Pedestrian Safety – Fundamental to a Walkable City

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Abstract. The abstract should summarize the contents of the paper and should contain at least 70 and at most 200 words. It should be set in 9-point font size and should be inset 1.0 cm from the right and left margins. There should be two blank (10-point) lines before and after the abstract. This document is in the required format.

1 Introduction

An early-morning walk is a blessing for the whole day – Henry David Thoreau [4] So, begins the choice every day for urban dwellers – to walk or not to walk – to have a blessing as proposed by Thoreau, or to assess the daily commute - as summarized by Jeff Kober [5]: My intention is to get done with this commute… my intention will not be met until I get out of this car – as just a rather unpleasant means to get from point A to point B.

As the modern urban landscape has evolved in the US over the last fifty years, pedestrianism was often not often on the list of high priorities for inclusion into the development of urban environments. As a result of this trend, there have been real, and negative, consequences: economically, epidemiologically, and environmentally on the inhabitants of many cities in western developed countries. Economically, we can observe that the percentage of income spent on transportation for working families has doubled, from one-tenth to one-fifth of household earnings from the 1970s to current era [1]. So much so, that working families are currently spending more of their budget on transportation than housing. If we consider the health effects of urban living patterns, we observe that people living in less walkable neighborhoods are nearly twice as likely to be obese than people that live in walkable neighborhoods [1]. This statistic, coupled with the statement: "Americans now walk the least of any industrialized nation in the world" [2], indicate a growing health problem due in part by a lack of physical activity. With all due respect to Thoreau, who found great energy and inspiration by walking near Walden Pond, it is just as interesting to observe carbon mapping in the US. When constructed on a per-household basis, this carbon mapping clearly demonstrates that suburban dwellers generate nearly twice as much carbon-dioxide, the main pollutant which contributes to global warming [4], as urban dwellers due to longer commutes and larger houses [3].

As motivation for this work, we take heart that there is a growing movement in the US and other western nations to promote the concept of walkable cities as healthier

places to live - economically, environmentally and physiologically - than the suburban, exurban, drive-till-you-qualify model of modern western development. We are motivated to consider what contributes to a more walkable city, and to provide a contribution to enabling understanding of urban planning that supports that aim.

Within that context, a significant contributing element to a walkable city is pedestrian safety. As identified in the Toronto Pedestrian Charter [6] the six principles for building a vital urban pedestrian environment include: accessibility, equity, health and well-being, environmental sustainability, personal and community safety, and community cohesion and vitality. According to the city of Toronto, this is the first such pedestrian bill of rights in the world and serves to remind us that walking is valued for its social, environmental, and economic benefits. We are thus targeting our efforts to address the fifth of these principles, as it serves as the foundation for the others. Pedestrian safety is fundamental to a walkable city.

The US is experiencing an increase in the number of pedestrian fatalities, reaching a 25-year high in 2017, with nearly 6,000 fatalities [7]. Newspaper articles in the Midwest identify an unfortunate occurrence: “An uptick in pedestrians being hit by cars in the Cincinnati and Northern Kentucky area has officials sounding the alarm. Three crashes just this week resulted in the death of three pedestrians.”

As one avenue of response, the City of Cincinnati has requested citizen input to identify specific areas in the city which are pedestrian safety concerns. The city created a web-site, which launched in Feb-2018, that allows citizens to specifically identify a location on a map, within a distance of several feet of the area of concern and report the nature of the concern in a functional user interface. The city plans to use this community input to prioritize maintenance and improvement resources.

The research for this paper takes this survey data set as a point of departure for a larger study. This study will characterize the nature of pedestrian-vehicle accidents. The study will combine this data set with infrastructure definitions and safety accident reports to establish the interaction of environment, human observations, and reported safety incidents to identify the relevant characteristics that are associated to safety related incidents within the environment of the city of Cincinnati.

2 Definition Section

3 Related Work

4 Work and Solution

5 Results and Conclusions

6 Future Areas of Research

Acknowledgments. The heading should be treated as a 3rd level heading and should not be assigned a number.

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