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CENTER FOR TRANSPORTATION RESEARCH

Don’t mess with Texas Campaign Study: History, Effectiveness, and Success

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Executive Summary

Background

Introduced by Texas Department of Transportation (TxDOT) in 1986, the Don't mess with Texas (DMWT) Campaign and slogan is one of America's most successful and enduring public awareness campaigns. By 1990, the campaign achieved a historic 72% reduction in highway litter by changing public perceptions and behaviors. However, litter composition has changed.

The DMWT slogan's success has been linked to the message which appeals to younger Texans who tend to litter more. The slogan has also been made popular by Texas singers and celebrities through TV and radio commercials.

This study documents the history, past successes and future challenges of the DMWT campaign as Texas' population and traffic volumes continue to grow at increasing rates.

Notable Results from Surveys

In this study, two surveys were conducted with Texas residents about the DMWT Campaign. Surveys were sent to over 9.4 million residents with 36,110 valid responses. Parents were asked to conduct a linked youth DMWT survey with their children under the age of 18 about littering, resulting in 771 valid responses.

Texas Resident Survey:

- Very high level of awareness: 96.6% of respondents had heard of the DMWT slogan and 90.5% had heard of the Adopt-a-Highway program;
- Traditional and highly visible media are the primary way residents hear/learn about the DMWT slogan – billboards (70.9%), TV commercial (62.5%) and bumper stickers (42.8%);
- Approximately 55.4% of adult survey respondents indicated they Hear or See the DMWT slogan either Frequently or Occasionally. Approximately 11.6% hear the slogan rarely and 33.0% used to hear the slogan frequently, but rarely now;
- Understanding of what DMWT means: the top three are 'Don't Litter (80.6%), Texans are Proud of their State (45.9%) and Texans are Tough (30.8%)
- 80.6% of respondents understand the meaning of the DMWT slogan correctly; and
- For those who have heard the DMWT slogan, 92.0% reported the slogan was either very effective (32.4%) in prompting a conscious effort not to litter, or re-emphasized the importance of not littering (59.6%).

Youth (under 18) Survey:

- 97.9% of youth respondents know what littering is; 70.4% have heard of DMWT;

- 19.6% of respondents see or hear the DMWT slogan Frequently, (46.4%) Occasionally, and (34.0%) Rarely;
- The three methods Youth have seen or heard the DMWT slogan are billboards (53.1%), Relatives or Friends (44.4%) and Bumper Stickers (34.0%). Social media is ranked 8th among slogan sources at 26.5%; and
- Understanding of what DMWT means: the top three are: 'Texans are tough' (46.9%), 'Don't Litter' (44.4%) and 'Texans are Proud of their state' (38.6%).

TxDOT's 40th-anniversary materials note that DMWT launched in 1986 with high-profile TV and radio spots featuring artists like Willie Nelson. Surveys continue to show high exposure to television advertising, but the audience skews toward long-time residents and older adults, with 36.6% reporting they have never lived outside Texas and many aged 65 or older. As broadcast placements have declined and population growth has increasingly come from new residents, TxDOT has modernized the campaign by shifting from traditional media to where our target audience receives their media, via digital platforms.. This strategic shift strengthens TxDOT's ability to reach newcomers and younger audiences through multi-channel outreach, including social media, K-12 lesson plans, and community engagement.

Key Findings

Litter, Population, and Age Demographics

The amount of litter on a section of roadway is related to traffic volumes, route type, regional population, urban or rural location, age demographics, and other factors. Texas has experienced significant increases in population and daily vehicle miles traveled (DVMT) over the past decade including individuals from other states and countries who might not be aware of the DMWT campaign.

Under the Texas Demographic Center's 2024 mid migration scenario, Texas is projected to reach about 42.6 million residents by 2060. The Texas triangle urban areas of Dallas - Ft. Worth, Austin, San Antonio and Houston will gain population with reductions in rural counties. Highway litter is expected to increase within these metro regions and the surrounding counties. Further, age demographics will change due to decreases in birth rates and increases in 65 and older population. TxDOT litter behavioral surveys have determined that young men litter far more than other groups. Future litter amounts will change as a consequence.

Past Litter Composition Surveys

TxDOT has conducted periodic litter surveys using established survey locations along different routes, districts, and urban or rural locations. Litter composition has changed over the years with reductions in large litter (> 4" in size) piece counts which includes items

such as plastic bottles, aluminum cans and fast-food packaging. However, there have been larger increases in the amounts of micro litter (< 2" in size).

Micro litter and Cigarette butts

Micro litter now accounts for more than 70% of all litter pieces with cigarette butts being the single largest category. Cigarette filters are made of plastic and do not decompose, even though many smokers mistakenly believe they will break down and disappear.

Research on cigarette butt littering shows that disposal practices are often repeated, cue driven behaviors consistent with habit and automatic processing rather than deliberate environmental choices, underscoring the need for messaging that targets routine behavior rather than awareness alone. Lit cigarette butts also pose a safety risk because they can ignite roadside fires during Texas's hot, dry summers.

Litter amounts and highway route type

Based on past litter surveys, FM roads comprise the largest mileage of highway routes and also have the largest amount of litter (56% by piece count). State Highways account for 26% of litter and US Highways account for 8%. Interstate Highways have less total mileage and also account for 8% of litter volume, however they have a relatively higher litter density per mile. This is due to much higher IH traffic volumes.

Economic Considerations

TxDOT manages litter cleanup and litter prevention through distinct operational functions. Litter pickup is a maintenance activity delivered through maintenance crews and contracts, with current annual expenditures of about $50 million. DMWT is a highly effective, flagship behavior-change campaign focused on preventing litter at its source and is funded at <10% of total litter pickup spending, underscoring its strong return on investment and value to Texas residents, businesses and tourism.

Conclusions

Overall, the DMWT campaign represents a long-term success in public awareness and behavioral change toward littering.

Chapter 1. Introduction

1.1 Background

Roadside litter presents significant environmental, economic, and safety challenges for transportation agencies. Litter accumulation along highways negatively affects roadside aesthetics, increases roadway maintenance costs, poses hazards to motorists and wildlife, and may contribute to environmental pollution. In response to increasing litter problems in the mid-1980s, the Texas Department of Transportation (TxDOT) launched the Don't mess with Texas (DMWT) campaign in 1986 as a statewide public education and behavioral change initiative aimed at reducing litter on Texas highways. Over time, the campaign has evolved into one of the most widely recognized and successful anti-littering campaigns in the United States.

The DMWT campaign was initially developed as a targeted behavioral strategy focusing on demographics historically associated with higher littering rates. Through a combination of advertising, public outreach, and strategic messaging, the campaign sought to reshape public attitudes toward littering and encourage responsible behavior among motorists. Over the past four decades, the campaign has employed a variety of communication channels, including television advertisements, radio spots, billboards, educational materials, and partnerships with public figures and organizations. These outreach strategies have helped transform the slogan DMWT into a symbol that resonates strongly with Texas residents while reinforcing the importance of maintaining clean roadways.

Despite its widespread recognition, continued evaluation of the campaign remains important as Texas experiences rapid population growth, increasing travel demands, and evolving patterns in consumer packaging and waste composition. Changes in litter types, such as increased plastic packaging and single-use products, along with shifts in media consumption and communication platforms may influence how future anti-littering campaigns are designed and delivered. In addition, existing studies and surveys on litter trends have been conducted periodically over several decades, resulting in data that varies in methodology, geographic coverage, and analytical scope. Synthesizing these historical findings is critical for evaluating the sustained effectiveness of the campaign and its impact on reducing litter and promoting responsible behavior among Texas motorists.

1.2 Objectives and Work Plan

The primary objective of this study is to provide a comprehensive evaluation of the DMWT campaign, including historical development, public recognition, future trends in littering, and overall effectiveness in reducing littering behavior.

Figure 1.1 illustrates the overall work plan of the study, which provides a structured framework for evaluating the history, future littering trend, and overall effectiveness of the DMWT campaign. To accomplish the objective, the study:

- **Documents the history and evolution of the DMWT campaign (Chapter 2)**: review archival materials, previous reports, media content, and other documentation related to the development of the campaign since its inception in 1986. The study team also examines the campaign's messaging strategies, outreach approaches, and significance, as well as its role in shaping public awareness and attitudes toward littering;
- **Evaluates historical evidence of campaign effectiveness (Chapter 2)**: investigates studies, surveys, and TxDOT reports related to litter reduction and public awareness to assess the historical impact of the campaign. This evaluation considers metrics such as public recognition of the slogan, behavioral responses to campaign messaging, and trends in litter levels observed across Texas highways over time;
- **Assesses current knowledge of litter sources, composition, and trends (Chapter 3)**: synthesize available data from previous litter surveys and related studies to identify major sources and types of litter found on Texas highways, how these patterns have changed over time, and what information remains uncertain or insufficiently documented;
- **Identifies knowledge gaps and future data collection needs (Chapter 3)**: based on the review of historical studies and existing datasets, the study identifies gaps in knowledge related to litter trends, measurement methods, and public behavior;
- **Examines future factors influencing littering trends (Chapter 4)**: analyze external factors such as population growth, increases in vehicle travel, and demographic changes that may influence littering behavior and roadside litter conditions in the future; and
- **Evaluates public awareness and perception of the DMWT campaign and Adopt-a-Highway (AAH) program (Chapter 5)**: a statewide survey of Texas residents is conducted to assess awareness, effectiveness perceptions, as well as behavioral changes related to the DMWT campaign and AAH program. The survey also examines demographic differences in awareness and attitudes toward littering and the DMWT campaign.

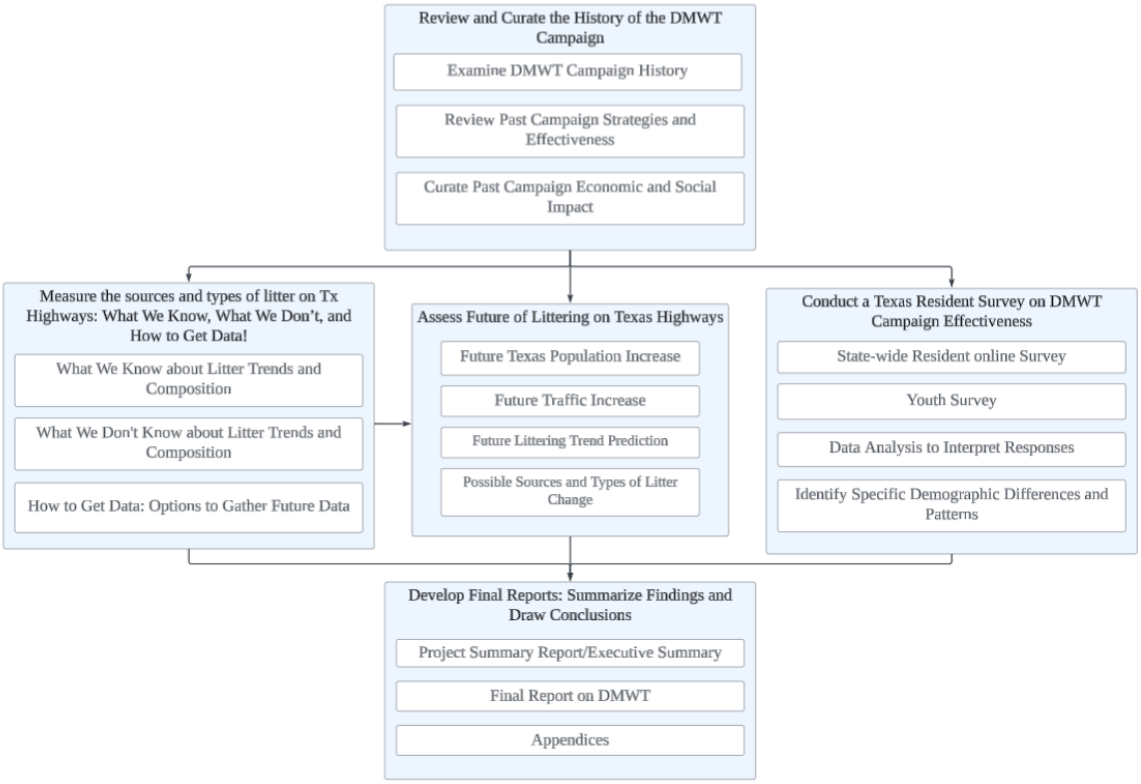


Figure 1.1. Structure of the Study Work Plan

By integrating historical review, data synthesis, trend assessment, and public perception analysis, the project provides TxDOT with a well-documented and evidence-based evaluation of the DMWT campaign's historical contributions and effectiveness. The methods and findings of each task are discussed in detail in the following chapters.

Chapter 2. History and Evolution of the DMWT Campaign

The TxDOT DMWT anti-littering campaign represents one of America's most successful and enduring public awareness initiatives, demonstrating remarkable effectiveness across four decades of demographic, technological, and cultural transformation. Chapter 2 presents the review of the DMWT campaign's history, strategies, effectiveness, and social impact which span four decades of messaging, creative advertising and research.

2.1 DMWT Campaign Phases

Section 2.1 traces the history of the DMWT campaign, beginning with its foundation and launch, and following its subsequent phases up to the present.

2.1.1. Foundational Era and Launch (1985-1990)

The Texas Department of Transportation (TxDOT) launched the DMWT campaign in 1986 after hiring an Austin-based advertising agency in 1985. At the time, Texas faced escalating cleanup costs of $20 million annually, creating urgent economic motivation for a more effective behavioral intervention campaign (Nodjimbadem 2017).

Rather than rely on environmental appeals, TxDOT framed anti-litter behavior as an expression of Texas identity and personal responsibility. Research showed that young men aged 16–34 were the primary source of roadside litter, and the campaign focused on messaging that felt familiar and self-directed rather than instructional (TxDOT 2009). Replacing the formal word "litter" with the more direct "mess" signaled that keeping Texas clean was not a rule to follow, but a matter of self-respect and pride in one's home state (Rosenthal 2025).

The campaign debuted during the 1986 Cotton Bowl with legendary Texas blues guitarist Stevie Ray Vaughan as its inaugural spokesperson, a choice that established the principle of Texan cultural identity guiding celebrity selection for four decades (Rosenthal 2025). Vaughan's selection was not incidental: as a figure perceived as authentically Texan across regions, communities, and generations, he served as a cultural touchstone rather than a government messenger, lending the campaign credibility it could not have derived from institutional authority alone. By positioning the anti-litter message within a framework of shared identity, TxDOT and its agency partners reframed a simple behavior - choosing not to litter - as something Texans do for Texas, rather than something they are directed to do for compliance. This distinction proved durable. By avoiding the resistance that government-issued directives tend to invite, the campaign aligned roadside cleanliness with pride and personal responsibility, establishing a social norm that continues to shape behavior decades later.

The psychology behind this approach has been studied over the years, with experts analyzing the original “outlaw” approach:

> The creators of the “*Don’t mess with Texas*” campaign used an adversarial slogan to appeal to their target market. Then, they reinforced the desired behavior by creating commercials with social “outlaws” such as Willie Nelson and Stevie Ray Vaughan to support the behavior. Even though this outlaw style campaign conveys the descriptive norm message that everyone is littering, it is the more powerful injunctive norm that makes this type of message salient to the public inducing the change needed (Cialdini 2003; Rudd 2015).

