



Public Messaging and Behavior Change Systems for Circular Economies

Problem Description

Roadside litter makes the roads visually unpleasant and is associated with social, economic, and environmental issues. It can cause safety and operational issues, such as traffic flow interruptions and safety hazards to road users (1, 2). Littering has been a concern in the United States since the 1950s, and many federal, state, local, and volunteer efforts have been taken to address this problem (3). According to the 2008 American State Litter Scorecard (4), Tennessee is among the ten worst-performing states. Since 1983, Tennessee has evolved with various litter prevention programs aiming to keep Tennessee beautiful. A summary of these programs is shown in Table 1. During 2012-22, Tennessee climbed up to the average performance on the litter scorecard (5), and the number of hotline reports was reduced; however, no substantial reduction in the pounds of litter removed was found. It is unclear what programs are effective, what organizational structure works, and what strategies are successful.

PROJECT NUMBER:

RES2024-01

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PROJECT SCHEDULE:

August 2023 to July 2025

Research Objectives

The primary goal of this research is to establish a responsive platform to develop new public messaging strategies that can change litter behavior. The research team proposes the following set of specific objectives to achieve it.

- Identify case studies to acquire a state-of-the-art understanding of public messaging strategies that have proven effective in changing litter behavior.
- Identify the effectiveness and challenges in Tennessee's currently implemented programs using the survey tool developed to obtain feedback from litter prevention personnel (LPP).
- Understand public behavior and attitudes regarding recycling and littering through a litter behavior survey tool designed to obtain responses from Tennessee residents.
- Analyze the effectiveness of various new public messaging strategies using the litter behavior model (LBM) and a field experiment and provide recommendations to TDOT.
- Develop an interactive tool visualizing hotspots of high-density littering for a priority implementation of strategies.

Potential Implementation and Expected Benefits

The final deliverable of this project will be a state-of-the-practice catalog of strategies concerning the prevention and removal of roadside litter. This can benefit TDOT in the following components: (i) Possessing a collection of global practices and policies that can be considered for implementation in Tennessee, (ii) Decision-making regarding new programs and campaigns based on the experiences of litter prevention personnel and feedback from Tennessee residents (iii) Improvements and enhancements to the current practices and recommendations on new strategies to nudge the people's littering behavior (v) Reduced littering behavior, cleaner communities, and improved public health.