12-2018

Engaging Youth to Increase their Transportation System Support, Understanding, and Use

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Recommended Citation

Shafer, Autumn and Jared Macary. Engaging Youth to Increase their Transportation Syste Support, Understanding, and Use, NITC-SS-1077. Portland, OR: Transportation Research and Education Center (TREC), 2018. https://doi.org/10.15760/trec.211

NITC
NATIONAL INSTITUTE for TRANSPORTATION and COMMUNITIES

FINAL REPORT

Engaging Youth to Increase their Transportation System Support, Understanding, and Use

NITC-SS-1077 ■ December 2018

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TREC
TRANSPORTATION RESEARCH and EDUCATION CENTER

ENGAGING YOUTH TO INCREASE THEIR TRANSPORTATION SYSTEM SUPPORT, UNDERSTANDING, AND USE

Final Report

NITC-SS-1077

by

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December 2018

Technical Report Documentation Page

1. Report No. NITC-SS-1077	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle Engaging Youth to Increase their Transportation System Support, Understanding, and Use		5. Report Date December 2018
		6. Performing Organization Code
7. Author(s) Autumn Shafer, Jared Macary		8. Performing Organization Report No.
9. Performing Organization Name and Address School of Journalism and Communication University of Oregon 1275 University of Oregon Eugene, OR 97403-1275		10. Work Unit No. (TRAIS)
		11. Contract or Grant No. NITC-SS-1077
12. Sponsoring Agency Name and Address National Institute for Transportation and Communities (NITC) P.O. Box 751 Portland, OR 97207		13. Type of Report and Period Covered
		14. Sponsoring Agency Code
15. Supplementary Notes		

16. Abstract

This project seeks to build on the sparse national and non-Portland regional, past, transit-related research with youth to create and evaluate communication messaging that foster more positive attitudes, intentions, and behaviors related to transit and other non-car transportation options among Portland youth. The theory of planned behavior was applied to the interpretation of the youth focus group data collected for this project. This research also collected feedback on test messages aimed at encouraging non-car mobility among Portland youth.
Key insights found mixed attitudes related to non-car mobility that were especially dependent on which type of mobility and often based on the youth's first-hand experience. Youth mostly held normative and perceived behavioral control beliefs supportive of non-car mobility, such as the belief that most of their friends and parents support non-car mobility and the belief that it is easy to ride transit. A dominant non-supportive belief was youth's lack of agency related to safety on public transit. Youth reported positive intentions to practice non-car mobility until they were old enough and could afford to drive. A variety of channels and settings, such as YouTube advertisements, may be effective at reaching teens, but this study concluded that teens are unlikely to subscribe and engage with text messages sent to their mobile devices. Youth responded positively to appeals to autonomy and generally disliked most of the Generation Z targeted messaging. More detailed insights and recommendations are discussed within the report.

17. Key Words Non-car mobility, youth, transit promotion, Portland, theory of planned behavior		18. Distribution Statement No restrictions. Copies available from NITC: www.nitc-utc.net	
19. Security Classification (of this report) Unclassified	20. Security Classification (of this page) Unclassified	21. No. of Pages 40	22. Price

ACKNOWLEDGEMENTS

This project was funded by the National Institute for Transportation and Communities (NITC) under grant number NITC-SS-1077. The authors would like to acknowledge the work of University of Oregon School of Journalism and Communication undergraduate students Katrina Cantwell, Valerie Cauduro, Gabriela Lean, Patrick Morgan, Vanessa Serrato, and Matthew Witenstein.

DISCLAIMER

RECOMMENDED CITATION

Shafer, Autumn and Jared Macary. *Engaging Youth to Increase their Transportation System Support, Understanding, and Use*, NITC-SS-1077. Portland, OR: Transportation Research and Education Center (TREC), 2018.

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EXECUTIVE SUMMARY

Little is known from research about how to motivate youth to choose non-car mobility, especially specific Portland-area youth. Understanding the current attitudes, beliefs, and behaviors of youth in relation to non-car mobility contributes to the sustainability of a long-term transportation system. Transportation system-related beliefs and behaviors of youth are likely to influence their willingness to access and support transportation services as adults. Today's youth are tomorrow's riders, bikers, walkers, voters, and transportation planners. Thus, it is important to develop age-appropriate messaging strategies and tactics that promote youth non-car mobility.

This project seeks to build on the sparse national and non-Portland regional, past, transit-related research with youth to create and evaluate communication messaging that fosters more positive attitudes, intentions, and behaviors related to transit and other non-car transportation options among Portland youth. The theory of planned behavior was applied to the interpretation of the youth focus group data collected for this project. This research also collected feedback on test messages aimed at encouraging non-car mobility among Portland youth.

Three focus group were conducted with participants (N = 28) who were teenagers entering the seventh, eighth, and ninth grades within the boundary of the Portland Public Schools district. This study used a systematic theory-based approach that consists of two stages of research consistent with best practices in strategic message development. The first stage is pre-production, which sources an audience's attitudes and beliefs to develop strategic messaging for a representative population. The second stage is production testing, where an audience reacts to specific messages to test the appeal and effectiveness of those messages. This study tested 15 text messages that were grouped under three themes: appeals to FOMO (fear of missing out), Generation Z empowerment, and autonomy.

Findings were analyzed using a combination of qualitative coding and quantitative content analysis. Findings addressed the following research questions:

> RQ1: What are the non-car mobility relevant attitudes, norms, perceived behavioral control beliefs, intentions, and behaviors of Portland youth?
>
> RQ2: Which communication channels and settings may be effective with Portland youth in regards to transportation system information and promotion?
>
> RQ3: How are each of the communication strategy themes promoting non-car mobility perceived by Portland youth?

Key insights found mixed attitudes related to non-car mobility that were especially dependent on which type of mobility and often based on the youth's firsthand experience. Youth mostly held normative and perceived behavioral control beliefs supportive of non-car mobility, such as the

belief that most of their friends and parents support non-car mobility and the belief that it is easy to ride transit. A dominant non-supportive belief was youth's lack of agency related to safety on public transit. Youth reported positive intentions to practice non-car mobility until they were old enough and could afford to drive. A variety of channels and settings, such as YouTube advertisements, may be effective at reaching teens, but this study concluded that teens are unlikely to subscribe and engage with text messages sent to their mobile devices. Youth responded positively to appeals to autonomy and generally disliked most of the Generation Z targeted messaging. More detailed insights and recommendations are discussed within the report.

1.0 INTRODUCTION

Transportation system planners, such as the Portland Bureau of Transportation and TriMet, have to think about sustainable long-term visions for their transportation systems, which includes engaging today's youth as current consumers and tomorrow's decision makers. Promoting support for and use of a planned transportation system (e.g., transit, bike paths) among youth helps contribute to a safe, healthy, and sustainable transportation system and fosters livable communities by providing secure mobility to a segment of the public typically restricted in their transportation choices (i.e., may not be old enough to drive or can't afford a car). Increasing non-car mobility among youth is also strategic to help grow and sustain long-term use of non-car transportation options because the transportation system-related beliefs and behaviors of youth are likely to influence their willingness to access transportation services, such as transit, as adults (Cain, 2006). Encouraging youth to understand and engage with non-car transportation options may also increase their interest in transportation systems, which could translate into future transportation-system support through voting, citizen engagement, and interest in a transportation-related career (Cain, 2006). Thus, it is important for transportation communities to actively communicate with youth who are or could be future transit riders or who have access to other non-car options (i.e., bike/walk paths). However, communicating what young audiences may see as complex or dry information in a way that is motivating and engaging requires specialized age-appropriate communication strategies and tactics that must be developed and tested for effectiveness.

