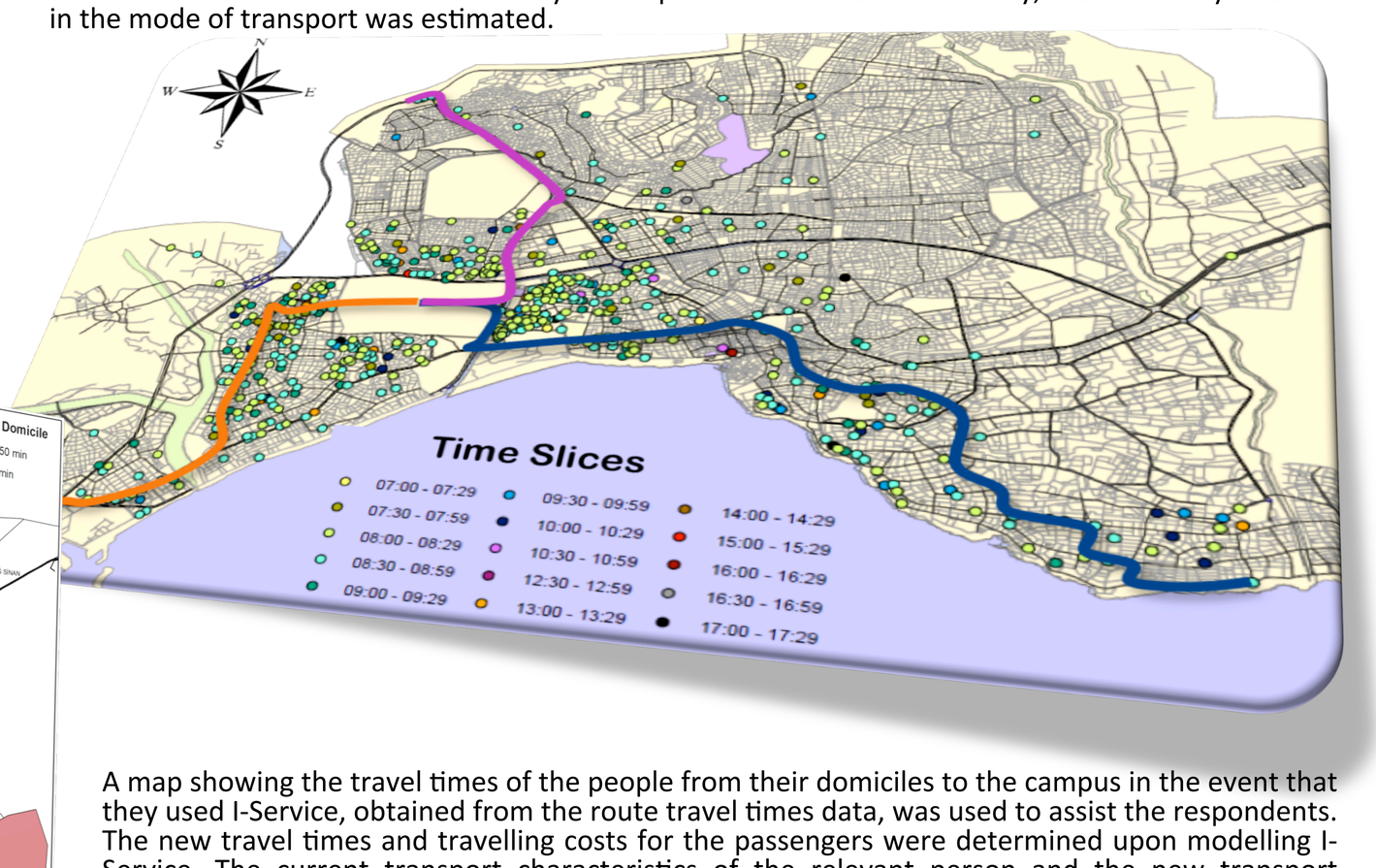
The concept of a dynamic and flexible 'Intelligent Subscription Bus Service' (briefly I-Service), which aims to provide its subscribers with shorter travel times when compared with standard public transport, has been developed. Two integrated questionnaire surveys were conducted among the commuters of a large university campus, and their interest in the service was studied. In order to determine travel times to the campus by I-Service, a digital urban road network map with travel time databases were produced. A piece of software was developed to calculate optimum routes using these databases and the travel times for each participant were determined by the software that works on the shortest travel time principle. The proposed hypothetical service were introduced to the participants and then the anticipated advantages for each participant were reported back to them by means of a second questionnaire survey to determine whether they would prefer I-Service or not. As a result, a 46% modal shift potential from all other modes in general and a 52% modal shift potential from private car alone to I-Service were found.