Strategic media placements in sports broadcasts, country music venues, and highway rest stops maximized exposure among target demographics while maintaining cultural relevance and authenticity. This foundational era delivered unprecedented results that established credibility for long-term investment. By 1990, the campaign achieved its historic 72% reduction in visible roadside litter, demonstrating the exceptional power of identity-based messaging (Nodjimbadem 2017). The campaign's foundational success demonstrated that framing anti-litter behavior as an expression of Texas identity, rather than compliance with external rules, produced rapid and measurable behavioral change within four years of launch. This early success provided both economic justification and methodological validation for sustained campaign development.

2.1.2. Cultural Phenomenon Development (1990s-Early 2000s)

By the 1990s, the campaign evolved from anti-litter messaging into a recognizable symbol of Texas identity. Musicians including Willie Nelson (1989) and Lyle Lovett (1990) reinforced the campaign's authenticity while widening its appeal (TxDOT 2026a). The slogan reached 96% recognition by 1998, yet only 61% connected the phrase with its original anti-littering message, revealing the risk of cultural transcendence diluting specific behavioral messaging (TxDOT 2026b). This gap showed the risk of the campaign becoming more of a cultural catchphrase than a behavior-change tool. To address this issue, George Strait's 2010 advertisement directly stated that "Don't mess with Texas means don't litter," addressing a major comprehension gap (TxDOT 2010).

The spokesperson lineup evolved across generations while maintaining message continuity and alignment with Texas’s identity. Over the years, the spokesperson lineup included: Stevie Ray Vaughan (1986), Willie Nelson and George Strait (1990s-2000s), then Matthew McConaughey (2010s-2020s), and most recently Joe Jonas and Ethan Hawke (2022-2023). In 2018, the campaign also featured Las Fénix, an all-female Spanish-language group, helping expand outreach to Spanish-speaking audiences while reinforcing the campaign’s broader cultural representation and Texas authenticity. For 2026, TxDOT has chosen singer, songwriter, and producer, Post Malone, who was raised in Grapevine, Texas, as the

next spokesperson. Each addition reflected changing audiences and the need to stay relevant without losing authenticity. Through this evolving use of spokespersons, the campaign managed to hold its place in Texas culture while keeping its original message alive and fresh across generations.

A comprehensive measurement of visible litter showed a 66% reduction over this period, with totals decreasing from 3.089 billion items in 1995 to 1.034 billion items in 2001 (NuStats 2002a). The 2001 NuStats Litter Attitudes and Behaviors Study deployed critical behavioral segmentation distinguishing between "gross litterers" (5.1% of Texans) and "reformed litterers" (20% who modified behavior over time) (NuStats 2001).

Federal trademark registration in 2002 enabled strategic brand protection and intellectual property management, allowing TxDOT to issue over 100 cease-and-desist letters protecting against message dilution and unauthorized commercial exploitation while maintaining campaign focus on anti-littering objectives (David Lizerbram & Associates 2013). The licensing program established in 2013 generated modest revenue while extending campaign reach through approved merchandise and partnerships (Rollins 2013). This program balanced revenue generation with brand protection, ensuring that commercial applications are reinforced rather than compromising campaign messaging.

The 2002 Hispanic Litter Survey revealed significant demographic disparities with 32% of Hispanic Texans reporting recent littering compared to 19% of the general population, with 29% of Hispanic Texans under 25 engaging in major littering versus 22% of those 25 and older (NuStats 2002c). These findings prompted targeted Spanish-language messaging and culturally adapted outreach, reflecting the understanding that effective statewide campaigns require demographic customization alongside consistent core messaging.

2.1.3. Measurement and Demographic Challenge Era (2005-2018)

This era brought methodological advancement alongside mounting demographic challenges that would test the campaign's adaptability. The 2005 Visible Litter Study confirmed continued effectiveness, reporting a 33% reduction in roadside litter since 2001 (NuStats 2001; NuStats 2005). However, TxDOT's maintenance division cleanup costs escalated from approximately $25 million in 2005 to $47 million in 2012, despite continued litter reduction (ER Planning 2013).

The 2013 Texas Litter Survey used a standardized classification distinguishing "Visible Litter" (≥2 square inches) from "Micro Litter" (<2 square inches) (ER Planning 2013). Cigarette butts are a unique subcategory here. The 2009 Study revealed persistent challenges: overall litter composition shifted even as cigarette butts, a micro litter subcategory, rose 42% between 2005 and 2009, indicating habit-driven behaviors resistant to conventional messaging (NuStats 2009). The 2013 Texas Litter Survey later found that visible litter decreased 34% between 2009 and 2013, even though cigarette butts had increased 42% between 2005 and 2009, underscoring the persistence of cigarette butt litter

despite broader litter reduction gains (ER Planning 2013). The 42% increase in cigarette butt litter, occurring alongside declines in other litter categories, revealed that habit-driven micro litter behaviors operate independently of the general anti-litter norm the campaign successfully established.

The 2018 introduction of the "Darrel the Barrel", a personified trash barrel mascot, represented a strategic pivot toward entertainment-driven engagement for younger audiences through social media platforms and public events. This innovation marked the campaign's initial adaptation to digital native communication preferences while maintaining its foundational Texas identity.

2.1.4. Digital Transformation Era (2019-Present)

The current era embraces digital transformation while confronting unprecedented generational engagement challenges. The 2019 Texas Litter Survey showed a 17% reduction in visible litter on TxDOT-maintained roadways since 2013, even as Texas population and vehicle miles traveled increased (ER Planning 2020). Texas added roughly 2.1 million residents between 2019-2025, according to Census data (US Census Bureau 2026). As the Texas population grew overall after 2019, the number of residents in the late teen and young adult ages also increased in absolute terms (Texas Demographic Center 2026).

The 2020 DMWT tracking research, conducted during the COVID-19 pandemic, found that about 71% of Texans believed the campaign has had a “very positive” impact on reducing litter, yet revealed significant attitude–behavior gaps among younger, digitally native Texans (Decision Analyst 2020). The 2023 Texas Litter Survey documented a 63.2% reduction in large litter between 2013 and 2023, despite substantial demographic growth (Tetra Tech 2023). The 63.2% reduction in large litter between 2013 and 2023, achieved during a period when Texas added roughly 2.1 million residents, indicates that the campaign's behavioral impact scaled with population growth for visible debris categories.

Modern methods of measuring success can and have assisted TxDOT in its goals. In 2018, The contracted brand management agency implemented advanced measurement tools such as heat mapping and detailed source-analysis methods. Recent celebrity spokespeople, including Joe Jonas (2022), Ethan Hawke (2023) and Post Malone (2026), reflect ongoing efforts to maintain generational relevance while preserving the brand consistency that has underpinned nearly four decades of success. Across these waves of research, the youngest age group (typically 16–25) has repeatedly shown the highest incidence of littering in Texas, highlighting the persistent challenge of shifting entrenched behaviors among young adults.

2.1.5. Campaign Effectiveness and Challenges

2.1.5.1 Litter Reduction Achievements and Methods

While the campaign demonstrates sustained effectiveness across four decades, fundamental methodological challenges persist. TxDOT litter studies acknowledge evolving survey approaches, from linear regression models before 2001 (notably the 1995 Visible Litter Study) to the NuStats expansion factors, i.e., the statistical model introduced in 2001 and used for subsequent visible litter studies (ER Planning 2013). These methodological shifts complicate direct year-over-year and long-term trend comparisons and necessitate statistical adjustment for meaningful analysis.

Recent program documents and TxDOT staff feedback note that while the “most likely litterers” age group (young adults ages 16-34) remains essentially unchanged over nearly four decades, positive cohort shifts are usually interpreted as signs of success. However, this item may also mask underlying methodological limitations, suggesting age effects may reflect cohort aging as much or more than true campaign impact (Tetra Tech 2023).

The number of highway litter study sites expanded from 125 in 2001 to 253 by 2013 - the largest coverage in Texas history. TxDOT’s 253 site sample is designed to be statewide and representative, yet district level litter data show substantial variation across the state. Staff have informally pointed to certain oil field corridors as challenging environments where standard campaign tools (e.g., billboards, industry partnerships) may have less observable impact on roadside litter.

2.1.5.2 Awareness-Behavior Disconnect: Deepening Contradictions

The persistent gap between 94% slogan recognition and only 52% correct anti-litter message identification represents a fundamental and persistent campaign limitation (Decision Analyst 2020). More concerning, past-month litterers demonstrate higher campaign material recall than non-litterers, suggesting exposure has not affected negative behaviors. This finding indicates that message exposure alone does not reliably predict behavioral compliance, and that factors beyond awareness shape disposal decisions.

TxDOT staff has identified "understanding of what DMWT means, from both newcomers and lifelong residents combined" as an important area for additional insight (TxDOT Staff Interview 2025). As Texas’ population has grown from approximately 16.5 million (1986) to 31.9 million (2024), gaining a clearer picture of how newer residents perceive and engage with the campaign may help inform ongoing efforts to maintain the campaign’s strong statewide relevance (US Census Bureau 2023).

For newcomers, adopting the DMWT attitude could serve as an accessible way to participate in Texas culture, reinforcing both place-based identity and a sense of shared responsibility for the public environment. This cultural onboarding effect extends the

campaign’s impact beyond behavior change into the realm of community integration. Embracing the campaign’s iconic message allows new residents to align with a distinctly Texan identity that celebrates independence, pride of residence, and environmental stewardship.

This dynamic highlights an opportunity to build on TxDOT’s long-standing success with the campaign. As newcomers represent a growing share of Texas’s population, gaining additional insight into how they perceive and respond to the campaign could further support TxDOT’s efforts to ensure continued statewide relevance. A modern survey focused on recent arrivals could help assess how effectively DMWT resonates as both an environmental and cultural touchstone and inform future refinements that preserve its strong impact.

2.2 Data Gaps, Behavioral Insights and Priorities

Section 2.2 briefly outlines several areas where additional data is needed to more effectively understand how to connect with Texans, including younger residents. It also highlights the importance of social media and the need to optimize these channels to reach audiences across all ages and demographic groups. In addition, the chapter identifies current data gaps related to litter composition and the underlying reasons why individuals continue to litter. Chapter 3 provides a more technical and in-depth examination of these data gaps, including statistical limitations and opportunities for improved measurement.

2.2.1. Digital Native Population Research Gaps

Current research methodologies give limited attention to information-seeking behaviors among digital native populations. TxDOT staff note that media consumption has shifted “from TV and radio to streaming channels/audio and a variety of digital platforms/social media channels including Facebook, X, Instagram, Snapchat, etc.” (TxDOT Staff Interview 2025)

In this evolving landscape, TxDOT’s advertising partners are well positioned to analyze platform specific trends and adjust strategies accordingly. Key unknowns remain, including: "What's the best form of delivery, commercials, radio, and billboards? What are the best locations for messaging, professional baseball/football/soccer games, festivals, etc.?" (TxDOT Staff Interview 2025). These uncertainties indicate a need for updated targeted strategies that align with how digital native audiences currently access and engage with information.

2.2.2. Demographic-Specific Messaging

Texas has undergone substantial demographic transformation since the DMWT campaign launched in 1986. The state's population has grown from approximately 16.5 million to 31.9 million, with much of this growth driven by domestic and international migration

(U.S. Census Bureau 2023). Hispanic and Latino Texans now exceed 12 million people, comprising approximately 40 percent of the population and representing the state's largest demographic group (U.S. Census Bureau 2023). This demographic shift raises important questions about how effectively the campaign's identity-based messaging reaches diverse audiences.

The 2002 Hispanic Litter Survey documented significant differences in littering behavior and campaign awareness among Hispanic Texans. The survey found that 32 percent of Hispanic Texans reported recent littering compared to 19 percent of the general population, with higher rates among those under 25 (NuStats 2002). Spanish-dominant speakers showed substantially lower awareness of the DMWT slogan and were more likely to interpret it as a general statement of Texas pride rather than an anti-litter message (NuStats 2002). These findings prompted TxDOT to expand Spanish-language messaging and culturally adapted outreach.

DMWT content is translated across communication channels and includes interpreter support for outreach activities, and messaging is designed for all Texans rather than tailored to specific cultural audiences. This universal approach has maintained brand consistency but may have limits in reaching populations with different cultural reference points or media consumption patterns. The 2013 Texas Litter Attitudes and Behaviors Report documented continued disparities, finding that Spanish-dominant speakers reported higher incidence of littering, especially for small items such as gum wrappers and lottery tickets, and showed lower correct identification of the campaign's anti-litter purpose (Decision Analyst 2013). In this context, it is reasonable to explore whether culturally and linguistically tailored message framing could further strengthen behavior change within specific communities.

Newcomers to Texas also represent an important consideration for campaign outreach. Unlike long-term residents who may have been exposed to DMWT messaging over time, recent arrivals may be less familiar with the slogan’s anti-litter meaning and historical context. Texas has experienced significant population growth, with newcomers arriving from other states and countries, raising questions about how effectively current messaging reaches these audiences. For these residents, interpretation of the slogan may depend more heavily on the clarity and visibility of the anti-litter messaging and campaign context.

The statewide survey conducted in Chapter 5 (i.e., the 2026 survey) addresses these demographic considerations by including Spanish-language survey instruments and questions designed to assess campaign comprehension across different population segments. The survey results provide updated evidence on how the campaign resonates with Texas's increasingly diverse population, including differences in awareness, message interpretation, and media exposure patterns across demographic groups.

2.2.3. Cigarette Butts and Micro Litter Research

More than a decade of Texas litter data shows that cigarette butts remain the largest and most persistent category of micro litter along state-maintained roadways. Across the 2013, 2019, and 2023 Texas Litter Surveys, cigarette butts consistently accounted for 24–29% of all micro litter, with the 2023 survey documenting over 120,000 cigarette filters in sampled roadway segments. This stability stands in contrast to the 63% decline in large litter over the same period, indicating that general anti-litter messaging has not substantially altered cigarette disposal habits.

Research helps explain this persistence. Many smokers do not view cigarette butts as “real” litter. TxDOT research found that only about two-thirds of English-speaking participants and just over half of Spanish-speaking participants classified discarded filters as litter.

The belief that cigarette filters are biodegradable is also strongly associated with higher rates of improper disposal. A national study of over 7,500 college-aged smokers found that those who believed butts were biodegradable were significantly more likely to litter them, while smokers who believed butts are litter were 3.68 times more likely to dispose of them properly (Webler and Jakubowski 2022). Texas-specific surveys have found that 60 to 70 percent of smokers either incorrectly believe butts will break down naturally or are unsure (Stadia Marketing 2010; Decision Analyst 2013).

These patterns demonstrate a habit-driven behavior pattern rooted in misperception, speed of disposal, and convenience, rather than in disregard for anti-litter norms. The 2009 Texas Attitudes and Behaviors Study classified 62 percent of all active smokers as "tobacco litterers" who admitted that they or someone in their vehicle threw cigarette butts out of the window (Stadia Marketing 2010). The 2013 Texas study found that about 30 percent of current and former smokers admitted to tossing butts out of the vehicle window, describing the behavior as habitual rather than deliberate (Decision Analyst 2013). The 2023 Texas Litter Survey found that 47 percent of motorists admit to discarding items while driving, even though most say they oppose littering (Tetra Tech 2023).

Physical interventions to support proper disposal have historically shown promise but were scaled back due to cost, maintenance demands, and theft (TxDOT Staff Interview 2025). Branded receptacles are now limited to Safety Rest Areas and Travel Information Centers. In the past, TxDOT emphasized the fire hazard of tossing lighted cigarettes during droughts with targeted messaging such as "Texas is not your ashtray" (CBS News 2011). TxDOT has since adopted unified branding under the DMWT campaign that addresses all litter types, including cigarette butts.

