1st Quarterly Progress Report

Dates covered in this report: September 2016 – December 2016

Project title: CaRe: Communicating about Recycling

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Project Website: http://stem.jou.ufl.edu/recycling-and-the-environment/

Introduction

CaRe: Communication about recycling is a project funded by a grant from the Hinkley Center for Solid Waste and Hazardous Management. Researchers at the STEM Translational Communication Center, located in the University of Florida's College of Journalism and Communications began work on this project during the Summer of 2016.

The overall goal of CaRe, is to develop and evaluate a comprehensive communication tool about recycling in order to inform educational and promotional efforts. In order to reach this goal, the CaRe project has three specific aims.

The first aim is to "Create an technical awareness group and develop a clearinghouse of recycling education messages in the state of Florida to evaluate their core text and visual components." The purpose of the technical awareness group is to provide crucial feedback on all elements of the project and prior to development of innovative education materials about recycling, a survey of the current available materials will be completed. Aim two is "To identify characteristics of high and low recyclers through formative research." We recognize that recycling knowledge and behaviors vary across Florida and through focus groups and a statewide survey, we will gain a deeper understanding of the characteristics that influence recycling knowledge, intentions and behaviors. The third and final aim is to "Develop and pilot-test materials for recycling education, including an interactive platform." Utilizing the information that will result from the progression of the two previous aims, formative research-informed recycling messages will be created and pilot-tested for effectiveness in communication of contamination prevention information and audience appropriateness.

Work accomplished during this reporting period:

Methods:

Aim 1: TAG Formation

After attendance at a webinar hosted by the Florida Department of Environmental Protection, researchers were connected to several key stakeholders in the fields of recycling and waste management. Following this webinar, researchers contacted key experts in these fields throughout the state of Florida and formally invited eight stakeholders to participate in the CaRe technical awareness group. Seven individuals, including the Director of Recycle Florida. Today, the Environmental Education Coordinator for Keep America Beautiful and the Hinkley Center Director accepted positions as members of the technical

awareness group. Following their acceptance, researchers have kept in communication with group members and have begun to schedule bi-monthly telephone meetings to receive feedback on project aims. Additionally, a protocol, that detailed the bi-monthly telephone meetings, was submitted and approved by the University of Florida's Institutional Review Board.

Aim 1: Evaluation of core text and visual components of recycling information
In order to complete a comprehensive evaluation of the recycling information available to Florida residents, members of the research team conducted a content analysis of web and print materials distributed by 58 of the 67 Florida counties. After review of several different county websites and their available content, the research team developed a codebook based on constructs associated with Diffusion of Innovations (DOI) (Valente, 2015).

Diffusion of Innovations explains how, why and at what rate innovations like recycling spread throughout society. The theory contains four main constructs: the innovation, communication channels, time and the social system (Valente, 2015). For example, researchers coded for the type of channel that counties used to distribute information (i.e., flyer, brochure, website, etc). Relative advantage was also coded for, taking note of whether or not counties explained the advantages of proper recycling behaviors. All variables and their corresponding codes were discussed and agreed upon by all team members.

Before final coding of the county websites, two members of the research team obtained inter-coder reliability from 3 sample websites with Cohens Kappa coefficients of ≥ 0.78. Subsequently, these members of the research team coded n = 58 Florida county recycling websites utilizing the codebook over a period of two months. All coding and testing for inter-coder reliability was conducted using SPSS Statistics, version 24. After all websites were coded, the results of the coding were analyzed in SPSS.

Following the conclusion of website coding, the research team adapted the coding document to be applicable to print materials available to Florida residents on the recycling domains of county websites. Prior to obtaining inter-coder reliability, two additional researchers were trained over the course of two weeks on how to code utilizing a coding manual. Four members of the research team obtained inter-coder reliability from six sample print materials with Cohens Kappa coefficients of ≥ 0.7. After reliability was obtained between all coders, over 50 recycling-focused print materials were coded over a period of two-and-half months. About half of the counties that had recycling websites had print materials available for residents. Print materials included flyers, brochures and manuals focused on recycling. The majority of counties that had print materials on their websites had more than one type of material available.