A gap in the literature exists in terms of studies about effective transportation messaging that targets youth riders, especially in the northwestern United States. Taylor and Fink (2003) identified two types of transit studies: descriptive (i.e., related to rider attitudes and perceptions) and causal (i.e., related to systems or institutions impacting ridership). Neither category finds representation in peer-reviewed articles about public transit and youth within the context of the Pacific Northwest. Some descriptive studies about youth attitudes and perceptions of public transit use do exist at the national level (Brown et al., 2016; Clifton, 2003; Davis et al., 2012) and within non-Portland localized data sets (Cain, 2006; Grimsrud et al., 2014; Thomas, 2007). No local study has been conducted to understand the attitudes and perceptions of youth (urban or suburban) in and/or around Portland nor the region. This significant geographic and demographic gap in public transit research provides an opportunity not only for scholarship, but also the sustainable business objectives of public transit authorities.

Although not Portland specific, there may still be important lessons from youth-targeted transportation studies which have concluded that youth use of public transit increased in the 2000s (Brown, Blumenber, Taylor, Ralph and Voulgaris, 2016; Davis and Dutzik, 2012) from the mid-1990s (Clifton, 2003). Clifton analyzed a 1995 Nationwide Personal Transportation Survey to argue that as adolescence progresses and the social lives of teens increase, greater reliance on cars follows: "Teenagers appear to abandon walking and [public] transit use as soon as the automobile becomes an option" (p. 11). By contrast, Brown et al. (2016) and Davis et al.

(2012) analyzed 2001 and 2009 National Household Travel Survey data to argue an increase in youth use of public transit. Brown et al. (2016) suggested this shift may not only be economic due to high costs associated with automobiles, but also a factor of youth moving closer to urban areas. Brown et al. (2016) posited that youth find urban areas more attractive, resulting in favorable impressions of transportation modes found in those areas. Davis et al. (2012) suggested the shift in the 2000s may be techno-social due to the popularizing of bike- and ride-share programs. These programs reduce social stigma in not owning and operating a vehicle for personal transit. The assessments of Brown et al. (2016) and Davis et al. (2012) also suggest that characteristics of New Urbanism may share a relationship with youth use of public transit in growing urban areas.

Few studies, however, have focused on connecting the transportation-related attitudes and behaviors of youth into developing messages that effectively promote non-car mobility among this population. One exception to this dearth of research on youth transportation messaging development is a study that conducted extensive formative research on the types of transit messaging that might work with teenagers (Cain, 2006; Cain, Hamer and Sibley-Perone, 2005). The Cain studies recommended three potential communication strategies that could be successful with teenagers: (1) highlight how transit allows teens to be more independent and less reliant on their parents for transportation; (2) highlight the safety benefits of using transit compared to the responsibility of driving; and (3) highlight the high cost of car travel and the better uses of their money to save for things teens care about (e.g., clothes). The messaging recommendations in the Cain studies were based on five mobility themes related to teen use of public transit: safety, cost, access-availability, reliability, and image. Via focus groups, Cain (2006) found that teens associated public transit like buses with a negative self-image (e.g., colloquially “uncool”). Teens also reported public transit to be less reliable than personal transit; however, teens reported public transit to be more economical. In synthesizing qualitative data from teens with a survey of transit agencies, Cain found that agencies viewed their social image as an obstacle to increasing youth ridership (e.g., teen stereotypes about public transit). Both agencies and individuals express cultural frames as communication barriers in relation to increasing ridership.

At least two transportation reports have also discussed the implementation of youth-target transit campaigns in terms of the development and materials created, but only process (distribution) evaluation data was available rather than outcome evaluation data on the effectiveness of the materials (Cain, Hamer and Sibley-Perone, 2005; Lindsey, Ratner and Freeman, 2003). As an outcome of his research in Florida, Cain (2006) suggested strategic approaches to public transit agencies to increase youth ridership; however, the study does not make claims about the effectiveness of those strategies. Cain encouraged transit agencies to “conduct their own market research [within their local market] before embarking on a teenage ridership program” (p. 147). That is, locally tailored strategies with targeted messages may increase and sustain youth use of public transit.

This project seeks to build on the sparse national and non-Portland regional, past, transit-related research with youth to create and evaluate communication messaging that foster more positive attitudes, intentions, and behaviors related to transit and other non-car transportation options. The theory of planned behavior was applied to the interpretation of the youth focus group data collected for this project. The theory of planned behavior is a model of behavioral determinants

(Ajzen, 1991). Within the theory of planned behavior, behavior-relevant attitudes, normative beliefs, and perceived behavioral control come together to predict an individual's intention to perform the behavior, which then affects behavior (Ajzen, 1991). Attitudes related to non-car mobility are observed when an individual attaches positive or negative value to the behavior or its attributes or outcomes. For example, a young person may express a positive attitude about how much they enjoy the feeling of wind on their face when riding their bike or a negative attitude about how slow they think the bus is compared to driving. Normative beliefs within the theory of planned behavior are subjective beliefs about whether other people, typically other people an individual is motivated to comply with, approve or disapprove of the behavior (Fishbein and Ajzen, 1975). For example, youth may discuss how much their parents want them to ride the bus. Perceived behavioral control describes an individual's sense of perceived ability to perform the behavior. A young person's perception of how easy or difficult it is for them personally to ride light rail or walk to their destination are examples of perceived behavioral control beliefs. Personal agency or control over the ease or difficulty is often associated with perceived behavioral control (Ajzen, 1991). Lastly, intention to perform the behavior is seen as a crucial predictor of the actual behavior in the theory of planned behavior (Fishbein and Ajzen, 1975). A young person may express their plans to walk more or, conversely, to drive as an example of non-car mobility intentions. The theory of planned behavior has successfully been used to predict and explain non-car mobility by adults (Heath and Gifford, 2002; Lo, van Breukelen, Peters and Kok, 2016; Lois, Moriano and Rondinella, 2015). Thus, the current study seeks to apply this theory to youth transportation behaviors and reactions to promotional messaging.

Secondary outcomes investigated the potential of delivering non-car mobility promotion messaging to youth via text and graphics sent to their mobile phones. Using mobile phones to deliver campaign messages is likely to be less costly than print materials, which are commonly used, and when automated, require minimal staff oversight. The use of mobile phones as marketing outreach tools is increasing as teen access to mobile phones increases. Of U.S. 13-14 year olds, 68% own a smart phone, 14% own a basic phone, and just 18% do not have their own phone. The mobile-phone ownership numbers are expected to increase over time and also rise as teens get older, are higher among Black teens and teens living in urban areas (Lenhart, 2015).

The Portland area is an appropriate region for testing these strategic communication messages because of their willingness to support such work and system support through programs such as Safe Routes to School, youth transit fare discounts, and the free TriMet rider pass for high school students in Portland Public Schools. Since the free rider pass begins in high school, this study focused on middle school students who would be transitioning to high school within the next few months or years in anticipation of their increased opportunity to access transit services and also increased independence in making transportation decisions.