The evidence indicates that cigarette butt litter persists not because Texans lack awareness or concern about littering, but because disposal of cigarette butts is automatic, fast, and often rationalized as harmless.

2.2.4. Youth Behavioral Patterns and Message Interpretation

Prior statewide studies consistently identified young adults, typically ages 16 to 24, as a higher-risk group for littering even as they demonstrated substantial awareness of the DMWT campaign (Baselice & Associates 2017; Decision Analyst 2020). In 2017, 68 percent of young adults reported littering within the past month, while over 79 percent recognized and supported the DMWT slogan (Baselice & Associates 2017). Similar patterns appeared in 2020, with young adults again exhibiting higher littering rates despite strong campaign familiarity (Decision Analyst 2020). Both surveys indicated that young adults commonly cited time pressure and convenience when explaining littering behavior.

This pattern reflects a well-documented challenge in public behavior-change campaigns: awareness does not automatically translate into sustained behavioral change. Behavioral research demonstrates that pro-environmental attitudes frequently fail to produce consistent action when habits, impulsivity, or situational pressures shape decision-making (Coughlin 2018; Tobias et al. 2024). Identity-based campaigns like DMWT can successfully influence norms and attitudes, but changing routine behavior often requires repeated reinforcement through social cues and environmental context.

The 2026 University of Texas statewide survey provides updated evidence that adds a new dimension to these findings. While prior surveys documented high awareness alongside persistent littering behavior, the 2026 statewide survey results reveal an additional challenge: a substantial comprehension gap among younger respondents. Youth were significantly less likely than adults to correctly identify the slogan's anti-litter meaning. Some youth interpreted "Don't mess with Texas" primarily as a statement about Texas toughness or state pride rather than as an anti-litter message. This suggests that for some younger Texans, the challenge is not merely translating awareness into action but understanding the campaign's intended purpose in the first place.

The 2026 survey also reveals differences in how youth encounter the campaign. While traditional media remains relevant, youth awareness appears to be shaped more heavily through peer, family, school, and community-based exposure than through broadcast channels alone. These social pathways may play an increasingly important role in both transmitting awareness and in reinforcing the slogan's behavioral meaning.

Youth who correctly understood the campaign's anti-litter message reported positive behavioral influence at levels comparable to adults, suggesting that comprehension, rather than age alone, may be the more significant factor shaping behavioral impact. These findings reinforce the campaign’s strength as an identity-based behavioral strategy while underscoring the importance of ensuring that younger and newer Texans clearly understand the slogan’s intended meaning.

2.3 Economic Impact and Cost-Effectiveness Paradoxes

Section 2.3 reviews changes in litter collection costs over time and evaluates how the DMWT campaign has shaped outcomes, while identifying the primary contributors to escalating cleanup expenses.

2.3.1. Historical Cost Trends and Key Patterns

TxDOT's approach already demonstrates strong cost-effective performance in litter prevention. Historical analysis estimates that campaign expenditures declined from about $2.33 per Texan in 1986 to $1.90 in 2011, while litter volumes fell substantially over the same period (Priceonomics 2014). By 2021, the TxDOT's Maintenance Division was spending approximately $50 million annually to remove litter and debris from state-maintained roadways (TxDOT 2025). This figure reflects roadway cleanup and debris-removal operations, not the budget for the Don't mess with Texas (DMWT) public-awareness campaign. During roughly the same period, large roadside litter on TxDOT-maintained highways declined by about 63 percent from 2013 baseline levels, according to the 2023 Texas Litter Survey conducted for TxDOT by Tetra Tech (Tetra Tech 2023). This creates an apparent paradox in which visible roadside litter declined substantially while statewide cleanup costs remained high. TxDOT attributes these continuing expenditures primarily to rapid population growth and rising contract labor costs.

Although cleanup expenses remain significant, reductions in litter likely prevented cleanup costs from rising even higher over time. The DMWT campaign itself operates separately through TxDOT's Travel Information Division as a litter-prevention and public-awareness initiative rather than as part of the highway maintenance cleanup budget, and it has historically relied in part on donated public-service advertising airtime. (Sorensen and George 2024).

In addition, volunteer labor through the Adopt-a-Highway program is valued at an additional $2 to $3 million per year (Zakaria 2016). Together, these figures demonstrate that DMWT and its companion programs deliver substantial economic and social value through a combination of prevention messaging, volunteer engagement, and community partnership.

2.3.2. Media Strategy Evolution and Cost Efficiency

For the first two decades following its 1986 launch, DMWT largely relied on traditional broadcast and outdoor media to reach motorists. Television and radio advertising featuring high-profile Texas celebrities contributed to substantial litter reductions during the late 1980s and early 1990s.

By 1998, a study revealed that while 96% of Texans had heard "Don't mess with Texas," only 61% knew the phrase referred to litter. This marked the first documented evidence that the slogan had become diluted as a general expression of Texas pride (TxDOT 2026b). As

media consumption patterns changed through the 2000s and early 2010s, the campaign's presence on television and radio gradually declined, driven by increasing media fragmentation, shifting audience time-use, and higher costs for statewide broadcast inventory. The rise of social networks and streaming platforms prompted a pivot toward digital delivery as a more flexible and cost-efficient way to maintain visibility among younger Texans who were spending less time-consuming traditional advertising. By the late 2010s, digital was no longer an addition to the campaign but had become its central distribution channel.

This transition accelerated in the early 2020s as campaign managers sought to capture younger audiences and control costs amid rising cleanup expenditures and Texas population growth. Digital content generally offers lower-cost reach, better real-time optimization, and faster production cycles than traditional media. It also reflects the practical shift in where Texans encounter the brand: younger respondents increasingly report seeing DMWT online or on lifestyle merchandise rather than through broadcast placements.

Platform optimization may produce significant efficiency gains. Environmental content achieved 30.61% of total campaign views using only 20.92% of the budget, according to TxDOT staff (GDC Marketing & Ideation 2024). Internal research from 2024 shows that influencer marketing continues to deliver strong value, with returns more than eleven times higher than traditional digital advertising. These results demonstrate that digital strategies are not only cost-efficient but also highly impactful.

While the shift toward digital communication has delivered clear cost efficiencies and broader reach, it has also meant that some previously used physical elements of the campaign have been streamlined over time. For example, TxDOT staff note that cigarette-butt messaging, historically supported through items such as "Keep Your Butts in the Car" stickers and branded receptacles at major events, now exists primarily within social-media content. This transition reflects practical considerations, including maintenance demands, as well as damage and loss experienced when physical assets were deployed in the field.

2.3.3. Social Impact and Cultural Legacy

2.3.3.1 Cultural Impact and "Texas Identity" Integration

The DMWT campaign achieved unprecedented cultural resonance, transforming a public service announcement into a defining element of Texas identity. Launched in 1986 as urgently needed anti-littering messaging, DMWT quickly evolved into a cultural hallmark, appearing organically in speeches, tourism branding, merchandise, civic education, and everyday conversation, demonstrating a depth of cultural integration that surpasses the reach of conventional advertising and reflects a distinctly Texan sense of pride and belonging.

Federal trademark recognition in 2002 acknowledged the slogan's unique cultural significance beyond conventional advertising applications, providing legal protection for a phrase that had become synonymous with Texas pride and identity rather than merely commercial messaging (David Lizerbram & Associates 2013). The Advertising Hall of Fame induction also recognized not only the campaign's creative excellence but also its unprecedented longevity and cultural impact that few advertising campaigns achieve across multiple decades (David Lizerbram and Associates 2013).

However, this extraordinary cultural integration creates strategic challenges. As the slogan becomes increasingly embedded in everyday language and popular culture, maintaining a clear connection between the phrase and its original anti-littering purpose becomes more difficult, particularly among newcomers to Texas who may encounter the slogan primarily through cultural rather than anti-littering contexts. This phenomenon complicates ongoing efforts to maintain message clarity about the slogan's anti-litter purpose.

This evolution reflects both the campaign's greatest strength and one of its central communication challenges: the more deeply the slogan becomes woven into Texas culture, the more important it becomes to reinforce the campaign's original anti-littering message and behavioral purpose. The campaign's explicit objective is to reduce visible litter on Texas roadways. It pursues this goal by appealing to Texans' civic pride and state identity as the primary behavioral lever. Beyond litter reduction, this identity-based approach has been associated with broader community benefits: cleaner roadways and a strong statewide image support community vitality, strengthen local business environments, and enhance the conditions that make Texas appealing for investment and visitation (Sorensen and George 2024).

2.3.3.2 Social Norm Transformation

The DMWT campaign fundamentally altered littering social acceptability from acceptable behavior (1986) to stigmatized conduct (2024). Community pressure and peer influence mechanisms create self-reinforcing behavioral modification operating independently of formal enforcement. The 2001 identification of "reformed litterers" (20% of population) provides measurable evidence of sustained behavioral modification (NuStats 2001). This demonstrates that the campaign can shift social norms and produce measurable behavior change.

However, social norms, media consumption, and demographics have all changed over time since the campaign's launch. The 2026 University of Texas statewide survey tested whether the conditions that made DMWT effective continue to hold, given Texas's demographic shifts and transformation in media channels, with a focus on how the campaign resonates across age groups, media platforms, and demographic segments.

2.4 Generational and Regional Observations

In addition to the behavioral patterns discussed above, recent research has documented generational differences in environmental attitudes that provide additional context for understanding littering behavior. Older audiences continue to show the strongest compliance with anti-litter norms, reflecting deep cultural adoption over the campaign's four-decade history. Younger generations present a more complex picture.

Recent marketing research found that Millennials (those born 1981 to 1996) report a 48% environmental and anti-littering priority mindset, yet exhibit higher littering rates than expected given these stated priorities (GDC Marketing & Ideation 2024). Generation Z (those born 1997 to 2012) demonstrates the highest levels of environmental activism among all age cohorts, but also the widest attitude-behavior gap, where strong advocacy does not consistently translate into responsible disposal behavior (GDC Marketing & Ideation 2024). These patterns are consistent with the awareness-behavior gap documented in prior TxDOT surveys and discussed above.

Regarding regional observations, TxDOT field staff have reported elevated litter levels in areas experiencing intensive economic development, including oil and gas activity zones and large-scale residential construction areas. These observations suggest that mobile workforces and rapid development may present distinct behavioral patterns not fully captured in statewide survey aggregates. Staff note that such areas often experience higher workforce turnover and may include populations with less established familiarity with Texas-specific stewardship norms and campaign messaging.

Construction activity, like other large-scale development efforts, can contribute to localized litter accumulation. These regional patterns complement the statewide behavioral data discussed elsewhere in this chapter and may warrant attention in future program planning.

2.5 Chapter Conclusion

The DMWT campaign stands as a remarkable example of cultural change and sustained behavior modification, demonstrating measurable effectiveness across nearly four decades. Historical data, litter-reduction trends, and the campaign's evolving messaging strategy highlight both its statewide cultural influence and its continued relevance as Texas demographics and media landscapes change. Impressive achievements include: a 72% litter reduction by 1990; a 66% reduction between 1995 and 2001; a 63.2% reduction in large litter between 2013 and 2023; and sustained recognition rates exceeding 90% across four decades. These findings demonstrate the enduring power of Texas identity-based messaging in shaping anti-littering behaviors.

The findings presented throughout this chapter also suggest that campaign awareness and behavioral influence can vary across demographic groups, age cohorts, and communication environments. As Texas continues to grow and diversify, these differences highlight the

importance of maintaining message clarity while adapting outreach strategies to evolving audiences and media habits.

Chapter 3. Measuring the Sources and Types of Litter on Texas Highways: What We Know, What We Don't Know, and How to Get Data!

Building upon Chapter 2, this chapter reviews the evidence base for understanding litter behavior on Texas roadways. It synthesizes findings from prior TxDOT surveys and behavioral studies, identifies limitations in the existing evidence base, and describes how the 2026 University of Texas statewide survey (detailed in Chapter 5) addresses questions that prior studies left unresolved.

This chapter is organized around three core questions:

What We Know: What do prior TxDOT surveys and behavioral studies tell us about the sources, types, and quantities of litter on Texas highways, and how have these patterns changed over time?

What We Don't Know: What limitations in prior studies constrain our understanding of litter trends, composition, and behavioral drivers?

How to Get Data: How does this report address these limitations, and what topics does it examine that were not covered in prior studies?

3.1 What We Know: Prior Studies

3.1.1. Litter Composition Patterns

Available evidence shows that Texas has made substantial, but uneven progress in reducing roadside litter since the launch of the DMWT campaign. While early post-launch reductions established the campaign's effectiveness, later studies reveal that changes in litter composition and evolving measurement practices complicate long-term trend interpretation.

A major methodological shift occurred in 2001, when TxDOT adopted standardized field protocols and stratified roadway sampling, enabling researchers to extrapolate statewide litter volumes and item types rather than relying on localized or anecdotal observations. The 2001 Visible Litter Study established a statewide baseline of approximately 1.237 billion litter items annually across major Texas highways, with Farm-to-Market roads accounting for 42 % of observed items and State Highways accounting for 35 percent (NuStats 2001). Subsequent studies, however, demonstrate the difficulty of detecting short-term change. The reported 33 % reduction between 2001 and 2005 was not statistically significant and could be explained by sampling variability rather than true statewide improvement (NuStats 2009).

More recent evidence confirms that micro litter, particularly cigarette butts, now dominates roadside counts. The 2023 Visible Litter Survey documented more than 422,000 micro litter items across 253 sampling locations and found that items two inches or smaller, primarily cigarette butts (29.2%), plastics, and small wrappers, comprise more than 70% of all observed litter. At the same time, large-item debris continues to decline, with a 63.2% reduction in large litter statewide since 2013 (Tetra Tech 2023).

3.1.2. Geographic Distribution, Traffic Relationship and Methods

The study team reviewed TxDOT's litter results by going back to past visible litter surveys. Our review focused on how the data were collected, how reported values were calculated, and the extent to which the survey methods support the conclusions drawn from them.

TxDOT's visible litter surveys (2001, 2009, 2013, 2019, 2023) estimate statewide litter by counting items on short, stratified roadway segments and extrapolating results to the entire system. Crews clean selected sites, allow litter to accumulate for several weeks (averaging 34 days in 2009), then inventory all items (NuStats 2009).

In 2001, approximately 29 miles across 125 sites were sampled to represent roughly 72,000 miles of state-maintained roads (NuStats 2001).

A consistent spatial pattern emerges across survey years. Farm-to-Market roads comprise approximately 56% of TxDOT centerline mileage and account for the largest share of total litter volume yet exhibit the lowest average litter per mile. FM roads account for roughly 58% of visible litter, indicating a disproportionate burden on these routes relative to their traffic volumes (ER Planning 2013). Interstate highways consistently show the highest per-mile litter densities, particularly for larger items.

Traffic and land-use context further shape accumulation patterns. Previous study findings indicate statistically significant positive correlations between traffic volume and litter density. The 2009 study reported that litter increases coincided with growth in average daily traffic, Texas population, and licensed drivers (NuStats 2009). Higher litter levels were also observed near shopping centers, gas stations, fast-food outlets, and schools.

