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Critical impact factors of pedestrians traffic in Athens combining multiple data sources

Loukas Strongylis^a, Virginia Petraki^a & George Yannis^a



^aNational Technical University of Athens, Department of Transportation Planning and Engineering, Athens, Greece

INTRODUCTION

Cities face the challenge to enhance the quality of urban environment reducing traffic congestion, air pollution and road accidents by promoting active travel modes and upgrading the relevant infrastructure. A typical example of an urban city, where mobility interventions are required to promote active travel modes, is the Greek capital, Athens. Passenger cars and motorcycles dominate in the city center while active travel modes present the lowest modal share. The city is characterized by limited and degraded active travel infrastructure (the 5.5% of the road infrastructure is sidewalks). Athens Great Walk (AGW) is an urban regeneration plan aiming to create a new quality in urban mobility, promote Public Transport and active travel modes, by increasing sidewalks with high pedestrian traffic, creating exclusive lanes for pedestrians and cyclists, bus lanes, etc.

RESULTS

The final Poisson regression models have adjustment factors R^2 from 0.3 to 0.6, which are considered adequate. Explanatory variables are considered statistically significant at the typical 95 % level. Also, the correlation of variables was examined to select the best-fitting mathematical model.

OBJECTIVES

The aim of this paper is the investigation of the critical factors affecting pedestrian traffic in Athens, during the pilot implementation of the AGW (June - October 2020) combining multiple data sources.

METHODOLOGY

Two field surveys were carried out, one on pedestrians travel information using questionnaires, and a second one on pedestrian and motorized modes volumes through on-road observations. The second survey lasted 18 weeks, the first week was before the pilot implementation of AGW. Following, three Poisson regression models were developed to define the correlation between pedestrian traffic and the factors affecting it on the wider area of Athens, on the city center of Athens and on the entry road axes to the city Figure 1: Survey Points center.

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Table 1: Result summary of mathematical models

				Model 1 Athens wider area			Model 2 Athens center			Model 3 Entry road axes		
			Ref.	β	z	ei*	β	z	ei*	β	z	ei*
		Constant factor	-	4.538	-	-	5.291	-	-	6.593	-	-
Discrete Variables		Feb.		-1.616	-13.590	59.945	-	-	-	-	-	-
		Mar.		-3.334	-13.541	402.077	-	-	-	-	-	-
	÷	June		0.630	11.476	-6.944	-	-	-	-	-	-
	0	July	Jan.	0.625	11.710	-6.910	-	-	-	-	-	-
	Σ	Aug.		0.180	4.416	-2.452	-	-	-	-	-	-
		Sept.		0.531	15.037	-6.122	-	-	-	-	-	-
		Oct.		-0.065	-2.426	1.000	-	-	-	-	-	-
		Ring road	Conto	-0.482	-16.684	9.213	-	-	-	-	-	-
	v v v	Entry road	r	2.365	30.223	-13.468	-	-	-	-	-	-
		Exit road	-	2.033	24.944	-12.918	-	-	-	-	-	-
	O	Services-Squares		-0.157	-7.774	2.532	-0.404	-15.296	1.000	-	-	-
	N	Grove		-3.198	-42.939	349.060	-	-	-	-	-	-
	Land	Stores & Services- Squares	s	-0.679	-36.424	14.452	-0.629	-40.950	1.760	-	-	-
		Stores & Grove		-3.483	-40.631	469.068	-	-	-	-0.315	-6.638	1.000
	es	Covid-19 cases	-	0.001	11.463	18.351	-0.000	-23.674	1.938	-0.0004	-8.507	-5.476
	q	Private car volume	-	0.0003	12.409	9.321	-	-	-	-	-	-
	ari	Taxi share	-	1.074	11.428	7.903	1.122	12.243	-4.987	-6.047	-4.992	-39.984
	> <	Trucks volume	-	-0.003	-18.274	-6.785	-0.003	-15.860	2.888	0.002	3.349	4.440
		Buses volume	-	-0.007	-16.967	-6.289	-0.002	-6.787	1.000	-0.007	-2.441	-11.226
	ij	Motorbikes volume	-	-	-	-	-	-	-	-0.001	-4.549	-16.704
	out	Bicycles volume	-	0.003	4.219	1.000	-	-	-	-0.008	-1.965	-3.196
	Ŭ	Mopeds volume	-	0.021	13.750	1.694	0.035	19.931	-1.829	0.012	2.043	1.000
		R ² McFadden			0.601			0.309			0.360	

CONCLUSIONS

Factors affecting pedestrian traffic vary. Areas with stores, increased active modes traffic, reduced heavy vehicles traffic are

affect positively pedestrian traffic in Athens. Covid-19 pandemic is a factor that seems to have determined the pedestrians flow within the center of Athens. Also, during the first weeks of the AGW pedestrian traffic increased significantly. Athens is a city with significant pedestrian traffic, mainly on central areas, which indicates the need to upgrade the sidewalks and generally the active travel modes facilities. The pilot implementation of AGW is the first but very important step towards the pedestrian promotion in the city of Athens.

HOSTED AND ORGANISED BY:

Konstantinou Avenue

Survey Points

Athens Downtown

Athens Great Walk Mobility Intrerventions

Street Free of Private Vehicles

Increase of Sidewalks

 Survey A - Points Survey B - Points

•••• Traffic Ring

Sidewalk

IN COOPERATION WITH:



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