Additionally, other scholars have noted the uniqueness and progressive qualities of the Portland transportation system. Taylor, Miller, Iseki and Fink (2009) studied factors influencing ridership in 265 U.S. urban areas to inform economic decision making among public transit authorities (e.g., price and service modifications). The authors found that ridership varied by place with the highest use of public transit in the largest urban areas home to the most established systems. Taylor et al. (2009) determined four factors that affect ridership: 1) regional geography, which

includes sub-factors like population density; 2) metropolitan economy (i.e., household income); 3) population characteristics (e.g., percentage of college students, Democrats, and recent immigrants); and 4) auto/highway system characteristics (i.e., percent of carless households). Kuby, Barranda and Upchurch (2004) extended the concept of regional geography and its impact on ridership by locating an "explosion" of domestic light rail development in the mountain and Pacific areas of the U.S. in the 1980s. Kuby et al. (2004) connected public transit development to planning in emerging urban areas at the time. The authors cite Portland "as a progressive example of anti-sprawl planning" (p. 243) that incorporated environmental and social awareness into its urban development. Dueker and Bianco (1999) linked public transit in Pacific urban areas like Portland to the concept of New Urbanism. Taylor et al. (2003) describe New Urbanism as a "movement" whose characteristics include "compact, mixed-use developments and dense, interconnected street/sidewalk networks" (p. 8). New Urbanism, in the context of public transit, promotes "transit corridors and…high-density development around transit stations" (Dueker et al., 1999, p. 3). Portland, in embracing New Urbanism, planned public transit to meet changing social dimensions, which include dynamic population and economic growth (Dueker et al., 1999; Schiller and Kenworthy, 1999). Schiller et al. (1999) argued that Portland's planning "offers some hope" that "despite a relatively low urban density [Portland] has been able to increase its transit ridership significantly in the past decade" (p. 38).

2.0 METHOD

2.1 OVERVIEW

This study used a systematic theory-based approach that consists of two stages of research consistent with best practices in strategic message development (Atkin and Freimuth, 2013; Berkowitz, Huhman, Heitzler, Potter, Nolin and Banspach, 2008; Shafer, Patel, Bulik and Zucker, 2017). The first stage is pre-production, which sources an audience's attitudes and beliefs to develop strategic messaging for a representative population. The second stage is production testing, where an audience reacts to specific messages to test the appeal and effectiveness of those messages (Shafer, Cates, Diehl and Hartmann, 2011). Pre-production and production testing in this study consisted of three focus groups moderated by the PI and graduate researcher. In each focus group, the pre-production research was conducted first and was followed by the production testing with the same participants (Patel, Shafer, Brown, Bulik, and Zucker, 2013; Shafer et al., 2011). Moderators used a discussion guide (see Appendix A-1) in each focus group. All procedures were approved by the researchers' university institutional review board.

2.2 PARTICIPANTS AND RECRUITMENT

Focus group participants in this study (N = 28) were teenagers during summer break who were entering the seventh, eighth, and ninth grades in the fall who lived within the boundary of the Portland Public Schools district. This demographic (i.e., middle school students) in this geographic location are eligible to receive a free TriMet pass to use public transit upon entering a local public high school. Of the 28 participants, 16 were male and 12 were female. Of the 28 participants, 22 identify their race or ethnicity as Black, three as Hispanic, and three as White.

Thirteen teenagers were recruited from a community program in Portland whose mission is to provide free and low cost enrichment activities for local youth. The PI and graduate researcher recruited these participants following in-person visits with program administrators and the strategic placement of promotional flyers advertising the study within the program's public spaces. The remaining 15 teenagers (FG two: seven teens; FG three: eight teens) were recruited by way of an informational website that the researchers created to communicate the study's objectives. The researchers called and emailed more than 30 youth-focused summer camps and community programs in the Portland area requesting that they direct parents and youth to the website via organizational newsletters, emails, or conversations. The informational website explained the study's objectives to parents and teens alike, allowing teenagers to register online to participate in one of two focus groups. The graduate researcher called teens who registered online via the information website to speak with youth and parents to confirm eligibility and participation in the youth's preferred focus group time slot.

2.3 FOCUS GROUP PROCEDURES

Three focus groups were performed: one on the grounds of a youth-focused community program, and two in a conference room at the University of Oregon's downtown Portland campus. No parents or guardians participated in any focus group following signature of parental release forms authorizing youth to participate in the study. Youth participants also provided assent to participate. The PI conducted the first two focus groups, while the graduate researcher conducted the third under the supervision of the PI. The PI and the graduate researcher used the same discussion guide (see Appendix A-1) to moderate all focus groups. The discussion guide was created to understand participants' transportation habits and experiences, non-car barriers and motivations, and communication habits and preferences. Both researchers applied a semi-structured approach to focus group moderation to allow for probing questions based on participant responses to initial query.

During focus groups, participants sat in chairs in a circle around desks to allow each member to see one another and have immediate access to a writing surface for the production testing portion of the study. The moderator began each session with two warm-up questions and concluded each session thanking participants for their time and assistance. The average time of all three focus groups was 1:02:55 minutes (FG one: 54:30 minutes; FG two: 1:01:30 minutes; FG three: 1:12:07 minutes).

The average duration of each focus group in the pre-production stage was 37:24 minutes [based on focus group (FG) one: 35:40 minutes; FG two: 28:11 minutes; and FG three: 47:00 minutes). Production testing immediately followed pre-production, such that moderators presented focus group participants with printed copies of the text messaging prompts (see Appendix A-2) after pre-production questions were finished. Moderators requested that participants write their thoughts, feelings, and impressions on each text message as a reaction. Participants were free to write any thoughts and were not guided about the types of reactions they should have to the messages. Production testing lasted an average of 25:59 minutes (FG one: 18:50 minutes; FG two: 33:19 minutes; and FG three: 25:07 minutes). Although researchers planned to also solicit verbal comments from participants about their reactions to the text messages, due to time constraints only written comments were collected. Focus groups were audio recorded with the permission of participants and their parents. Audio files were de-identified and transcribed into a Word document for qualitative coding. After each focus group, participants received cash or a Visa gift card in exchange for their participation.

2.4 PRODUCTION TESTING MESSAGE DEVELOPMENT

The PI selected six undergraduate students and one graduate researcher to be part of a research team to develop the messages for production testing. The PI directed undergraduate students to select peer-reviewed articles relevant to the study and to a youth audience. The undergraduates shared and discussed relevant articles over the course of several weeks. From these discussions, undergraduate students developed production-testing concepts. By way of discussion with the PI and graduate researcher, production testing concepts became themes that acted as frameworks to craft strategic messaging. Three themes were selected as potentially relevant for the development of strategic non-car mobility messaging targeting youth: FOMO (fear of missing out), autonomy, and Generation Z. Once themes were identified and defined, the research team developed sets of

visual text messages to represent the frameworks as actual text messages. After several rounds of ideation and editing among the research team, five text messages that incorporated a mix of textual and still images were developed for each of the three themes. A total of 15 individual text message prompts were developed and presented to focus group participants in the form of mock-up mobile smart phones (e.g., Apple iPhone skins; see Appendix A-2).

