10th INTERNATIONAL CONGRESS ON TRANSPORTATION RESEARCH



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Investigating the acceptance of environmental parking charging & congestion charging in urban centers in Greece

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Introduction

- Considering that the 60% of European citizens live in cities of over 10,000 inhabitants, the environment and the life quality in urban areas are of vital importance
- The sustainable mobility has attracted considerable interest by the scientific community and the public policymakers since in addition to economic importance, mobility activities have environmental and social impacts especially in urban centers
- Transport charging policies consist a basic tool for sustainable mobility while they increasingly applied in urban centers







Background

- Several cities apply access regulations into urban areas such as Congestion Charging Zones, Low Emission Zones or a combination of both
- Results of the implementation of transport charging policies in urban centers include:
 - Reduction of traffic congestion
 - Reduction of air pollution
 - Reduction of traffic noise
 - Increase the use of Public Transport
- However, there is an important precondition for the successful implementation of urban access restriction schemes; that is public acceptability
- Factors that affect public acceptance are:
 - Demographics (Gender, Age)
 - Personal-outcome expectations
 - The concrete use of its revenue
 - The complexity of the charging scheme



Objective

The objective of the paper is to investigate **drivers' acceptance** of:

an environmental parking charging policy and
 an environmental congestion charging policy
 in Greek urban centers, based on questionnaire data





Data Collection

- A questionnaire-based survey
- Study Area: Athens
- 370 valid answers
- Questionnaire Structure

Section A: Drivers' Travel Profile

- Main transport mode
- Weekly Trips & Travel Cost
- Drivers' satisfaction on their typical daily trip
- Car's characteristics (Euro standard, cc, fuel type)

Section C: Annual Card Scenarios

- Depending on the age of the vehicle (1st Registration), 3 possible Annual Card fees (low, medium, high) have been set
- The driver is asked to answer if she/he is willing to pay the 3
 possible annual card fees to reduce by 5, 10 or 15 minutes her/his
 daily typical trip



Section B: Environmental Awareness

- General environmental questions
- Environmental problems related to road transport
- Acceptance level of **environmental transport charging** policies

Section D: Demographic Characteristics

- Gender
- Age
- Annual Income
- Education Level





Descriptive Analysis

- Half the sample accepts the proposed environmental parking charging policy
- The majority of the respondents do not accept or hesitate to accept the proposed environmental congestion charging policy in Greek urban areas
- Respondents who are contended with the existing parking service seem to accept the environmental parking policy to a greater extent
- The majority of respondents who claim to be satisfied with the daily travel time accept the implementation of the environmental congestion charging policy in urban centers in Greece
- Although, those who are satisfied and quite satisfied with the travel time do not seem to support the transport policy under consideration







Statistical Analysis

- Two ordinal logistic regression models were developed to identify public acceptance of the two environmental transport charging policies under consideration
- For the first model, the dependent variable was defined as "At what level do you accept the implementation of environmental parking charging in Greek urban centers?"
- For the second model, the dependent variable was defined as "At what level do you accept the implementation of environmental congestion charging in Greek urban centers?"
- The dependent variables are ordinal variables taking into account that the values include five categories "Definitely Not", "Probably Not", "Possibly", "Probably", "Definitely".





Environmental Parking Charging

- Drivers who accept the implementation of an environmental congestion charging policy are more likely to accept the environmental parking charging
- Respondents who believe strongly that the transportation sector is responsible for environmental pollution, have 13,5 times the probability to accept the policy "Definitely" instead of "Probably"
- Drivers who make more than 10 trips per week to work or educated have almost 70% increased probability to accept the policy "Definitely" instead of "Probably", compared to drivers who make 5-10 trips per week
- The level of satisfaction considering the travel cost affects also positively the level of acceptance
- Younger people and people with high annual income are more likely to accept the policy

Parameter	Coef.	Std. Error	t	р	Odds Ratio				
Environmental Parking Charging Policy Acceptance									
CongestionCharging_Acceptance	0,876	0,114	7,698	0,000	2,402				
Transport_environmental_pollution	0,988	0,136	7,248	0,000	2,687				
VeeklyTrips_EducationWork	0,519	0,173	3,005	0,003	1,681				
PersonalSatisfaction_TravelCost	0,318	0,101	3,165	0,002	1,374				
Age	-0,589	0,167	-3,519	0,000	0,555				
Annual_Income	0,402	0,198	2,030	0,042	1,495				
Definitely Not Propably Not	4,585	0,774	5,928	0,000	-				
Propably Not Possibly	6,533	0,803	8,137	0,000	-				
Possibly Probably	8,670	0,859	10,094	0,000	-				
Probably Definitely	11,570	1,008	11,479	0,000					
McFadden R ²			0,14						

Environmental Congestion Charging

- Drivers who accept the implementation of an environmental circulation tax in Greek urban centers are more likely to accept the environmental congestion charging policy
- Respondent who is bothered by the traffic noise on urban road network is more possible to accept the policy under consideration
- Those who believe that environmental burden is a crucial factor to choose a car, have 9,5 times the probability to accept the proposed policy compared to those who think that is an insignificant factor
- The level of satisfaction considering the Public Transport accessibility affects also positively the level of acceptance
- For each additional annual income group, the odds that the driver responds with "Definitely" instead of "Probably" increase by about 76%

Parameter	Coef.	Std. Error	t	р	Odds Ratio				
Environmental Congestion Charging Policy Acceptance									
Circulation_Tax_ Acceptance	1,437	0,158	9,122	0,000	4,207				
Annoyance_from_traffic_noise	0,500	0,146	3,413	0,001	1,648				
VehicleChoiceFactor_ EnvironmentPollution	0,640	0,156	4,092	0,000	1,896				
PersonalSatisfaction_ PublicTransportAccess	-0,249	0,132	-1,892	0,058	0,780				
Annual_Income	0,566	0,191	2,957	0,003	1,762				
Definitely Not Propably Not	7,063	0,919	7,686	0,000	-				
Propably Not Possibly	9,198	0,977	9,412	0,000	-				
Possibly Probably	11,185	1,034	10,812	0,000	-				
Probably Definitely	14,042	1,269	11,068	0,000	-				
McFadden R ²			0,27	(\bigcirc				





Conclusion

- The majority of the respondents accept the proposed environmental parking charging policy while hesitate to accept the proposed environmental congestion charging policy in Greek urban areas
- Athenian drivers who accept the implementation of other environmental transport charging policies, are more likely to accept the proposed environmental congestion and parking charging policies
- An environmentally conscious driver is more possible to accept the environmental charging policies under consideration
- Regarding respondents demographic characteristics, younger people and people with high annual income are more likely to accept the environmental charging policies under consideration





Future Challenges

- The environmental pollution risks on urban centers need to be addressed through concrete and targeted actions and scientifically sound decisions to turn them into opportunities for the future
- Environmental charging policies that have a positive impact on the environment and society must be integrated into a more general strategic plan adapted to the characteristics of each city
- Environmental charging transport policies should be tailored to the specific mobility and safety problems and needs of each city
- Any environmental/ congestion charging plan requires strong social acceptance and related political support





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