3.1.3. Demographic and Behavioral Patterns

Social and behavioral segmentation data consistently show that the highest littering rates occur among young men ages 16–34, with relatively little evidence of sustained behavior change over time (Baselice & Associates 2017). Although 94 % of Texans recognize the DMWT slogan, survey data show that younger Texans, especially ages 16–24 and men, report higher littering incidence than older adults, indicating that high awareness alone does not eliminate littering behavior (ER Planning 2013; Decision Analyst 2020).

The 2009 Litter Attitudes & Behaviors Executive Summary reports that, when "accidental" and "pickup truck–related" litter are added, 87% of Texans overall had littered at some point, and 41% were "recent litterers", with younger adults reporting higher rates than older

Texans. In this study, 42% of Texans reported having littered within the past month and more than half (54%) of those Active Litterers said they had littered while driving or riding in a car (Stadia Marketing 2010).

The 2002 Hispanic Litter Survey further identified important differences across demographic groups. 32% of Hispanic Texans reported littering in the preceding three months, compared with 19% of the general population (NuStats 2002b).

Among Hispanic respondents, those under age 25 reported higher levels of gross littering (29%) than those age 25 and older (22%), while respondents ages 25–29 were twice as likely to be micro litterers (NuStats 2002c). The survey also documented significant gaps in campaign awareness and message comprehension among non-English speaking Hispanics, suggesting that language-appropriate outreach may be needed to address these disparities (NuStats 2002c).

These findings indicate that the campaign's widespread recognition has not consistently translated into comparable behavior change among some of the demographic groups historically associated with higher littering rates, including young men, younger adults, and Hispanic Texans. This pattern documents a continuing gap between campaign awareness and behavioral outcomes. The 2026 University of Texas statewide survey examined these dynamics directly, capturing updated data on awareness, comprehension, and self-reported behavior across demographic groups.

3.1.4. Micro Litter and Cigarette Butt Disposal Behavior

Despite continued success in reducing large, highly visible debris, micro litter, primarily cigarette butts, small food wrappers, and similar items under two inches, now comprises more than 70% of all litter pieces documented in contemporary surveys (Tetra Tech 2023). Current estimates indicate approximately 362 million pieces of litter accumulate on Texas roadways annually (ER Planning 2020). While large litter decreased by 63.2% between 2013 and 2023, micro litter remains a persistent challenge, with cigarette butts constituting 29% of all micro litter found on Texas roads (Tetra Tech 2023).

Behavioral surveys have consistently revealed that cigarette disposal represents a major persistent problem in litter prevention efforts. The 2009 Texas Attitudes and Behaviors Study classified 62% of all active smokers as “tobacco litterers” who admitted that, rather than keep a cigarette butt in the car, they or someone in their vehicle threw it out of the window (Stadia Marketing 2010).

The 2013 Texas study found that about 30% of current and former smokers admitted to tossing butts out of the vehicle window (Decision Analyst 2013). Note that, this behavior was described as habitual. Most respondents who littered did not see their actions as conscious rejection of the law but rather as a default or matter of convenience.

Texas survey findings align with national research. A 2022 study of 7,532 college-aged smokers found that littering was most likely among those who believed butts were biodegradable, not harmful, or not actually "litter" (Webler and Jakubowski 2022). Unlike other litter types, cigarette disposal typically occurs automatically, without conscious thought about consequences. The Webler and Jakubowski study found that smokers who believed cigarette butts are litter were 3.68 times more likely to dispose of them properly. The study also found that biodegradability misconceptions and failure to classify butts as "real litter" were significant predictors of improper disposal. These findings align with prior Texas surveys showing that 60 to 70% of smokers incorrectly believe filters will break down naturally (Stadia Marketing 2010; Decision Analyst 2013).

3.2 What We Don't Know: Limitations of Prior Studies

3.2.1. Methodology Variation Across Survey Years

Even though Texas has been measuring litter for decades, tracking real trends over time has been difficult because methods have not been consistent from one study to the next. Sampling areas have changed. Segment lengths increased from approximately 750 feet in 2001 and 2005 to 1,000 feet in 2009, while sampling locations shifted from 129 sites to 170 sites. These methodological changes complicate longitudinal comparisons.

This limitation becomes evident when examining reported results. The 2005 study appeared to show a 33% reduction in litter compared to 2001. However, because the 90% confidence intervals for both years overlapped, the observed decrease was not statistically significant and therefore cannot be interpreted as evidence of a confirmed decline (NuStats 2005). In addition, annual single-wave surveys provide only a snapshot and do not capture seasonal or event-driven fluctuations (holidays, major sporting events) in littering (NuStats 2009).

3.2.2. Self-Reported Behavior Limitations

Most existing research relies on self-reported survey responses, which do not always reflect real behavior. People often express strong anti-litter attitudes while still engaging in littering, particularly in routine or convenience-driven situations (Stadia Marketing 2010; ER Planning 2013; Decision Analyst 2020). This attitude-behavior gap has been documented across multiple survey years but was not fully explored in terms of underlying motivations or situational triggers.

3.2.3. Economic Data Separation

TxDOT tracks direct litter cleanup costs but does not capture the full range of costs borne by cities, counties, and the private sector. TxDOT and campaign materials indicate that annual roadside litter cleanup expenditures, including both maintenance crew and contracted cleanup costs statewide, rose from roughly $30 to $46 million in the early to

mid-2000s to approximately $48 to $49 million per year by the late 2010s (NuStats 2009). These figures capture only what TxDOT spends to remove litter from state-maintained highways and rights-of-way, not the wider costs such as clogged storm drains, additional road and stormwater maintenance, crashes and incident response related to roadway debris, or damage to Texas's image and tourism when visitors encounter heavily littered corridors (NuStats 2009; Sorensen and George 2024).

TxDOT's current accounting structure reflects a functional division of responsibilities: litter pickup and disposal are delivered as part of right-of-way maintenance operations (Maintenance Division), while the DMWT campaign, administered by the Travel Information Division (TRV), serves as the department's signature statewide litter-prevention and behavior-change program. Because cleanup expenditures are typically reported separately from prevention and outreach investments, the relationship between campaign investment and cleanup cost avoidance is not directly measured. This accounting separation may understate the full economic value of the campaign's litter-prevention effects.

3.2.4. Demographic Detail

When all respondents are grouped together, important community differences can disappear. The 2013 Texas Litter Attitudes and Behaviors Report includes a dedicated section (i.e., “Spanish Dominants - Key Findings”) documenting significant differences in littering behavior, campaign awareness, and message comprehension among Hispanic and Spanish-dominant Texans (Decision Analyst 2013). Spanish-dominant speakers have substantially lower awareness of DMWT than the general population and are more likely to interpret it as a Texas pride slogan rather than an explicit anti-litter message. Language and cultural variations shape how Texans understand and act on anti-litter messages. When statewide data are aggregated, these segment specific insights are often lost, making it harder to design strategies that directly address the needs and behaviors of Spanish dominant communities.

3.2.5. Media Channel Shifts

TxDOT has noted that media consumption patterns have shifted substantially, moving from TV and radio to streaming channels/audio and a variety of digital platforms/social media channels. Prior surveys captured where respondents recalled hearing about DMWT but did not systematically assess which channels are most associated with message comprehension or behavioral influence across different age groups. TxDOT staff have internally noted the need to better understand optimal delivery methods, including the relative effectiveness of commercials, radio, and billboards.

3.2.6. Newcomers and Population Growth

Texas's population has nearly doubled since the launch of DMWT in 1986, growing from approximately 16.5 million to 31.9 million in 2025, largely due to domestic and international in-migration (U.S. Census Bureau 2023). TxDOT staff have noted this demographic shift: "Texas has experienced tremendous growth and newcomers come from other states and countries. It would be good to find out if present messaging is reaching these audiences" (TxDOT Staff Interview 2025). Prior surveys did not specifically assess how newcomers to Texas perceive and understand the campaign.

3.2.7. Regional Observations

TxDOT's staff have observed elevated litter levels in areas with intensive oil and gas activity and in large-scale residential construction zones (TxDOT Staff Interview 2025). These observations suggest that mobile workforces and rapid development may present distinct behavioral patterns not captured in statewide survey aggregates.

3.3 How to Get Data: Topics Addressed by the 2026 Statewide Survey

Prior DMWT research, including the 2013 Litter Attitudes and Behaviors Report, the 2020 Campaign Tracking Report, and the 2023 Visible Litter Survey, established important baseline metrics on campaign awareness and litter prevalence. The 2026 University of Texas statewide survey (detailed in Chapter 5) was designed to address questions that these earlier studies left unresolved.

Table 3.1 summarizes the key topics addressed through the 2026 adult and youth surveys, including reasons for littering behavior, attitudes versus reported behavior, social norms and peer influence, youth learning pathways, message comprehension across age groups, and media channel exposure by demographic group.

Table 3.1. Topics Addressed by the 2026 Statewide Survey

#	Topic	Addressed in 2026 Statewide Survey
1	Reasons for Littering Behavior	Yes (Q23)
2	Actual vs. Reported Behavior	Yes
3	Social Norms and Peer Influence	Yes
4	Youth Learning Path	Yes (Youth Survey)
5	Message Comprehension by Age Group	Yes
6	Media Channel Exposure by Demographic	Yes

3.3.1. Reasons for Littering

Prior TxDOT studies and external research have found that smokers often describe cigarette butt disposal in terms of habit and convenience. The 2026 survey directly asked respondents to identify specific reasons they litter (See Section 5.2.3 Q23 for detailed analysis), addressing a gap in prior research that documented littering rates without systematically exploring underlying motivations.

3.3.2. Attitudes vs. Behavior

By 1998, 96% of Texans had heard of the DMWT slogan but only 61% knew it referred to litter. Prior studies documented a persistent paradox: 94% awareness in 2020 coexisted with only 52% correct purpose identification, while the 2013 study found 98% awareness alongside 32% past-month littering rates (Decision Analyst 2013; Decision Analyst 2020). The 2026 statewide survey simultaneously measured awareness, understanding, and self-reported behavior, which explores the widening gap between recognition and understanding over more than two decades.

3.3.3. Social Norms and Peer Influence

Prior TxDOT research did not assess whether anti-litter values spread through peer networks independently of campaign messaging. The 2026 statewide survey includes a question asking youth who taught them about littering and not to litter (see Section 5.3.2 Q8 for details), with options including family, teachers, and friends/peers.

3.3.4. Youth Learning Pathways

Earlier statewide litter studies were predominantly focused on adult populations. The 2026 Youth Survey (see Section 5.3 for details) appropriately expands this focus by asking students where they learned not to litter, including school-based learning alongside family, media, and community influences. The 2026 Youth Survey represents the most comprehensive examination of how younger Texans (under 18) learn about and interpret the campaign, expanding beyond the adult-focused methodologies that characterized prior statewide litter research.

3.3.5. Message Comprehension by Age Group

Prior TxDOT studies documented a persistent gap between slogan recognition and correct understanding of its anti-litter purpose but generally reported comprehension at the statewide level rather than disaggregating it by age. The 2026 statewide survey asked respondents what they believe the slogan means and analyzed the results across age groups, including a dedicated examination of the 16–34 cohort, addressing whether comprehension differs between younger and older Texans (see Section 5.2.3 Q11 for the full adult analysis and Section 5.2.4 Q11 for the Age Group 16–34 comparison). The survey extended the same question to younger Texans through the youth instrument (see Section 5.3.2 Q12),

enabling a direct comparison of how adults, young adults, and youth interpret the slogan. These results allow the report to assess comprehension as a function of age rather than treating awareness and understanding as a single statewide measure.

3.3.6. Media Channel Exposure by Demographic

Earlier surveys recorded where respondents recalled encountering the campaign but did not systematically link channel exposure to demographic group, leaving open which channels reach which audiences. The 2026 statewide survey asked respondents how they heard or learned about the slogan and analyzed channel exposure by demographic group, including a comparison of the 16–34 cohort against all age groups (see Section 5.2.3 Q10 for the full adult analysis and Section 5.2.4 Q10 for the Age Group 16–34 comparison). The youth instrument captured the same information for respondents under 18 (see Section 5.3.2 Q11). Together, these results identify which channels, including billboards, television, and social and interpersonal sources, are most associated with each audience segment, informing how outreach can be matched to the audiences TxDOT intends to reach.

3.4 Chapter Conclusion

TxDOT's DMWT campaign represents one of the nation's most enduring and well-evaluated public behavior–change initiatives. Its foundational achievements are well documented through four decades of research: the 2020 Tracking Report confirmed sustained, exceptionally high public awareness, and the 2023 Visible Litter Survey provided an updated, objective picture of current roadside litter conditions.

Prior studies established important baselines but were not designed to resolve all questions about behavioral motivations, attitude-behavior gaps, and youth learning pathways. The 2026 University of Texas statewide survey addresses these topics directly, capturing data on reasons for littering, peer influence dynamics, message comprehension across age groups, and media channel exposure patterns, which are detailed in Chapter 5.

Chapter 4. Assess Future of Littering on Texas Highways

Chapter 4 evaluates how littering in Texas might change in the future. Past TxDOT studies have identified the following factors that are associated with amounts of litter along Texas highways:

- Regional Population size and growth;
- Urban or Rural location;
- The Daily Vehicle Miles Traveled (DVMT) along a highway;
- The State Highway System (SHS) type including Interstate Highway, US highway, State Highway or Farm to Market Road;
- Age demographics particularly young males in the 16 - 24 and 25 - 29 years old categories; and
- Other factors such as routes that carry refuse or recycling trucks and highway construction zones are associated with highway litter that is not from motorists.

Factors that help reduce the amount of litter over time include:

- Guidance to children about not littering and litter's impacts on wildlife and the environment given by parents, grandparents and other adults;
- Potential public behavioral changes about littering possibly due to anti-littering campaigns such as DMWT and associated advertising;
- Adopt-a-Highway program which involves volunteer citizens who clean highway sections during the year which reduces litter and saves tax dollars; and
- School educational programs that teach students not to litter.

The factors that might help reduce the amount of litter over time through the impacts of DMWT and behavioral change are addressed through a large, statewide survey conducted in Chapter 5.

Section 4.1 discusses forecast population growth for each TxDOT District using a large Texas population database with future projections from 2020 to 2060 obtained from the Texas State Demographic Center.

In Section 4.2, District – County Statistics (DISCOS) data is examined including the Daily Vehicle Miles Traveled (DVMT) on the state system by passenger vehicles (light vehicles) and by trucks for each TxDOT District. This information will be evaluated in conjunction with the Litter Survey conducted in 2019 to better understand the correlations between DVMT and litter amounts.

Section 4.3 provides a summary and conclusions for Chapter 4.

4.1 Population Growth and Litter Amounts

Texas has experienced significant population growth over the past two decades. Information and data provided by the Texas Demographic Center (TDC) indicates that population changes for urban or rural regions of Texas are directly related to migration between counties in Texas, between other U.S. states and Texas and immigration from other countries to Texas rather than birth rate. Birth rates in Texas have significantly declined since 2007 (Biundo 2024; UTSA 2025; TDC 2025a).

The TDC has developed three population forecast models for Texas based on: 1) High-migration scenario, 2) Mid-migration scenario and 3) Low- migration scenario which are consistent with National scenarios prepared by the U.S. Census Bureau. The TDC recommends that the mid-migration scenario, used in this study, applies to most purposes and is based on migration rates that have occurred in Texas over the past two decades (TDC 2025b). The TDC mid-migration scenario provides Texas population forecasts from 2020 to 2060. The database downloaded from the TDC website contains forecasts for individuals on one-year age increments for each county. The population data also provides race, ethnicity, and gender associated with the age data. For this analysis, population age categories, gender, race and ethnicity trends were consistent with previous TxDOT studies on litter behavior.