2.4.1 Themes

2.4.1.1 FOMO (fear of missing out)

The FOMO theme appeals to teens' desire for social connection and to be seen as operating within the social norms of the group. This theme presents an idea to an audience member as contagious (e.g., popular, trending). This strategy does not strive to alter strongly held opinions, but can sway the undecided and serve as a useful reminder and motivator for those in agreement with a message (Austin and Pinkleton, 2006). Crafted messages may attempt to demonstrate that a behavior must be "normal," because so many people like the audience member do it or think it. Messages within this theme attempt to show or discuss other teens practicing non-car mobility and enjoying it (e.g., having unique or fun experiences with public transit). Messages within this theme may suggest or hint at how teens make comparisons between themselves and others. Messages within this theme may highlight things that can be seen or done solely via non-car mobility. Message appeals within the FOMO theme may hint at anticipated regret teens may feel if they do not engage in non-car mobility.

2.4.1.2 Autonomy

The autonomy theme appeals to teens' desire for independence from their parents. Messages within this theme may suggest that by teens choosing their own non-car transportation they attain greater freedom, which reduces reliance on others to meet transport needs. Messages with an autonomy appeal may try to get teens to recall a moment when they may have felt frustrated by their reliance on others. Autonomy appeals are likely to associate teen selection of non-car transportation with supporting teens' goals of autonomy, achievement, and competence. Messages within this theme are likely to encourage teens to explore their environment and decide for themselves where they want to go, when, and how they will get there.

2.4.1.3 Generation Z

The Generation Z theme appeals to teens' desire to be valued and seen as having important needs and wants. Messages within this theme validate teens' experiences and needs by communicating their importance (i.e., empowerment messaging). Messages with a Gen Z appeal are likely to impress upon teens that public transit authorities consider the needs and wants of teens when authorities design services. Gen Z messages may employ a form of personalization and/or help teens to feel like they have ownership of the public transit choices they make (e.g., "make it yours" messaging). Within this theme teens are encouraged to share their opinions and feeling because they would be heard by the transit authorities.

2.5 ANALYSIS

2.5.1 Pre-production analysis

Focus groups were first transcribed. Then, the three focus group transcripts were uploaded into Transana, a qualitative research analysis software program. The PI then manually coded each transcript with the unit of analysis as an individual's response to a moderator's question. Codes were organized by theory of planned behavior constructs (attitudes, norms, perceived behavioral control, and intentions) and discussion guide themes (i.e., transportation use habits and contexts, non-car mobility barriers and motivations, and communication habits and preferences). Coding was analyzed across the three focus groups with the overall goal being to contextualize, such that more weight was given to responses that occurred more frequently; included words that connoted intensity of feeling (e.g., a strongly held opinion or deeply emotional response); were specific and based on personal experiences (vs. vague or impersonal responses); and received agreement (vs. disagreement) from other participants. Analysis also looked for patterns of co-occurrence among topics (e.g., biking and walking were often discussed simultaneously) (Krueger, 1998).

2.5.2 Production testing analysis

Written comments from participants associated with each of the 15 sample messages were transcribed into an Excel document that was organized by participant and sample message, resulting in 325 individual reactions with an additional 95 non-reactions (meaning a participant left the reaction space to a message blank). Both researchers used content analysis to code youth reactions to the text messaging prompts. Analysis included several rounds to refine the development of the code book (see Appendix A-3) and attainment of inter-coder reliability between the PI and graduate researcher. Codes were based on patterns noticed within participant reactions. Participants were free to have any reaction and they were not guided by researchers. Each researcher independently coding all reactions in the final coding round. Strong inter-coder reliability was achieved on all but one code (conditionality), which was removed from analysis. Cohen's kappa averaged .90 with all codes above .79. The PI's coding was then used for analysis and reporting. Since coding options were categorical (present/not present), crosstabs were used to compare text message reactions for each coding category. Significant chi-square findings are organized by coding category below.

3.0 FINDINGS

Findings from the analysis are presented here with insights discussed in the following section.

3.1 PRE-PRODUCTION

This phase of research sought to answer the following research questions:

> RQ1: What are the non-car mobility relevant attitudes, norms, perceived behavioral control beliefs, intentions, and behaviors of Portland youth?
>
> RQ2: Which communication channels and settings may be effective with Portland youth in regards to transportation system information and promotion?

3.1.1 Attitudes relevant to non-car mobility

Participants generally expressed positive attitudes about walking and biking, although most stated they didn't do either activity regularly. Participants were quick to indicate that walking can be fun and that it was cheaper than any other mobility method. Some participants also mentioned the exercise benefit of walking or biking. Riding "The Max" was also discussed with a positive attitude by several participants, mostly because it was faster than waiting for their parents to give them a ride. For example, a participant in the first focus group stated, "I like taking the Max because it's like faster cause by the time you get there my momma would probably just be walking out the house." Parents taking a long time or not wanting to give their children rides places was a common experience among the participants. For example, a participant in focus group 1 stated, "M: When I try to ask them [his parents] to take me somewhere they wanna be slow about then I'm just gonna catch the Max."

Participants expressed concerning negative attitudes about riding the bus or light rail that were steeped in their personal experiences. These negative attitudes were often centered on feelings of uncertainty, anxiety, safety concerns, and sexual harassment that they have personally experienced when riding Portland public transit. Here is a sample of some of the experiences:

> "Um, men, being a girl. Men when they come up to you and they approach you and they're like and you're grown and you're like I'm a little girl or you're just not interested at all. And they don't take no for an answer. That's really scary cuz I've been groped and grabbed and it's because I said no. They just don't listen." Focus group 1 participant
>
> "Like, um, like somebody yelling and like yelling at other people or a guy with a knife was on the bus once like standing right next to the bus driver and he wouldn't go sit down. He'd just stay next to the bus driver, so we had to get off the bus." Focus group 3 participant

> "You like if you're on a Max sometimes you see like drunk people on a Max." Focus group 2 participant

> "So I remember when me and my brother, we were um, we were getting on the Max from the Loyd center and it was like super super dark cause we had been like like everywhere that day. Right? And there was this guy It was I'm telling you like. It was three people me, my brother, some guy. It was just weird. He was looking down at this phone he was like this, and my brother was sittin like this on the other side, and um the guy came up to my brother like, "You got a cigarette?" My brother was like, no, he was like and he came to me was like, "Do you have a cigarette?" I'm 12 years old why I got a cigarette? Anyways, he was like, I was like, where would I have a cigarette, and then he was like, "I was just asking." And then he keep trying to talk to me like you know you're very pretty. I was like I know but I don't need to hear it from you." Focus group 1 participant

These negative attitudes about public transit appeared to be held by nearly every participant.

The main negative associations with walking or biking were that it can be boring or tiring. There was some disagreement among participants on those points as others thought the opposite. Additionally, a minority of participants mentioned they disliked walking at night due to safety concerns.

3.1.2 Normative beliefs relevant to non-car mobility

Normative beliefs came up less often than attitudes throughout the discussion, although there was some overlap as demonstrated by the string of participant responses from focus group 3:

> "Participant 1: Yeah people only really talk about the bus if its…
> Participant 2: Bad
> Participant 3: Terrible
> Participant 4: Something weird happens."