Results Part I: Websites
All data analysis was conducted in SPSS Statistics version 24. The research team included the 2015 Traditional Recycling Rates (Adjusted) of each Florida county as part of the data analysis. These rates are present on the Florida Department of Environmental Protection's website and include curbside recycling and materials collected at

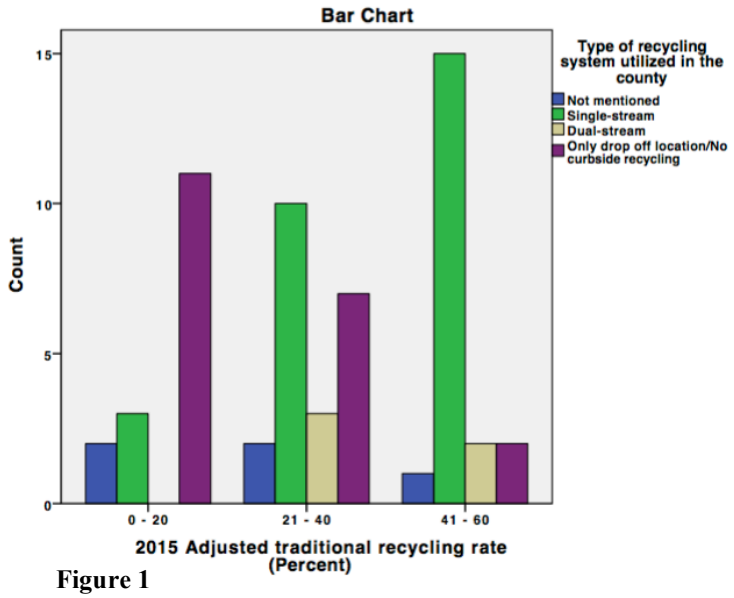

Figure 1
2015 Adjusted traditional recycling rate by recycling system

drop-off locations and recycling centers (FDEP, 2016). Traditional recycling rates do not include the amount of renewable energy accumulated by each county. The team's decision to include Traditional Recycling Rate data as opposed to Overall Recycling Rate data was based on the project's overall purpose. Considering our target audience for the research-informed recycling messages will be county residents who mainly contribute to the county's Traditional recycling rate we felt this was appropriate. However, the research team did discover that several counties presented their Overall Recycling Rate to their residents on the county website.

Results from data analysis showed that counties that utilized single-stream recycling had higher recycling rates. In contrast, counties that did not have curbside recycling and only provided residents with drop-off recycling had lower rates (Figure 1). Unsurprisingly, we also found that the majority of counties with population estimates below 50,000 had the lowest recycling rates but, counties with population estimates above 50,000, were more likely to have recycling rates above 20% (Figure 2).

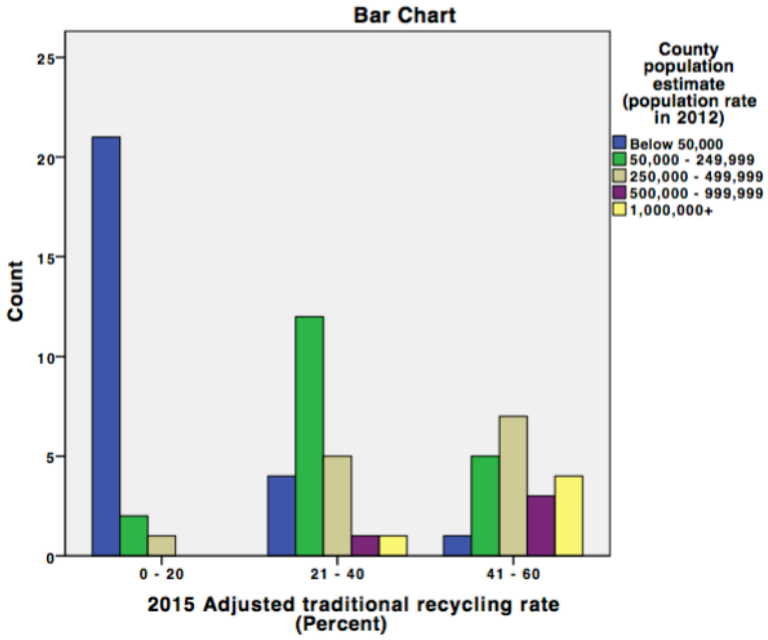

Figure 2
2015 Adjusted traditional recycling rate by county population estimate

As stated earlier, the diffusion of innovations theory was utilized as a framework for constructing the codebook and the innovation was defined as recycling behavior (Rogers, 1995). The relative advantage associated with recycling or simply "why recycle" was coded for. 22 out of the 58 recycling websites did not provide users with the relative advantage to recycling. The remaining 36 websites that did provide a reason for recycling mentioned the environment and waste reduction as the top reasons. Compatibility, a construct of the innovation that attempts to address whether or not the innovation fits with intended audiences, was coded for (Rogers, 1995). Language compatibility, information available in another language in addition to English – including Spanish and/or Creole, was demonstrated in 13 of the 58 sites.

Communication, the second component to the DOI, explains the process by which information is shared and created (Rogers, 1995). Communication channels, including presence of a website, flyer, brochure or other printed materials were included in the content analysis. 27 of the recycling websites had a flyer, 12 had a brochure and 10 had some other form of printed material available to residents.