The age categories used in this study do not include children from infancy through age nine. Children in this age range spend more time with their families and tend to model the behavior they observe at home. Their social norms around littering are primarily shaped by parents or other responsible adults through education and example (Casaló et al., 2016; Herdiansyah et al., 2021). As children move into adolescence and early adulthood, peer influence becomes a more significant driver of behavior. Consistent with prior TxDOT behavioral research, the age groups and gender most likely to litter are younger males in the 16–24 and 25–29-year-old categories (NuStats 2001). Other research has presented more generalized findings, indicating that males under age 35 are more likely to litter (ER Planning 2020).

The age categories used in this analysis are:

- 10 – 15 years old
- 16 – 24 years old
- 25 – 29 years old
- 30 – 35 years old
- 36 – 44 years old
- 45 – 54 years old
- 55 – 64 years old
- 65 + years old

As individuals age, respect for public spaces increases and the tendency to litter decreases. Thus, based on previous studies, the population age forecasts are an indication about numbers of individuals who are more or less likely to litter. The DMWT campaign is focused on potential behavior changes to encourage individuals to dispose of litter properly thus reducing highway litter amounts. Based on litter surveys conducted by TxDOT in 2013 and 2023, it was found that litter had reduced by over 63% for large litter (two inches and larger). Thus, the DMWT campaign may have a significant impact on highway littering. In the future, changes in Texas's forecast age demographics might also have an effect on the amount of litter deposited on Texas highways.

Traffic volumes are another factor associated with the amount of litter along a highway which is characterized by Daily Vehicle Miles Traveled (DVMT) in this study. TxDOT reports DVMT for passenger vehicles (light vehicles) and Trucks for each district though this data was not available to the CTR study team for specific highways or route types. Section 4.2 will discuss the relationships that were found regarding DVMT and litter amounts from the 2019 litter survey.

The following sets of graphs for each TxDOT District in alphabetical order provide information about

- Forecast population changes from 2020 to 2060 for the different age categories summed for all counties that comprise a District;
- The total of all age categories (excluding < 1 - 9-year-old children) summed to show how the District forecast population might change from 2020 – 2060;
- Forecast population changes for males between 16 – 24 and 25 – 29 years old;
- Forecast population changes for individuals in the workforce 30 – 44 years old and the mature workforce 45 – 64 years old;
- Forecast population changes for individuals 65 years old and greater; and
- Forecast population changes are also presented from 2020 to 2060 for different age categories in the most populous county within each district. In cases that two counties have similar total populations, the age distributions of both counties are shown in separate graphs.

Discussion will follow selected district graphs to point out specific trends including how those trends might affect highway litter in that district or county.

4.1.1. Abilene District

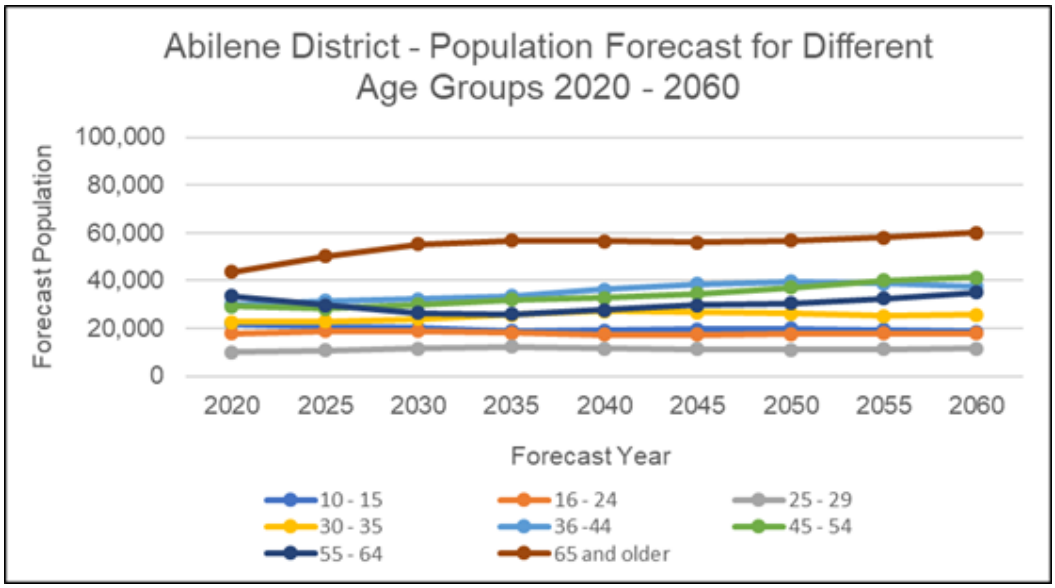


Figure 4.1. Abilene District – Population Growth Forecast for Different Age Groups, 2020 – 2060

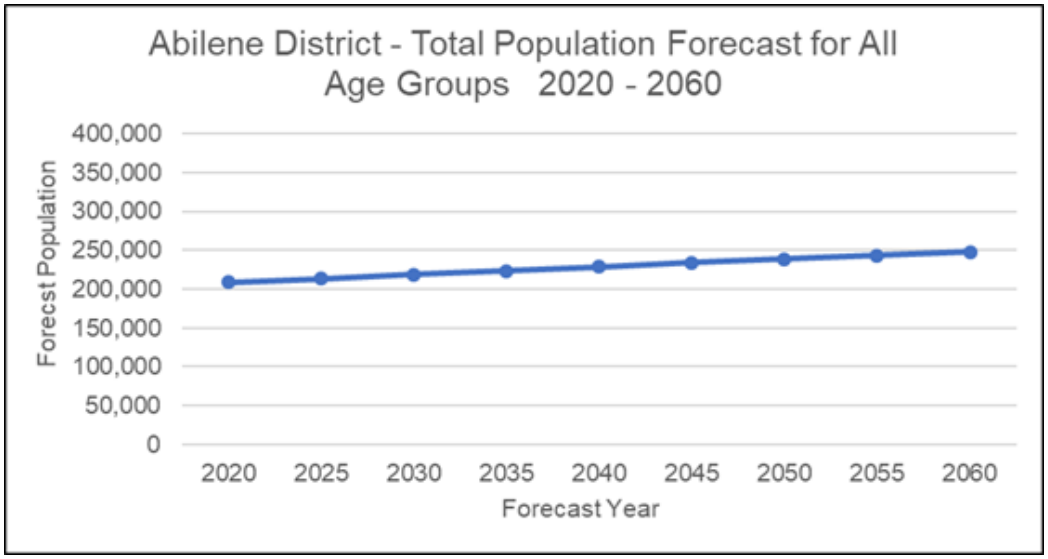


Figure 4.2. Abilene District – Total Population Forecast for All Age Groups, 2020 – 2060

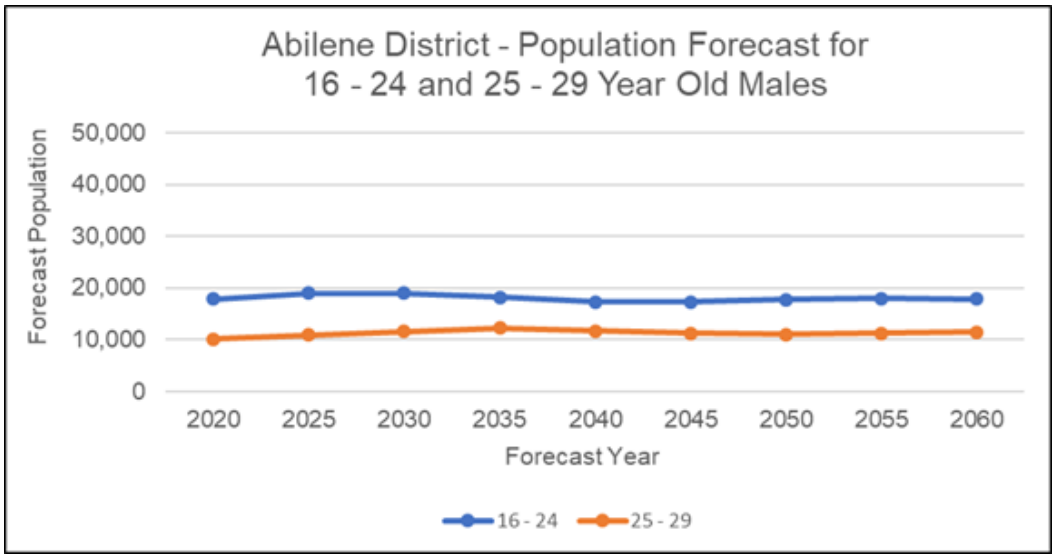


Figure 4.3. Abilene District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

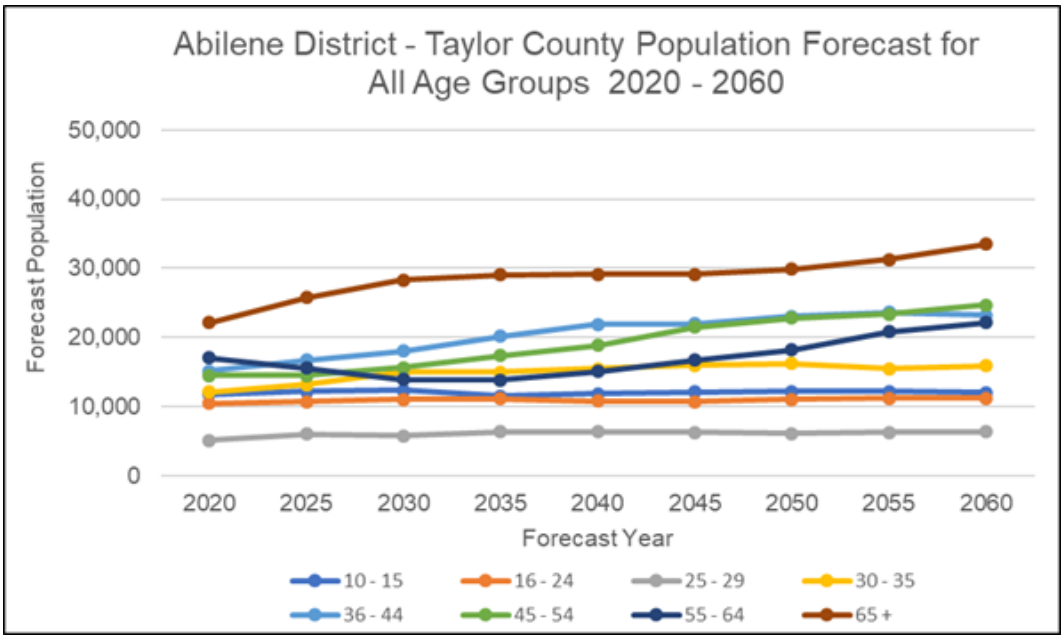


Figure 4.4. Abilene District – Taylor County Population Forecast for Different Age Groups, 2020 – 2060

4.1.2. Amarillo District

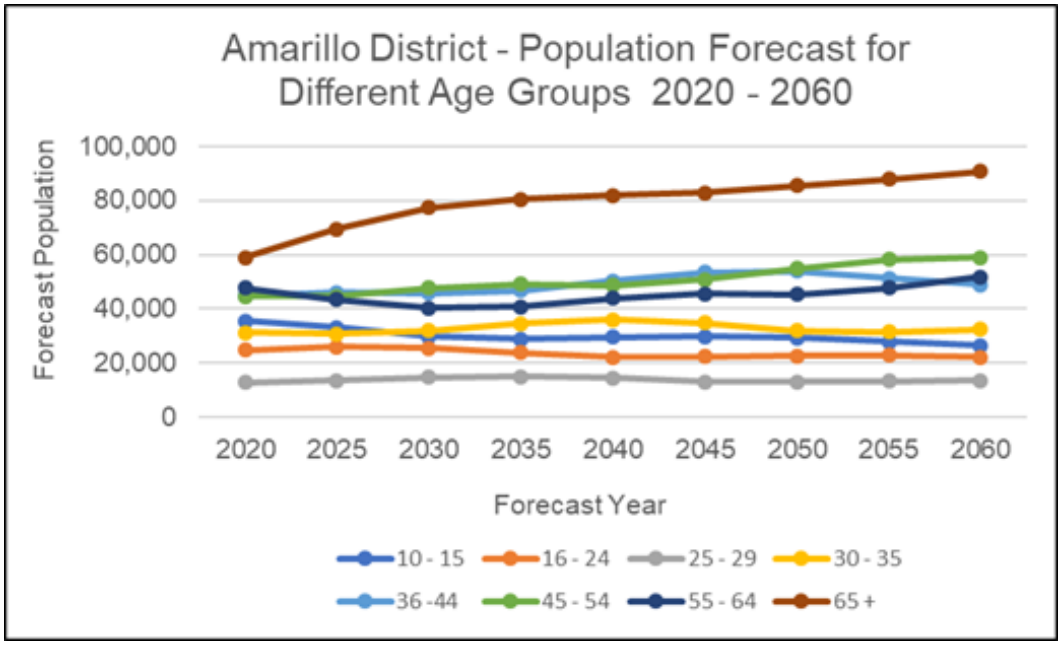


Figure 4.5. Amarillo District – Population Growth Forecast for Different Age Groups, 2020 – 2060

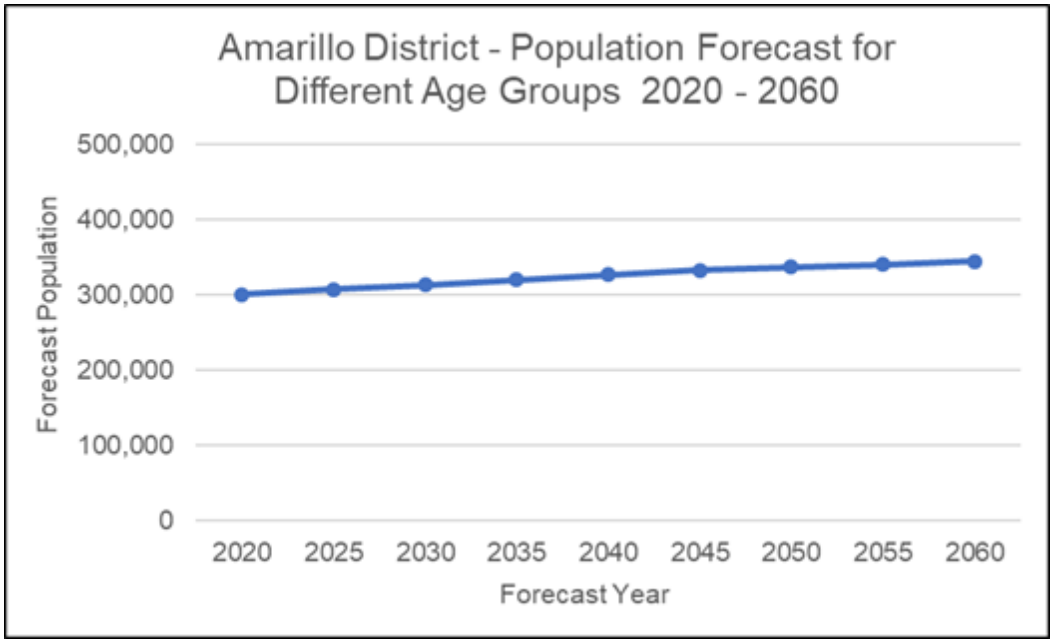


Figure 4.6. Amarillo District – Total Population Forecast for All Age Groups, 2020 – 2060