The most common normative belief among participants was related to their parents support or lack of support for them riding transit. It seems like most participants' parents encouraged or mandated that participants ride transit, but sometimes parents were also described as having safety concerns related to transit. For example,

> "My dad he doesn't like giving me the rides but like I said before he's like really over-protective so he's confusing sometimes cuz like I ask him for a ride and he's like no you have to go on the bus and then when I don't want to go on the bus, no when I want to go on the bus, he's like no I'm going to give you a ride." Focus group 2 participant

Normative beliefs associated with walking or biking were mostly non-existent from the conversation other than when participants agreed that their friends have similar non-car mobility habits as they do.

3.1.3 Perceived behavioral control beliefs relevant to non-car mobility

Participants had a high degree of confidence in their ability to navigate the Portland transportation system by walking, biking, or riding public transportation. Participants felt they knew most of the information they needed to know to get around without a car, and could easily find any information they didn't know using their smart phone. For example, a participant in focus group 2 stated, "I know where I'm going cuz I've been here all my life so I like isn't no worry for me." Another participant in focus group 2 expressed a similar sentiment, "Like I use the app sometimes to check when my bus and my MAX come but I know where everything takes me now."

The main issue connected to perceived behavioral control was not about being able to travel without a car, but more about being unable to control or predict the type of experience they would have once they choose to ride transit. Participants discussed the measures they take to achieve some degree of control over their safety and experience riding transit. Many of these personal agency concerns co-occurred with negative attitudes expressed about riding transit. For example, a participant in focus group 1 stated, "I be trying to block off so nobody sit by me, sit next to me. (laughs). I like put my foot up and I put my backpack up there. I like no one to sit next to me if I don't know you."

Another issue related to control that came up in two of the focus groups was that a few participants lacked access to a bicycle despite wanting to use that mode of transportation. For the participants who mentioned this issue their bike was either broken and they did not know how to repair it or it had been stolen.

3.1.4 Intentions relevant to non-car mobility

Nearly every participant stated that they intend to drive rather than use some form of non-car mobility as soon as they are old enough and/or have the money to get a car. For example, a participant in focus group 1 stated, "Driving is the best. If I get a car, I'll never ride again." And other participant in focus group 3 stated, "I'm fine with doing it now, but when I turn 16 I plan on getting a car, like it's just faster." While still expressing their preference for driving when they are able, several participants cited financial constraints as a reason they may still use non-car mobility in the future. For example, a participant in focus group 1 stated, "It depend like the distance. Maybe you have like little bit of gas you don't got enough money so." Participants were also asked if they ever thought about walking, biking, or riding transit more than they already do and nearly every participant said "no," with some also expressing that they wished they practiced less non-car mobility. For example, a participant in focus group 3 stated, "If, if, I can ride it less I would definitely ride it less."

3.1.5 Channels and settings for non-car mobility messages

Channels and setting commonly used by participants included: smart phones, the TriMet tracker app, Snapchat, Instagram, YouTube, broadcast news (usually because their parents are watching it), local radio, and peer-to-peer in-person or texting conversations. When probed about whether they follow any local personalities, government, or organizations on the social media channels

they use, the universal answer was “no.” There was a wide variety of well-known celebrities or national figures that participants followed, but no local figures.

Participants were asked if they would follow a transit agency on any social media or if they would want to receive text messages from or about local public transportation (including walking and biking paths), and most participants said “no” or provided a lukewarm reception to the idea if any text or alert was relevant to them at the time they received it and if the texts were not frequent. For example, a participant in focus group 2 stated, “It depends on how like how frequently they text like my phone. Like if these text messages come like every day I’m going to start getting irritated and like delete the number or something. If it’s not that often I’ll probably do the text thing.” Some participants suggested sending text messages no more often than once per week. Of the minority of participants who said they would even consider opting into text messages from TriMet or another public transportation agency, they only would consider it if they were incentivized by the possibility of winning prizes such as a free bus pass. The majority of participants said that their parents were the preferred source to get transportation-related communication messages from.

3.2 PRODUCTION TESTING

This phase of the research sought to answer the following research question:

> RQ3: How are each of the communication strategy themes promoting non-car mobility perceived by Portland youth?

3.2.1 Positive reactions

Overall, the Autonomy messages received the most positive reactions, with 55.9% of reactions coded as positive compared to 50.9% of FOMO and 30.1% of Gen Z message reactions being positive, $\chi^2(2, N = 325) = 11.08$, $p < 0.005$. No significant differences emerged among the themes for the type of positive reaction each received. Enthusiastic was the most common positive reaction among all of the themes, which was defined in the code book as “emphatic approval or general approval.” Between 53-67% of all positive reactions were coded as enthusiastic.

3.2.2 Negative reactions

Overall, the Gen Z messages received the most negative reactions, with 63.7% of reactions coded as negative compared to 44.5% of FOMO and 44.1% of Autonomy message reactions being negative, $\chi^2(2, N = 325) = 16.56$, $p < 0.001$. No significant differences emerged among the themes for the type of negative reaction each received. Rejection was the most common negative reaction among all of the themes, which was defined in the code book as “non-acceptance of message or refusal of message.” About 70% of all negative reactions were coded as a rejection, regardless of the theme. Counterargument was the next most common reaction across themes, with 40.0% of Autonomy’s, 33.3% of Gen Z’s, and 20.4% of FOMO’s negative reactions coded as counterarguments (note: there was not a significant chi-square among the counterargument

findings). Counterargument was defined in the code book as "user pushes back on message's points with his/her own counter point. User has a point."

3.2.3 Humor reactions

The messages were intended to be engaging and entertaining to young audiences, which may include being humorous. Autonomy messages (14.7%) were seen as funny more often than Gen Z messages (0.9%), with FOMO messages (11.8%) just behind Autonomy, $\chi^2(2, N = 325) = 14.32$, $p < 0.005$.

3.2.4 Helpfulness reactions

There were no significant differences among the themes for whether a message reaction included comments about helpfulness or unhelpfulness. Very few message reactions discussed helpfulness, with just 29 of the 325 reactions being coded for explicitly referring to the message as helpful or unhelpful.

3.2.5 Likelihood of following through reactions

There were no significant differences among the themes for whether a message reaction included comments about likelihood of following through with the message. Very few message reactions discussed likelihood, with only 23 of the 325 reactions being coded for indicating any degree of likelihood or unlikelihood of following through with the message request or recommendations.

3.2.6 Personal relevance reactions

Overall, the Autonomy theme message reactions included the most discussion of personal relevance with 18.6% of messages seen as personally relevant, whereas only 10.9% of FOMO and 3.5% of Gen Z messages eliciting relevance reactions, $\chi^2(2, N = 325) = 14.32$, $p < 0.005$. There was no significant difference among the themes about reactions that indicated a message was not relevant or inauthentic, with between 10-13% of all messages eliciting a comment that indicated the message seemed inauthentic or not personally relevant to a participant.

3.2.7 Individual message reactions

Although messages' reactions were primarily analyzed by theme because it is more helpful to understand our target public's reaction to a theme on which future message iterations may vary, reactions were also analyzed by individual message in the hope of gaining additional insights about the types of pro-transportation system messages that connect with youth.