Method

A questionnaire survey was conducted by reaching some 606 people on the main campus of Akdeniz University, Antalya, Turkey and the current travelling characteristics of the passengers who continually commuted to and from the campus were determined. Later, digital maps which showed the need for transport to the campus within different time zones were drawn up by using the address information of these people. The optimum number of vehicles required in the event that the respondents used this service, the travelling kilometres of vehicles and the new transport characteristics of the passengers were determined by modelling the Intelligent Service. Finally, the participants in the questionnaire survey were individually notified of the information on the new transport characteristics via their email addresses and asked whether they would prefer the service. In this way, the shift likely to occur in the mode of transport was estimated.





A map showing the travel times of the people from their domiciles to the campus in the event that they used I-Service, obtained from the route travel times data, was used to assist the respondents. The new travel times and travelling costs for the passengers were determined upon modelling I-Service. The current transport characteristics of the relevant person and the new transport characteristics to occur in the event that he/she used I-Service, general information on what kind of service I-Service was and a questionnaire form (Questionnaire II) containing two questions were emailed to the respondents of Questionnaire I.

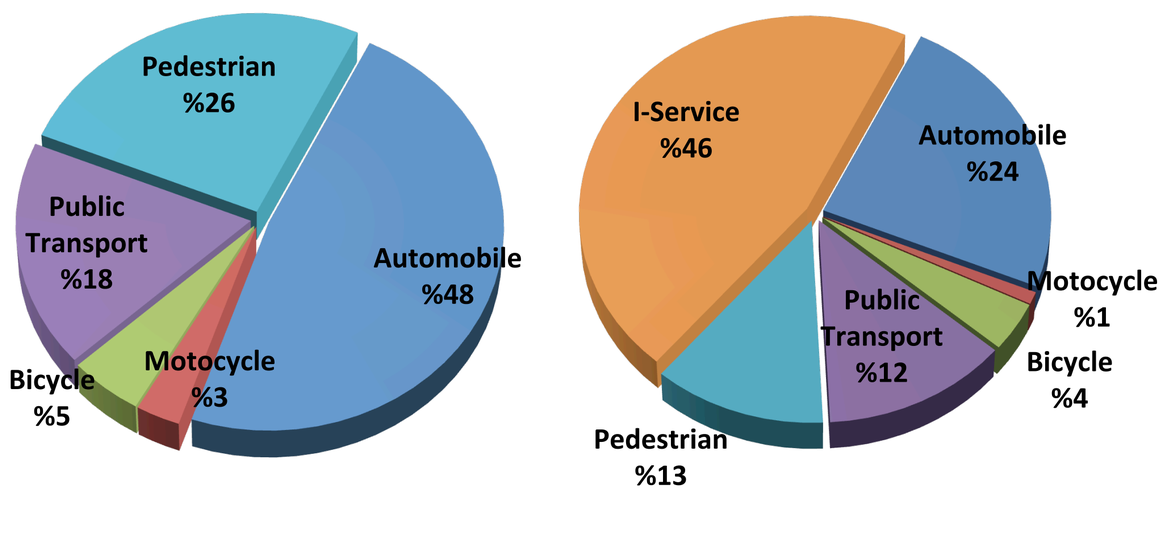
Questionnaire II

1. Would you prefer I-Service?	Yes, every weekday (…)	Sometimes, a few days (…)	No (…)
If your answer is No, why? …			
2. Do you find the projected price of I-Service appropriate?	Yes (…)	No (…)	
If your answer is "No", then how much would you pay for this service? (…)			

The reasons why I-Service was not preferred among the participants

Familial Reasons	10%
Comfort	1%
Need for a Private Car	12%
Health	16%
Fare	23%
Proximity	25%
Time	13%

Result



When the reason why the participants, who did not consider using the proposed service (54%) did not prefer it, was examined and it was seen that many different factors were influential. The reasons determined mostly included the factors of living nearby the campus, health, and the fare. It was found out that the pedestrians and bicycle users did not want to prefer this service particularly because they lived in nearby places, that automobile users did not want to prefer it as they did not use the automobiles only for commuting to and from the campus, and that the public transport users did not want to prefer it since they thought the fare was high. It is seen that there was a 52% modal shift from the use of automobiles to the use of I-Service regarding the mode of transport. I-Service provides a more comfortable service than the conventional public transport service, which leads to a 59% shift in the mode of transport within public transport and a 26% shift in the mode of transport among the pedestrians. When the automobile and motorcycle users are evaluated collectively, the modal shift caused by the private car users rises to 54%. 51% of the members of academic staff, 70% of the members of other staff and 44% of the students contributed to the modal shift that I-Service caused in the mode of transport.

Acknowledgements

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