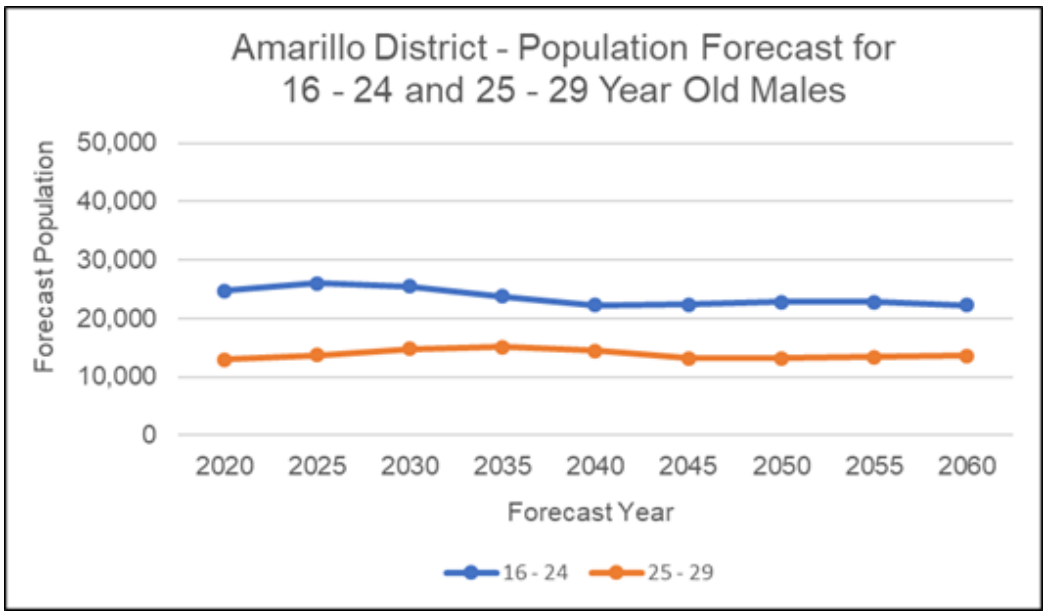


Figure 4.7. Amarillo District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

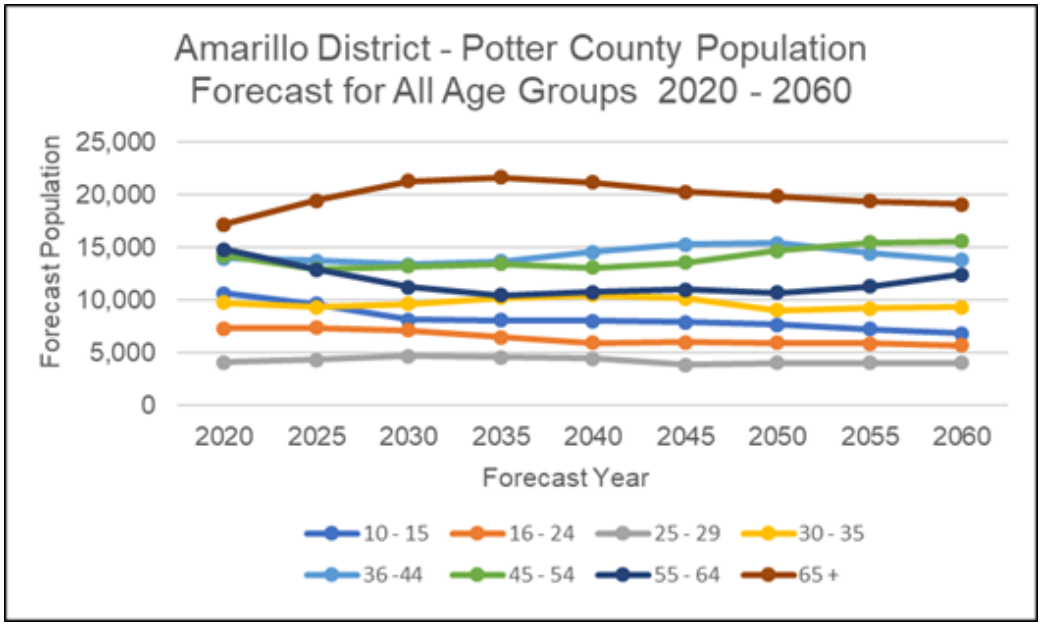


Figure 4.8. Amarillo District – Potter County Population Forecast for Different Age Groups, 2020 – 2060

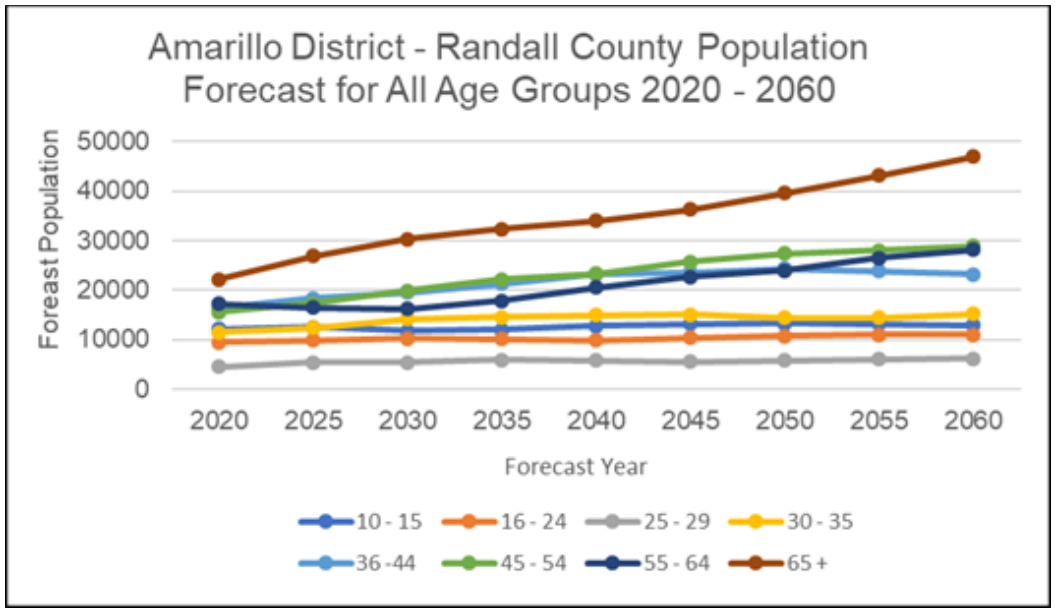


Figure 4.9. Amarillo District – Randall County Population Forecast for Different Age Groups, 2020 – 2060

4.1.3. Atlanta District

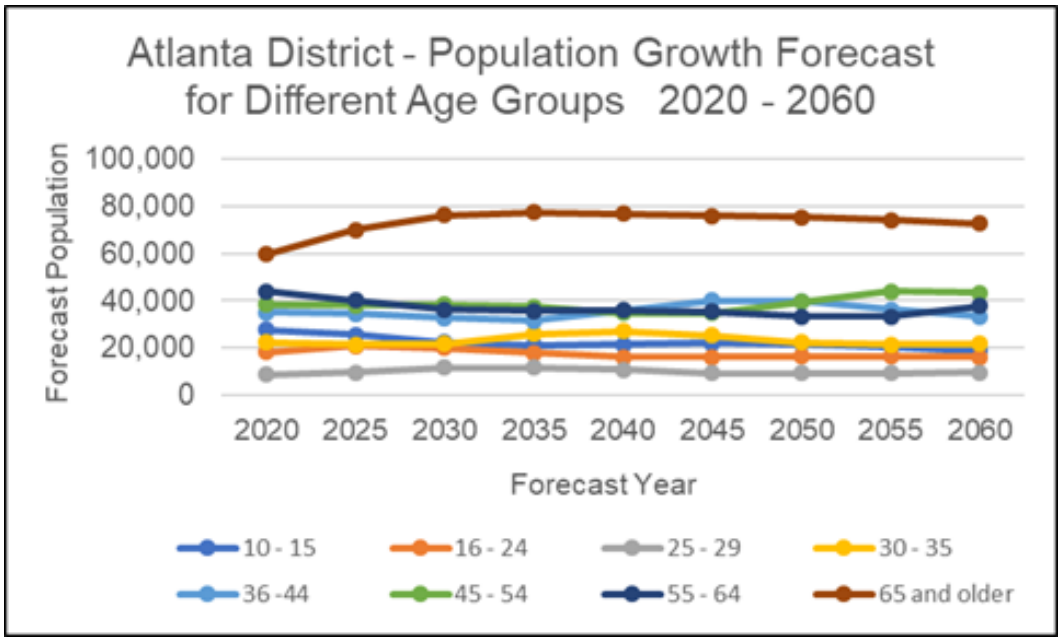


Figure 4.10. Atlanta District – Population Growth Forecast for Different Age Groups, 2020 – 2060

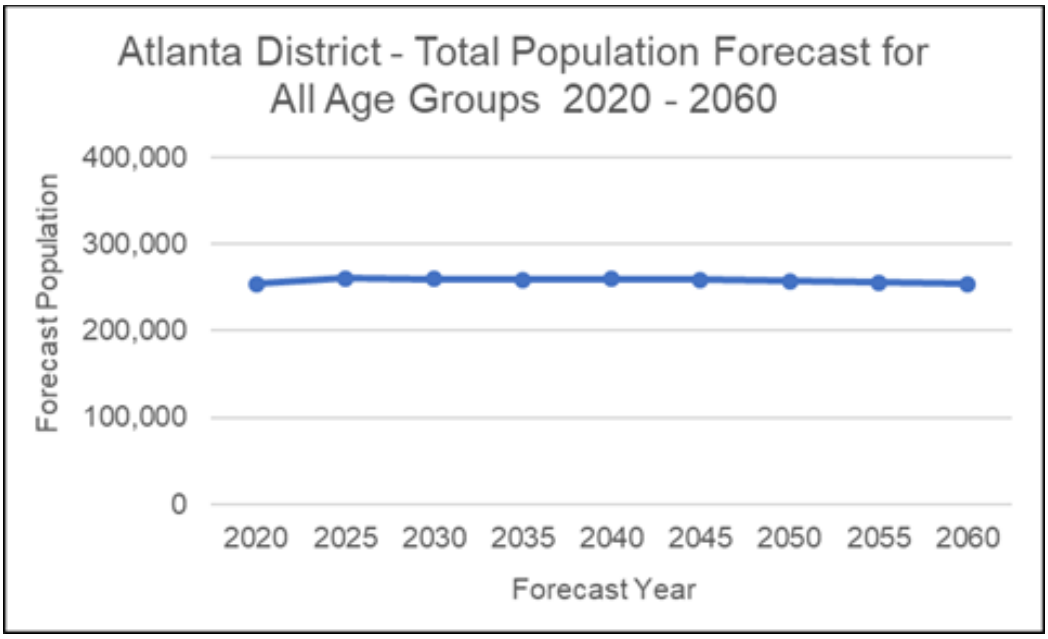


Figure 4.11. Atlanta District – Total Population Forecast for All Age Groups, 2020 – 2060

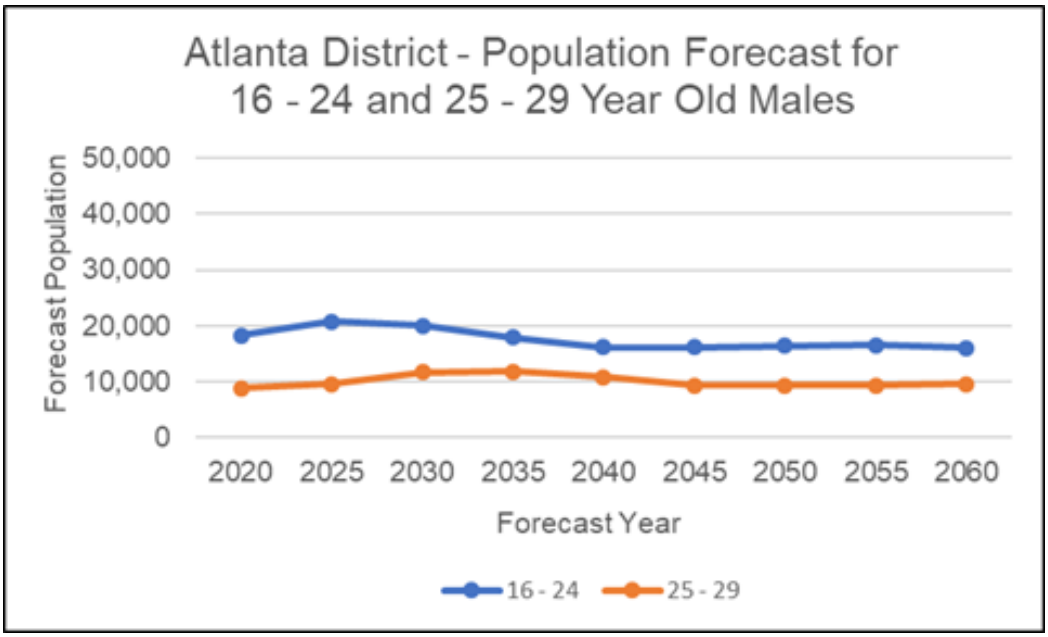


Figure 4.12. Atlanta District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

The Atlanta District shows a small decrease in overall population within the next 35 years (2025 to 2060). The 65+ age category is forecast to increase within the next five years followed by a small decrease for the remainder of the forecast. The 16 – 24 and 25 – 29 age groups for males will decrease.

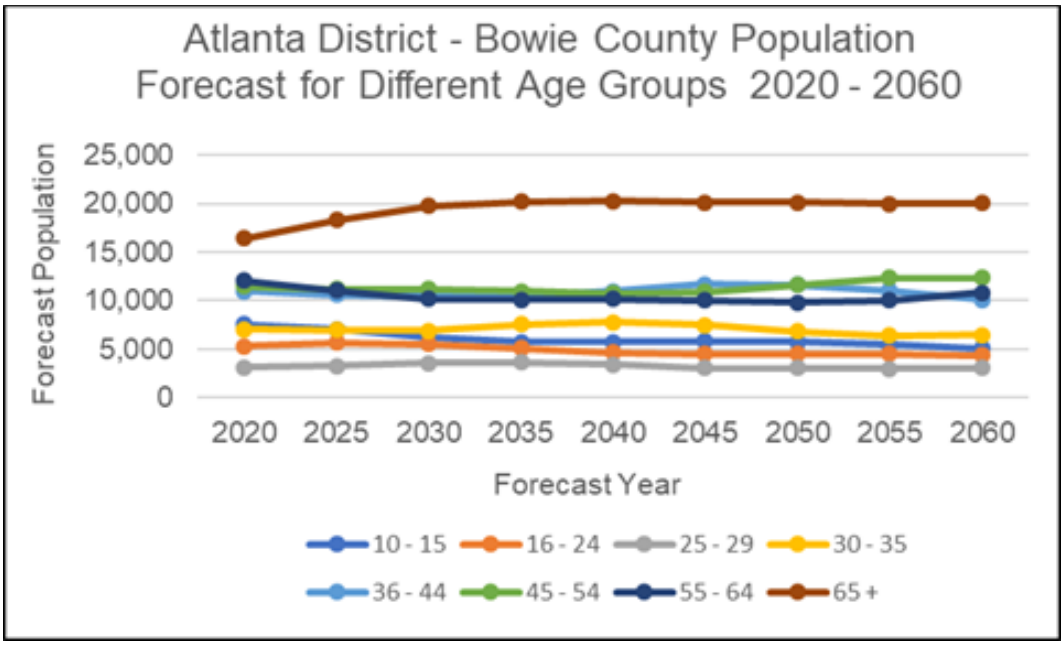


Figure 4.13. Atlanta District – Bowie County Population Forecast for Different Age Groups, 2020 – 2060

There is variability in other age groups over the 35-year forecast period which includes increases followed by decreases or modest growth in some cases. Overall, it is expected that litter amounts will change little based only on population demographics.