Overall, the three messages that received a consistent amount of positive feedback are featured in Figure 3.1. These messages were likely to elicit comments that described them in positive terms, indicated that they were in some way personally relevant or authentic to the participant, and funny. Four messages featured in Figure 3.2 stood out as receiving consistent negative feedback, such as comments that rejected and counterargued with the message and indicated that the message was not helpful or relevant to their lives.

Figure 3.1: Most positively reviewed messages

Figure 3.2: Most negatively reviewed messages

4.0 INSIGHTS AND RECOMMENDATIONS

Results from the pre-production and production testing research provided several key insights and recommendations for non-car mobility message development and dissemination targeting youth in Portland. In comparing this study's findings with one of the only other studies looking at teen transit messaging (Cain, 2006), there are important areas of similarities and dissimilarities among the findings. For example, both this study and Cain's study found that parents are a key influencer among this target public on this issue. Similar to Cain's study, this research found support for autonomy appeals that encourage teens to be less reliant on their parents for transportation. Another similarity among the studies' findings were teens' beliefs that public transit is more economical, even if it is slower or less reliable. One notable difference in the current research findings from the findings in Cain's Florida study of teens was that teens rarely, if ever, expressed concerns about negative self-image associated with transit. Teens in our Portland study didn't seem to feel stigmatized when using transit and expressed that it was normative behavior among their peer groups. Cain's finding that recommended highlighting the safety benefits of transit compared to the responsibility of driving are likely to be seen as untrue and inauthentic to the Portland youth experience, and one of the main and deeply engrained narratives around their transit experience is how unsafe and unpredictable it is. Related to Cain's third messaging recommendation about highlighting the high cost of car travel and the better uses of their money to save for things teens care about (e.g., clothes), this may ring true with Portland youth, based on our participants, but it is a reluctant truth. Participants clearly stated that money was a barrier to car use, but they still felt driving was worth it.

4.1 THEORY-BASED MESSAGING RECOMMENDATIONS

Messages promoting non-car mobility may consider different themes or appeals based on the type of non-car mobility being promoted. For example, teens are more likely to see messages associating walking or biking with leisure or friendship as authentic to their own attitudes and experiences with those forms of non-car mobility than their experiences with riding the bus or light rail. Messages promoting light rail may want to tap into existing positive associations about how light rail is easy to use, fast, and allows for independence from their parents. Because of the strongly held negative associations with the bus and light rail, in regards to safety and negative interactions with adult passengers, Portland transportation officials should consider system changes and related messages that provide teens with more agency to avoid and report those negative experiences. Messages touting the safety of the Portland transit system are likely to be seen as inauthentic to the teens' experiences, and thus, rejected. These safety-focused messages are likely to need to demonstrate that tangible changes that have been made to the transit system and/or new information about what to do in situations where teen feel uncomfortable to be seen as relevant and useful to participants.

Normative beliefs predict behavior and this research found that most of the youth participants had normative beliefs that encouraged current non-car mobility practices. Messages could reliably feature normative messaging to continue to support their current intentions, especially in regards to parental support for non-car mobility. Unfortunately, nearly all the youth in our study had future intentions of not practicing non-car mobility once they were able to drive. Messaging should consider including people who are 16-18 years old and actively choose non-car mobility. These older referents should be people Portland youth are likely to want to be like and identify with. The idea is to establish choosing to take the bus (or other forms of non-car mobility) as a continued norm past the age of 15 years old. Further research should explore the viability of incorporating the positive parental norms related to non-car mobility for older teens.

Similar to the Cain (2006) study, messaging highlighting teens' ability to be autonomous and exercise independence from their parents by choosing non-car mobility instead of getting rides is likely to be well received by Portland youth. Humor could be used to remind teens of a common experience of annoyance at waiting for their parents to give them a ride.

Messaging that seemed to fail during production testing focused on Gen Z themes, such as empowerment and providing feedback to decision makers. Additionally, individual messages which highlighted negative aspects about driving, such as cost, were not well received, with the exception of highlighting the hassle of getting rides from parents being positively rated. Upbeat messages and those that featured local references or information were generally well received.

4.2 DISTRIBUTION AND SOURCE RECOMMENDATIONS

Based on feedback from participants, parents seem to be the best source for distribution and endorsement of any non-car mobility messages. It seems unlikely that many teens would follow transportation organizations on social media or opt in to receive text messages. Despite initial testing, this study does not recommend engaging in a text messaging campaign directly to teens. Any messaging aimed at teens is likely going to have to first reach parents, who would then pass the message on to their children. Since parents were not part of the research participants for this study, future studies should test the kinds of messages that are effective with parents, how to best motivate parents to pass messages on, and where to reach parents. Although, one channel mentioned by participants that is often attended to by parents and teens together is local broadcast news.

Outside of distribution through parents, Portland teens are likely to be reached through their use of the TriMet app, billboards or posters near non-car mobility area (e.g., bus stops), ads on youth-oriented YouTube channels, ads on youth-oriented local radio, and ads on Instagram. Although this study ultimately recommended abandoning the initial idea to target through text messaging, the results of the production testing still provide important information about the content of youth-targeted messages that could be distributed on other channels (e.g., posters, social media ads). Since production testing in this study was conducted with the assumption that text messaging would be the distribution channel, further production testing is needed to adapt the results and recommendations to other channels (e.g., social media ads, billboards) that may target youth directly to promote non-car mobility.

4.3 LIMITATIONS

An important limitation of this study is that the results may not be generalizable to all Portland youth. Sample demographics are not consistent with Portland demographics, such that this sample is 79% Black compared to census data that indicates the Portland population is 70% White and 5% Black (U.S. Census Bureau, 2017). Also, teens who agreed to participate may have been those who have more of a personal stake in transportation issues. Another important limitation is that because the pre-production and production testing research were conducted within the same focus groups the research team was unable to adapt the distribution channel (text messaging) during the production testing stage. Although the reactions are likely to apply outside of this message delivery context. What participants found personally relevant, for example, did not seem predicated on delivery mode (text messaging), but rather was connected to the message graphics and wording, which could be adapted to other channels.

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APPENDIX A-1

FOCUS GROUP DISCUSSION GUIDE

Introduction

Thank you all for agreeing to participate in our focus group today. My name is _____ and I will be facilitating the discussion today. This is _____ and he will be taking notes as we discuss your experiences getting around town as a teen in Portland. We really appreciate your agreeing to be here. We're interested in your honest opinions, so please feel free to say what's on your mind. At the same time, it's important that we all remain respectful of one another and encourage everyone to participate.

Before we begin, I wanted to remind you that we've brought a digital recorder so that we don't miss anything you say. The discussion will last about an hour and a half. Remember that you do not have to answer any question that you are uncomfortable with, and most importantly, there are no right or wrong answers. Please don't use your names or anything else that would identify you during the recording. If you, or someone else, mistakenly say your name, it will be kept confidential and will not be included in any research reports.

We also ask that you keep other people's responses during the focus group private and don't discuss their responses outside of this group. We will distribute the gift cards at the end of the session. Any questions before we begin? OK, let's get started.

Warm-up questions/rapport building

1. What are some of the things you like about living in Portland?
2. What are some of the things you don't like about living in Portland?