Additionally, county websites that provided residents with information on how to recycle, including discrete behaviors such as removing book covers, breaking down boxes and removing bottle caps, had higher adjusted traditional recycling rates than websites without this information. Similarly, counties with direct instructions on contamination prevention (ie., rinsing out materials and removing food particles before recycling), had higher adjusted traditional recycling rates. Finally, there was a statistically significant correlation (r =.37) was found between the 2015 Adjusted Traditional Recycling Rate and the

presence of a call to action on county recycling websites. Counties with higher Adjusted Traditional recycling rates were more likely to have a call to action located on their website. A call to action includes targeted language that encourages the pursuit of further information about recycling.

TAG Meetings:

As of December 2016, no TAG meetings or interviews have been held. However, they will commence in early spring of 2017.

Metrics:

1. List research publications resulting from THIS Hinkley Center project. *None*
2. List research presentations resulting from (or about) THIS Hinkley Center project. *None*
3. List who has referenced or cited your publications from this project. *None*
4. How have the research results from THIS Hinkley Center project been leveraged to secure additional research funding? What additional sources of funding are you seeking or have you sought? *None*
5. What new collaborations were initiated based on THIS Hinkley Center project? *The creation of the CaRe technical awareness group has initiated new collaborations between the University of Florida and several different Florida county stakeholders in the public and private waste management fields.* (See Appendix)
6. How have the results from THIS Hinkley Center funded project been used (not will be used) by the FDEP or other stakeholders? *None*

Next Steps

The immediate next steps for the CaRe project include progress on Aims two and three while continuing work on part of Aim one. The first round of interviews will be conducted with members of the technical advisory group soon. A protocol for the state-wide survey assessing recycling behaviors and characteristics will be drafted and submitted to the University's Institutional Review Board in mid-spring. Following approval data collection from 1,000 Florida residents will be collected via Qualtrics and subsequently analyzed in SPSS Statistics.

Additionally, there is a protocol that has been recently approved for the 19 focus groups that will be conducted throughout the state of Florida. The purpose of these focus groups will be to obtain information on what facilitates and impedes proper recycling. Focus groups will also be used to receive feedback on sample recycling messages and their content as well as their format.

The research team is also considering visiting several different county Waste Departments in order to get a more in-depth knowledge of the process of recycling. Specifically, we are planning to visit the Alachua County Waste Department in early spring of 2017.

Recommendations

Based off of the results from our data analysis in combination with a communication framework, we have selected top Florida county recycling websites and print materials. The best websites include Miami-Dade County and Lee County. Miami-Dade county's website provides recycling information to residents in English, Spanish and Creole. They have an interactive game, several how-to videos on recycling as well as print materials. Additionally, they have a wealth of available information on commercial recycling.

Lee county also has a model recycling page for its' residents. They have a consistent slogan "Recycle smart, 5 for the cart," that is presented throughout the website. Lee county also has an informational video and provides information in Spanish and English. Similar to Miami-Dade, Lee county provides extensive information on commercial recycling and how businesses can start and improve their recycling program.

Finally, Collier County and Seminole County have model print materials from a communication perspective. Collier county provides very thorough and appealing brochures for residential and commercial recycling. Both brochures have a consistent layout and provide a wealth of information. Several Frequently Asked Questions about recycling and their respective answers are also included on each flyer.

Seminole County also provides some model print materials to its residents. Their brochure contains a wealth of information including descriptive information on recyclable items, how to prepare them to be recycled and what locations are available for drop-off. In addition to their county-specific print materials, information from the Florida Department of Environmental Protection's website is also present. These documents detail how to recycle paper, plastic, glass and include word puzzles that are focused on recycling.

Pictures

Figure 3
Florida map with recycling rates in the STEM Translational Communication Center at UF's College of Journalism and Communications

References

FDEP – Florida Department of Environmental Protection. (2016, July 25). RECYCLING RATES IN FLORIDA CONTINUE TO CLIMB. Retrieved January 03, 2017, from https://content.govdelivery.com/accounts/FLDEP/bulletins/c15acd

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Rogers Everett, M. (1995). Diffusion of innovations. *New York*, *12*.

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Appendix

CaRe Technical awareness group Members

Name	County	Organization
Emory Smith	Lee	Lee County Solid Waste Division
Raymond Lotito	Pasco	Atlantic Coast Consultants, Inc.
John Schert	Alachua	Hinkley Center for Solid and Hazardous Waste Management
Dawn McCormick	Broward	Waste Management Inc. of Florida
Karen Moore	Leon	Florida Department of Environmental Protection
Elizabeth Bartlett	Leon	Keep Florida Beautiful
Heather Armstrong	Marion	Recycle Florida Today, Inc.