4.1.4. Austin District

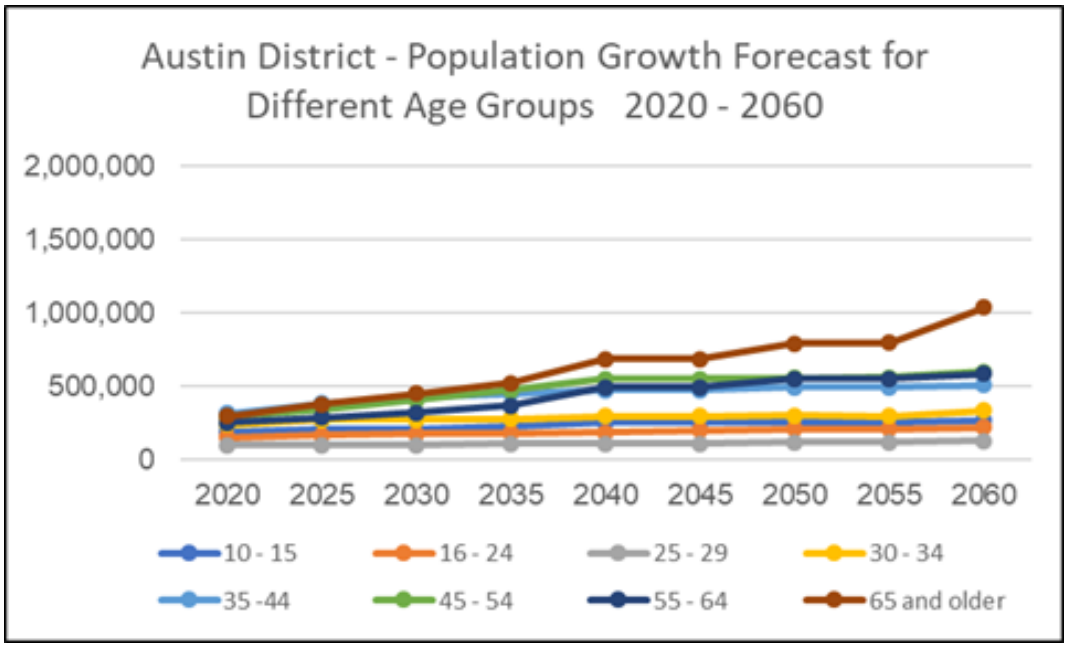


Figure 4.14. Austin District - Population Growth Forecast for Different Age Groups, 2020 – 2060

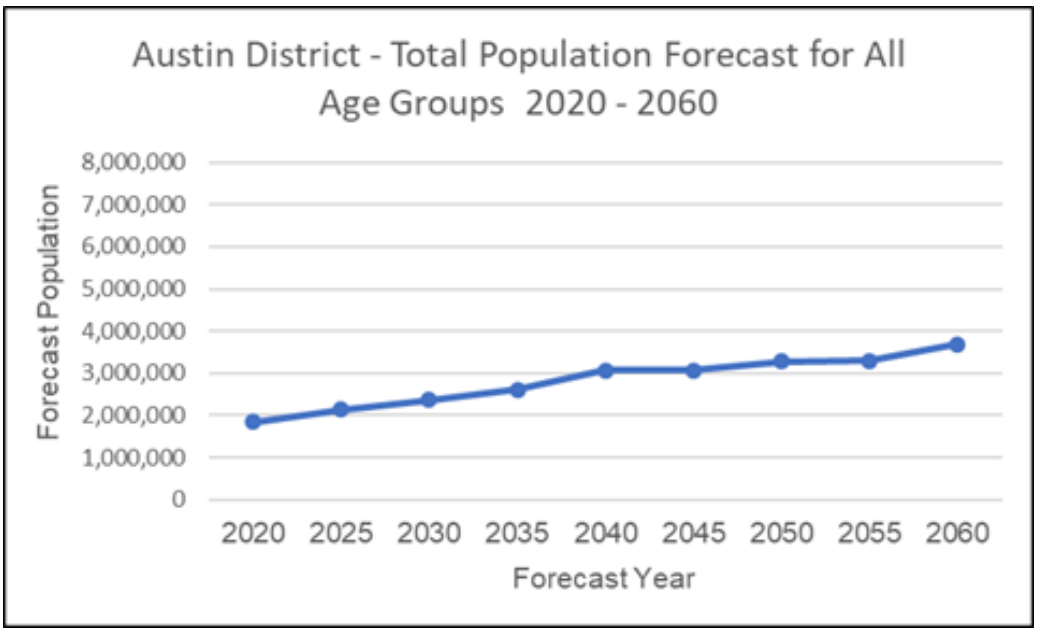


Figure 4.15. Austin District – Total Population Growth for All Age Groups, 2020 – 2060

Figure 4.14 shows that the 65+ age category is forecast to increase by approximately 700,000. Figure 4.15 shows that the Austin District population growth is forecast to be slightly greater than either the San Antonio (Figure 4.86) or Fort Worth (Figure 4.47) Districts.

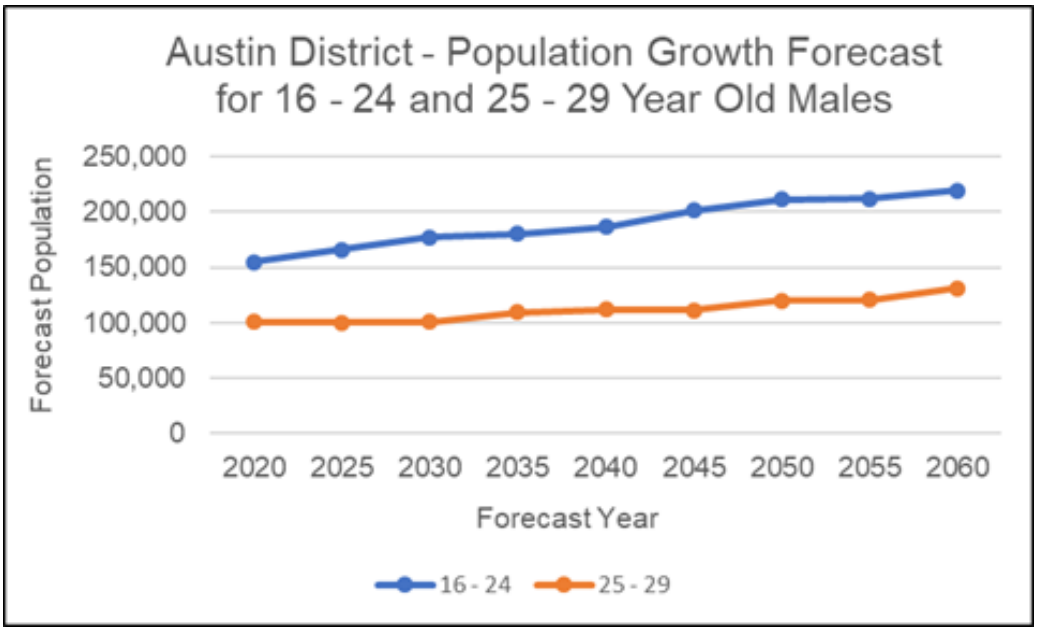


Figure 4.16 Austin District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

Figure 4.16 shows that the 16 – 24-year-old male category is forecast to increase by approximately 65,000 while the 25 – 29-year-old male category is forecast to grow by approximately 35,000.

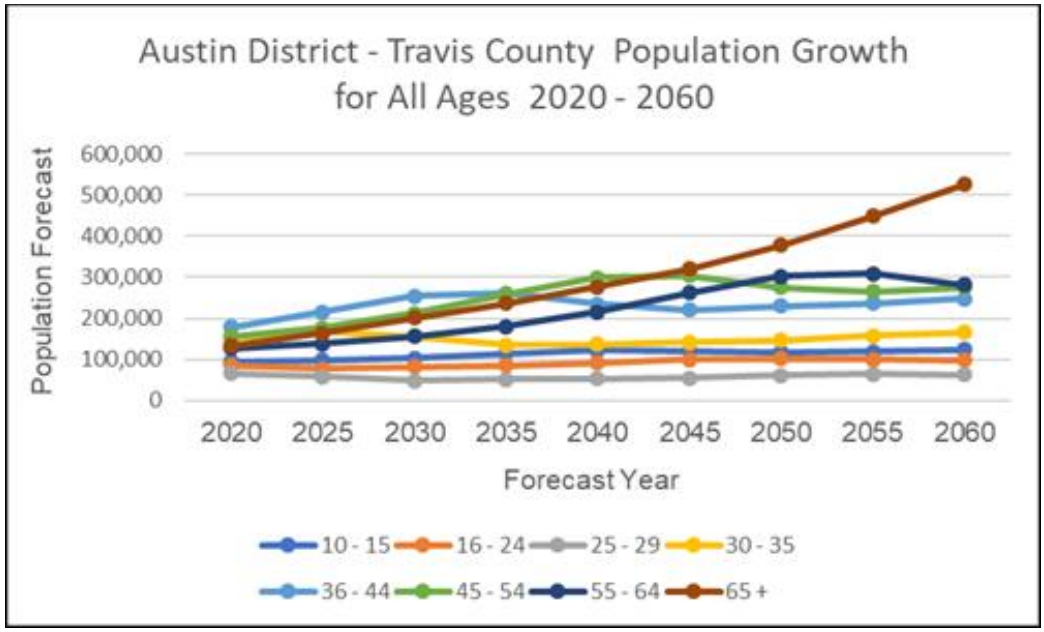


Figure 4.17. Austin District – Travis County Population Growth Forecast for Different Age Groups, 2020 – 2060

4.1.5. Beaumont District

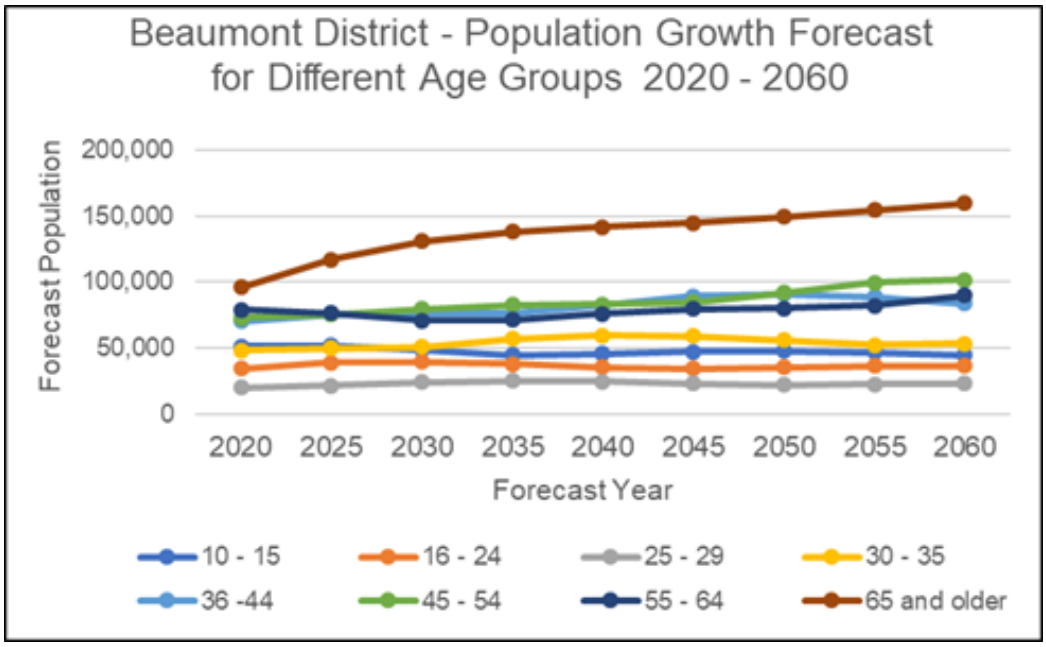


Figure 4.18. Beaumont District – Population Growth Forecast for Different Age Groups, 2020 – 2060

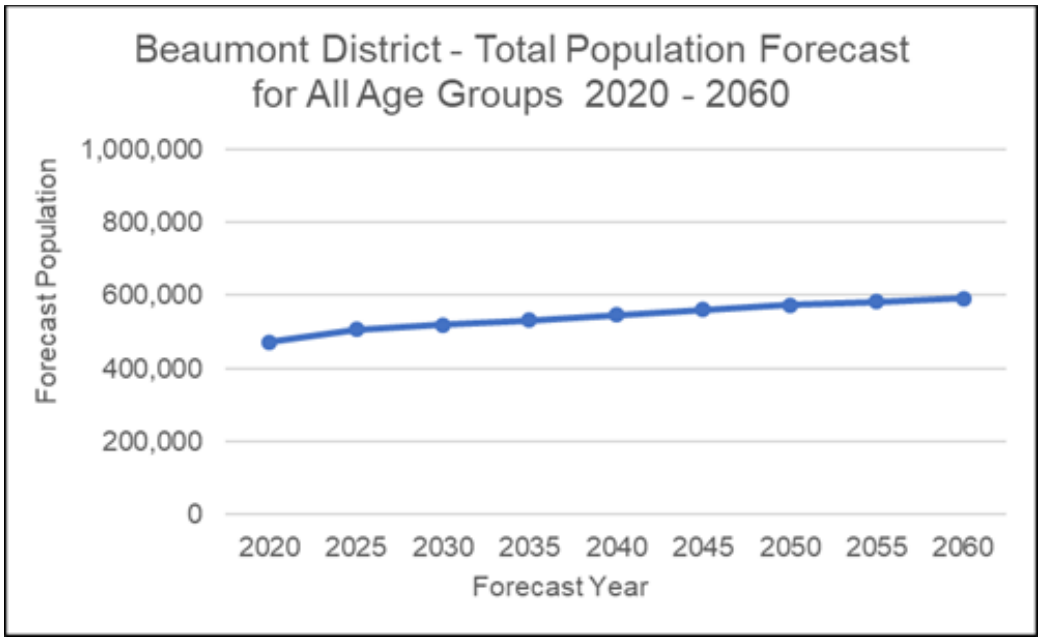


Figure 4.19. Beaumont District – Total Population Forecast for All Age Groups, 2020 – 2060