Transportation use and contexts

1. How do you typically get to school? (if bus, is it a city bus or school bus?) (do they like that mode?)
2. Where are some other places, besides school, that you go in Portland? (how often?) (how do they typically get to those places?) (do they like those modes?) (same for friends?)
3. When you drive places, who typically drives you around? (do you/they seem to enjoy that?) (places you drive a lot?)
4. How often do you walk places? (in what contexts?) (do they like walking?)
5. How often do you ride your bike/skateboard/scooter places? (in what contexts?) (do they like that mode?)
6. How often do you ride Tri-Met buses and/or the Max? (in what contexts?) (do they like those modes?) (how did they start/learn to ride)

Non-car barriers and motivations

1. What do you think about walking, biking, or riding the bus instead of driving (getting a ride)? (pros/cons)
2. What have you heard from other people about walking, biking, or riding the bus? (if so, who?)

3. If you have (or would) walk, bike, or ride the bus, would you prefer to do it alone or with people? (friends, family, etc.?)
4. Have you ever thought about riding the bus/Max more? (if yes, what's stopping you?) (if no, reasons?)
5. Imagine that you wanted to take the bus to the mall. Describe to me, step-by-step of how you would do it (starting with how you would figure out the bus stop/times)? (which info sources would you use to figure out how to get there?) ***this is designed to get their understanding of how to ride—probe more, if needed
6. Have you ever thought about biking more? (if yes, what's stopping you? e.g., safety, bike theft, etc.) (if no, reasons?)
7. Have you ever thought about walking more? (if yes, what's stopping you? e.g., safety, etc.) (if no, reasons?)
8. Do you think you have a good idea about how to get around Portland without a car? (probe for specifics or examples of times they did this)
9. What do your parents think about you riding the bus, walking, or biking? (probe for specifics, examples)
10. Do you picture yourself getting a car while you are in high school? How important is this to you? (pros/cons)

Communication modes

1. Please think about the ways you get information and learn about traveling around Portland. What are the most helpful ways you get information? (Probe: online, in-person, talking to a parent/teacher, from a friend) (Follow up: Which websites/social media accounts?) (separate transportation-related info from non-transportation)
2. Who would you most like to hear information about getting around Portland without a car from?
3. Does your school ever talk about taking the bus, walking, biking, etc.? (what do they say?)
4. What is the best way to reach you? What about if it was about the bus or a new bike path? (how do your friends get ahold of you?)
5. Could you ever picture yourself checking Tri-Met's website or Twitter or other social media for information about the bus/Max? (why/why not?) (anything that you can imagine would motivate you to do this?)
6. How do you hear about things going on in Portland? (if word-of-mouth, how do you think that person knows?)
7. What are some good ways to let teens like you know about ways to get around Portland without a car?
8. Do you follow any local blogs, YouTube accounts, social media, etc. besides your friends/family? (if so, which?)
9. What do you think about getting short text messages from Portland transit about options to get around besides driving? How willing would you be to sign-up to get those? Anything that would make you want to do that more/less?

Sample messaging (Note: Due to time constraints only written reactions were collected for this section)

1. Now I'm going to ask you to be creative and write down a message encouraging teens to get around Portland using the bus, walking, or biking that you could see showing up on a poster or Internet ad that would get your attention. Just write down whatever comes to mind. I'll ask you to share it with the group if you agree to. Here's some paper and a pencil.
2. Now, I'm going to show you some text messages that we would send to teens, like you, who sign up for more information about this stuff. ***Show theme 1 (random order)*** Go ahead and make notes about your thoughts next to the messages. If you like them, hate them, odd wording, funny, etc. (Probes, what do you think? What do you like/not like about them? Would you want to get these text messages? How would you change them? What would you do when you saw them? Anything missing from them?)
3. Now, I'm going to show you some text messages that we would send to teens, like you, who sign up for more information about this stuff. ***Show theme 2 (random order)*** Go ahead and make notes about your thoughts next to the messages. If you like them, hate them, odd wording, funny, etc. (Probes, what do you think? What do you like/not like about them? Would you want to get these text messages? How would you change them? What would you do when you saw them? Anything missing from them?)
4. Now, I'm going to show you some text messages that we would send to teens, like you, who sign up for more information about this stuff. ***Show theme 3 (random order)*** Go ahead and make notes about your thoughts next to the messages. If you like them, hate them, odd wording, funny, etc. (Probes, what do you think? What do you like/not like about them? Would you want to get these text messages? How would you change them? What would you do when you saw them? Anything missing from them?)

Wrap up

1. We are at the end of our discussion for today. Is there anything else that you'd like to share that we didn't already cover?
2. Thank you so much for joining us today. This has been very helpful. Be sure to pick up your gift card on your way out.

