

Grant Deliverables and Reporting Requirements for UTC Grants

UTC Project Information	
Project Title	Exploring the Influence of Carbon Footprint and Health Benefits in Parking Location Decisions
University	The University of Texas at El Paso
Principal Investigator	Kelvin Cheu
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Funding Source(s) and Amounts Provided (by each agency or organization)	CTECH: \$64,430 UTEP CTIS: \$32,215
Total Project Cost	\$96,645
Agency ID or Contract Number	Sponsor Source: Federal Government CFDA #: 20.701 Agreement ID: 69A3551747119
Start and End Dates	Start date: 10/01/2019 End date: 05/31/2021
Brief Description of Research Project	<p>In modeling the parking location decisions, traditionally, the cost of parking permits and last-mile travel time (factored with the value of time) are the only two decision criteria. From the viewpoint of sustainability, parking location affects the carbon footprint of a vehicle-trip. In addition, walking between the parked vehicle and the final destination has health benefits. Therefore, the parking location problem may be modeled as a multi-criteria decision problem involving trade-offs between permit fees, last-mile travel time, carbon footprint, and health benefits.</p> <p>The objective of this project is to answer the Research Question: If the information on carbon footprint and health benefits are available, what are their influences relative to permit fee and last-mile travel time in parking location decisions? This project focused on commuter students at The University of Texas at El Paso (UTEP).</p> <p>In this project, the research team has:</p>

	<ul style="list-style-type: none"> • Selected the calories burned as the Measure for Health Benefits (MHB) of walking and the carbon dioxide emission as the Measure for Carbon Footprint (MCF). • Collected the data on campus to determine the MHBs and MCFs associated with different parking zones. • Developed a table that included the last-mile travel times, MHBs, and MCFs to display to students during the simulated parking permit purchase process. • Surveyed students in the simulated permit purchase scenarios without and with the MHB and MCF information. • Analyzed the survey response with regards to student choices of parking zones and decision factors. <p>Output: This research has estimated the MHBs from all the parking zones to the center of the campus, and MCFs from the campus entrances to parking zones. The estimated MHBs and MCFs have been incorporated into an informational table. The student survey has collected responses from 430 students.</p> <p>Outcome: Although the permit price, last-mile travel time, ease of finding a parking space are still the top three decision factors, the introduction of MHB and MCF have created awareness of health benefits and carbon footprints associated with parking. Health benefits and carbon footprints received the largest increase in respondents who said they were “very important” and “important” in their parking location decisions.</p> <p>Impact: The provisions of MCFs and MHBs during the parking permit purchase process will shift the parking location choices of some students that will lead to a reduction of total CO₂ contributed by commuter students on campus.</p>
<p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p>	<p>The PI will present the findings to UTEP President and UTEP Parking and Transportation Services. The student parking permits will go on sale in mid-July. The table of MHBs and MCFs is unlikely to be used because of insufficient lead time. If this is the case the PI will seek the implementation in Summer of 2022.</p>
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>If UTEP includes MHBs and MCFs in the parking website as part of the permit sales process, the overall CO₂ emission is expected to reduce by 2.10%.</p>
<p>Web Links</p> <ul style="list-style-type: none"> • Reports • Project website 	<p>http://ctech.cce.cornell.edu/final-project-reports/</p>