APPENDIX A-2

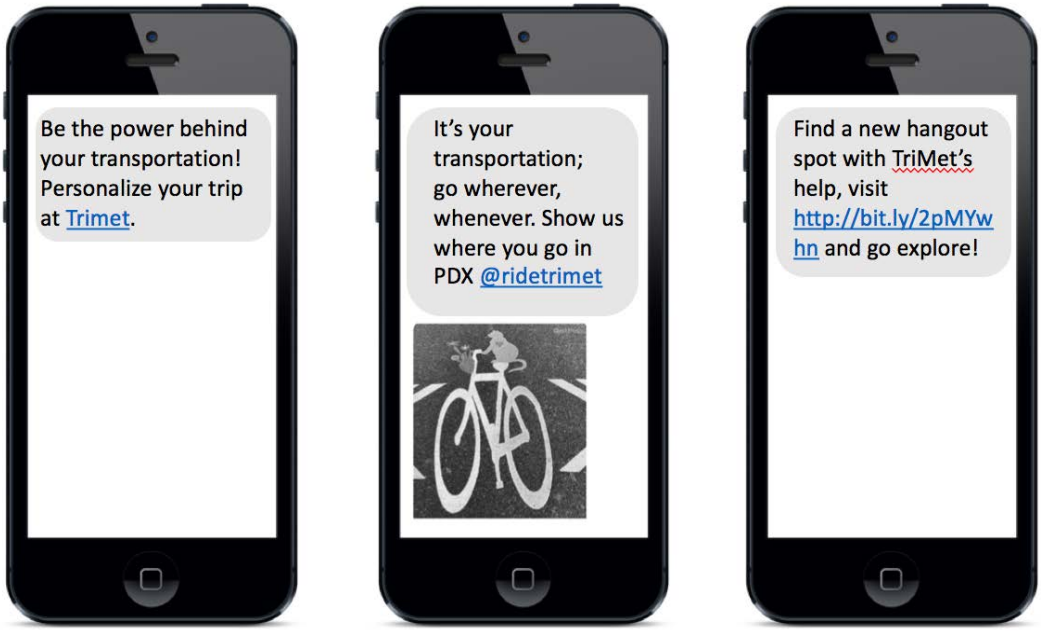
TEXT MESSAGE PROMPTS

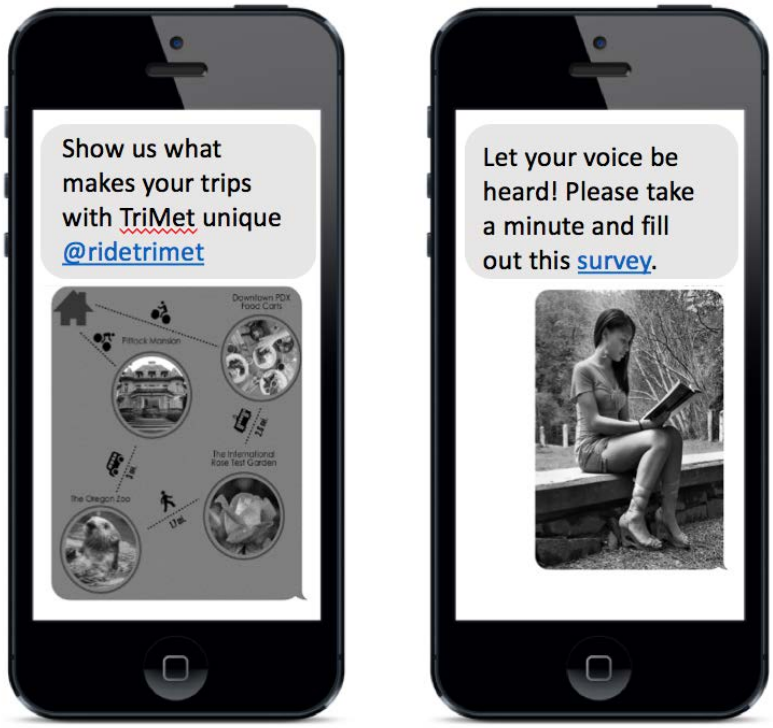
FOMO (FEAR OF MISSING OUT)

The following collection of five images depict the visual prompts of the FOMO (fear of missing out) theme. Images were presented to study participants as shown in the context of Apple iPhone skins.

GENERATION Z

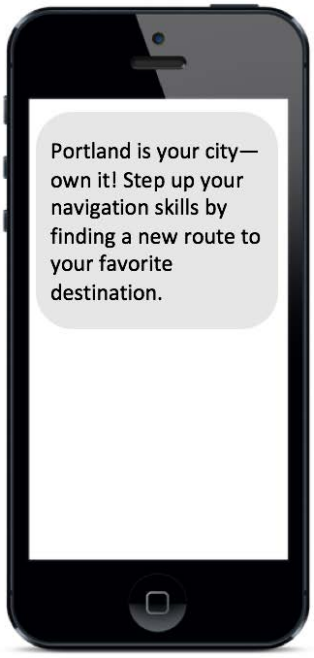
The following collection of five images depict the visual prompts of the Generation Z theme. Images were presented to study participants as shown in the context of Apple iPhone skins.

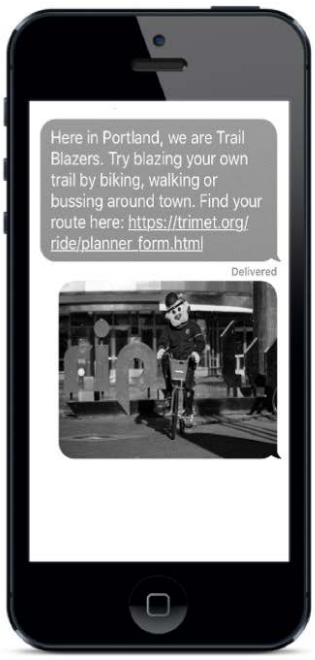




AUTONOMY

The following collection of five images depict the visual prompts of the Autonomy theme. Images were presented to study participants as shown in the context of Apple iPhone skins.





APPENDIX A-3

PRODUCTION TESTING REACTION CODE BOOK

Definition	Example
General valence: is the message positive, neutral, or negative?	
Positive appraisal: 1. Enthusiastic: emphatic approval or general approval 2. Warm/Lukewarm: non-rejection approval of some aspect of message; and/or non-negative summary Neutral appraisal: 1. Non-sequitur: reaction is does not address message shown 2. Conditional or qualifying: reaction is predicated on another action. User suggests that message is appropriate/targeting /helpful, etc. for some people (and not others; e.g., "would work for others", "would not work for others") 3. Clarifying: more information requested to render decision. Negative appraisal: 1. Rejection: non-acceptance of message; refusal of message. 2. Critical: explicit suggestion(s) to improve message 3. Counter-argument: user pushes back on message's points with his/her own counter point. User has a point. 4. Persuasive intent: user critiques message as obvious use of persuasion.	Positive appraisal: *(N.B.: If LOL or lol has additional content, LOL or lol relies on that content for context)* 1. Enthusiastic: "Yea is it works! I like it" or "Funny and true." "More like this/these" "Funny" "Cool" "LOL (by itself and not other text)" 2. Warm/Lukewarm: "good information to know" or "Sure" "lol (by itself and not other text)" Neutral appraisal: 1. Non-sequitur: 2. Conditional or qualifying: "depends if I get a prize or not" or "Well… if must of your friends live in Portland. Than they already know how weird it is. Good for ppl who have never come to Portland b4!" 3. Clarifying: "Is the new route going to be better than my regular route?" Negative appraisal: 5. Rejection: "Not completely true," or "Too direct and boring" or "Very plain" 6. Critical: "This text needs something more specific about transportation and maybe reasons on why they are better" "Try something new" 7. Counter-argument: "That's why ppl. take a car. So they don't have to walk or catch a bus" or "But w/ cars you don't have to wait around for the bus to come. Plus cars teach you how to be responsible and independent" 8. Persuasive intent: "trying to convince people; "no, this one seems to be pushing you";
Humorous: does the user find the MESSAGE humorous or not?	
Funny: user finds the message humorous and makes an explicit statement, uses onomatopoeia, or acronym	Funny: "Funny" or "funny but not informational" or "hahaha" or "lol"

Not Funny: user does not find the message humorous and makes an explicit statement	Not Funny:
Follow-through: is the USER likely to pursue the CONTENT or MESSAGE'S request or solicitation?	
This focuses on the USER; beyond the message itself Likely: user is likely to follow-through message request or solicitation. Explicit that user would do what message's content suggests. Relates to future actions. Not Likely: user is not likely to follow-through message request or solicitation. Explicit that user would do what message's content suggests. Relates to future actions.	This focuses on the USER; beyond the message itself Likely: "sounds like I would do just for the fun of it, I guess." Not Likely: "Don't think ppl would do the survey. I wouldn't"
Helpful: is the CONTENT in the message helpful or not?	
User responds directly to the content in the message; not the message itself Helpful: user finds message helpful to themselves. Such as indicating the message provides new and useful information. Not Helpful: user does not find message helpful to themselves. Such as the message not being useful or does not provide new information.	User responds directly to the content in the message; not the message itself Helpful: "sounds like something I would probably follow" or "good information to know" Not Helpful: "But, why do I need to find my own route, if I already know it?!"
Authenticity/realism: is the CONTENT in the message realistic to the user?	
Authentic/realistic: user states that content is realistic; content is true to his/her life; user states that messaging relates to something similar in their lives (e.g., current and past experiences); user explicitly includes a specific group: family, friends, etc. Not authentic/realistic: user states that content is not realistic; false/not true to his/her life; user states that messaging does not relate to something similar in their lives (e.g., current and past experiences); user explicitly includes a specific group: family, friends, etc., in saying that messaging is not authentic.	Authentic/realistic: "True" "Funny and true" "I agree" Not authentic/realistic: "not realistic"; "false"; "not true"; "No, I would get irritated and this would be a waste of time" I do not agree" or "I don't agree" "Lies"

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