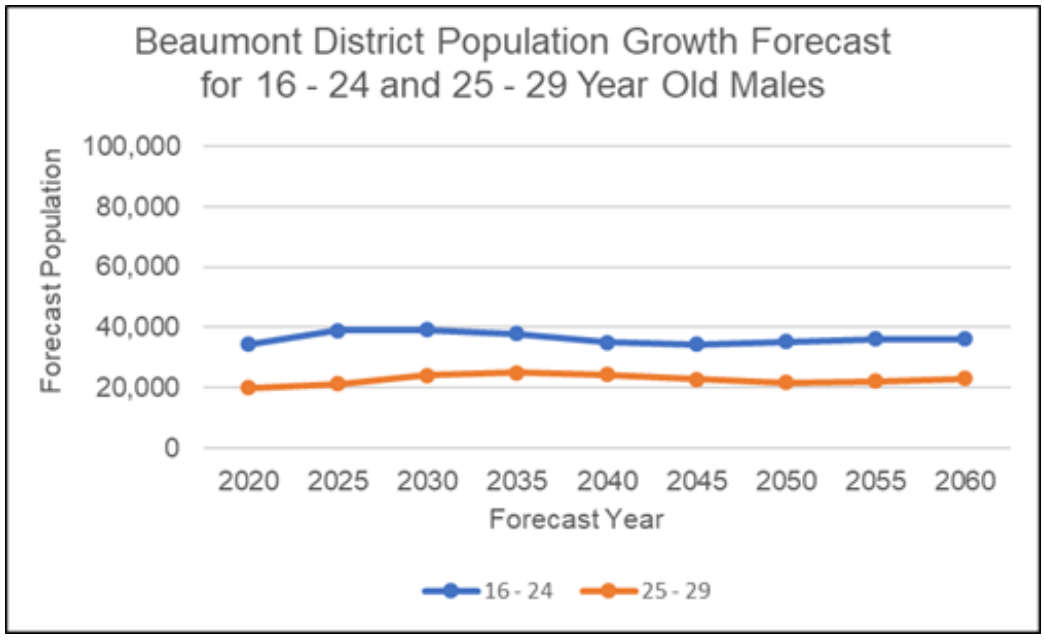


Figure 4.20. Beaumont District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

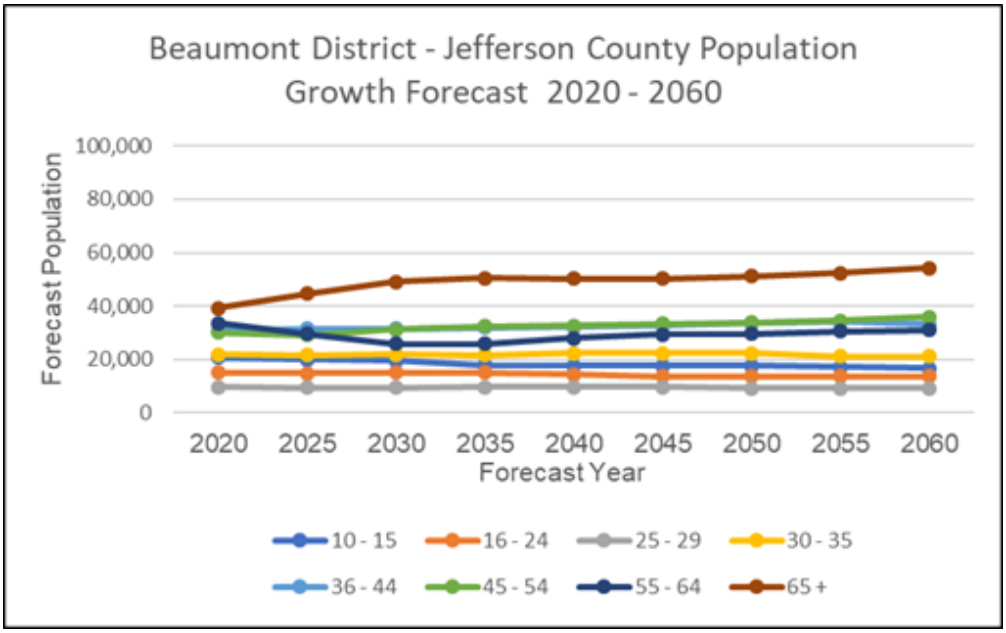


Figure 4.21. Beaumont District – Jefferson County Population Forecast for Different Age Groups, 2020 – 2060

Compared to the Beaumont District population for 65+ age category, Jefferson County population depicts a slightly different trend with an initial increase followed by almost no increase over the next 25 years.

4.1.6. Brownwood District

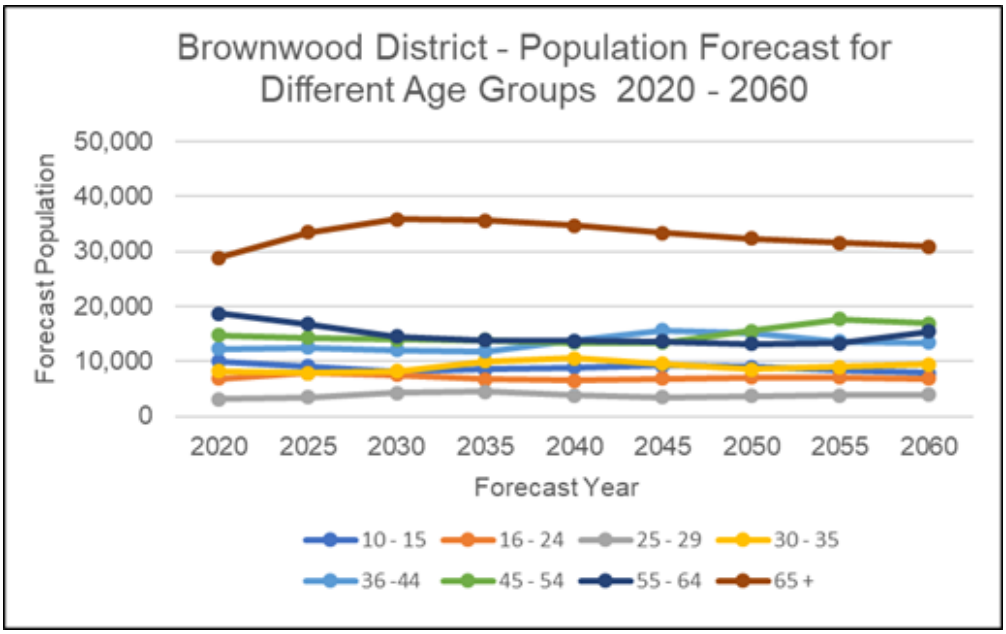


Figure 4.22. Brownwood District – Population Growth Forecast for Different Age Groups, 2020 – 2060

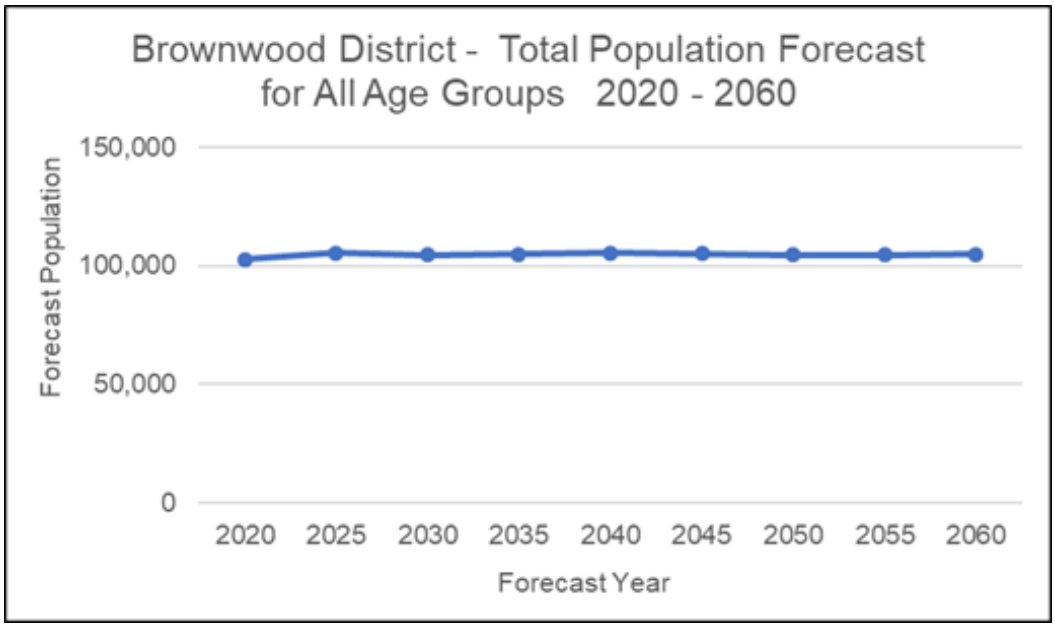


Figure 4.23. Brownwood District – Total Population Forecast for All Age Groups, 2020 – 2060

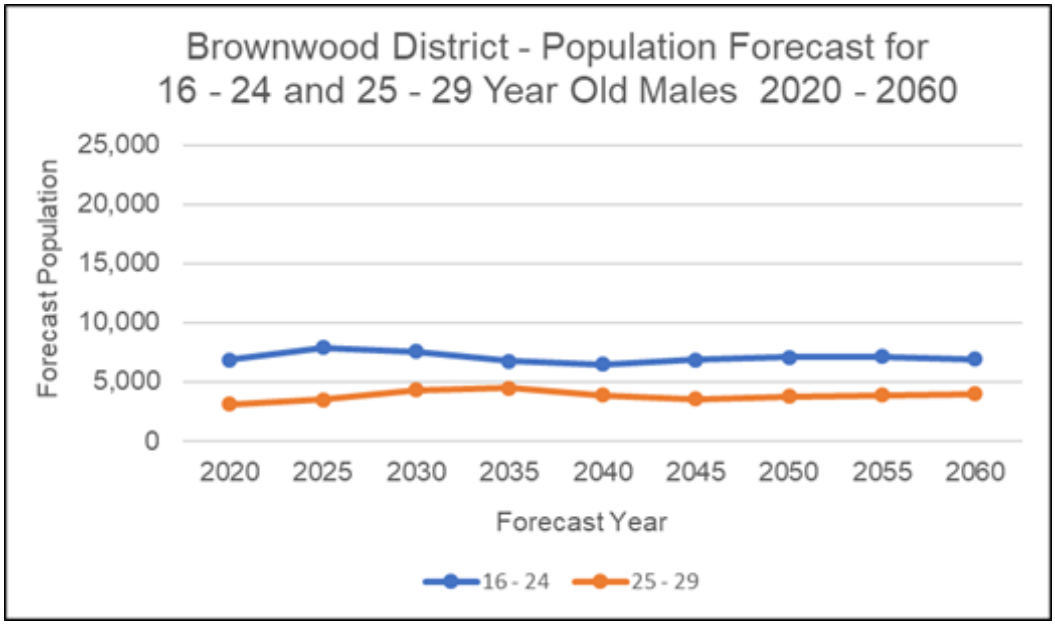


Figure 4.24. Brownwood District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

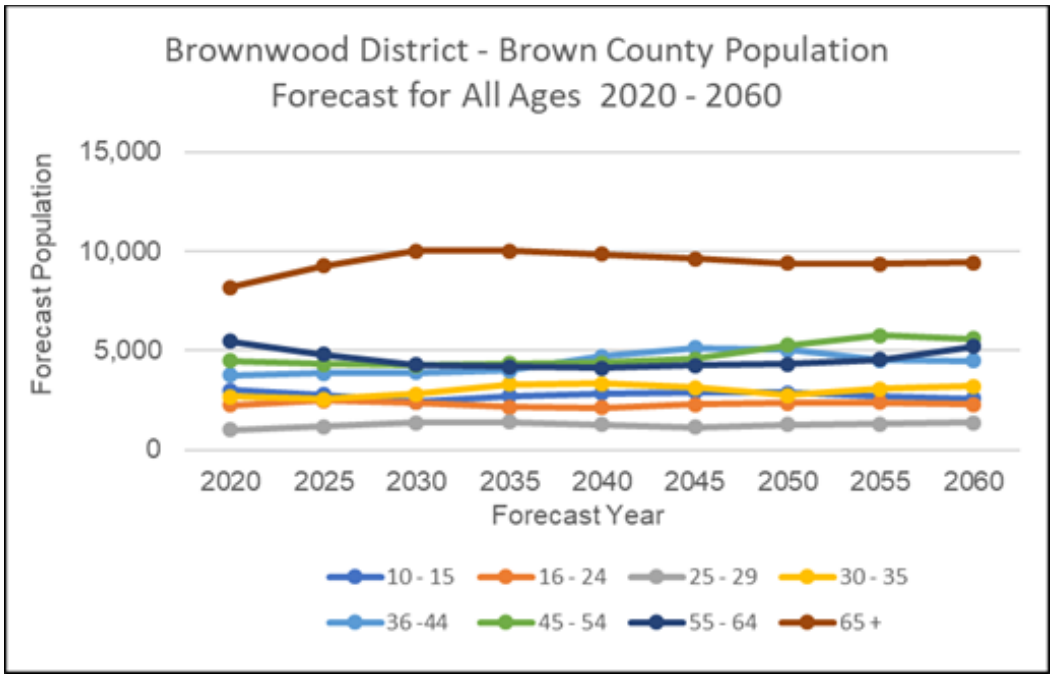


Figure 4.25. Brownwood District – Brown County Population Forecast for Different Age Groups, 2020 – 2060

4.1.7. Bryan District

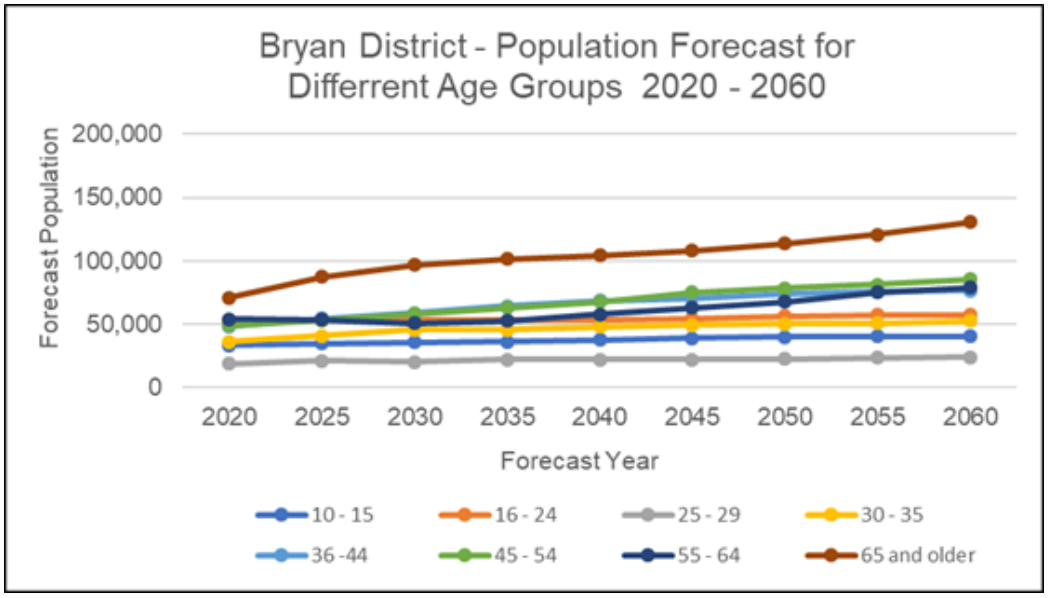


Figure 4.26. Bryan District – Population Growth Forecast for Different Age Groups, 2020 – 2060

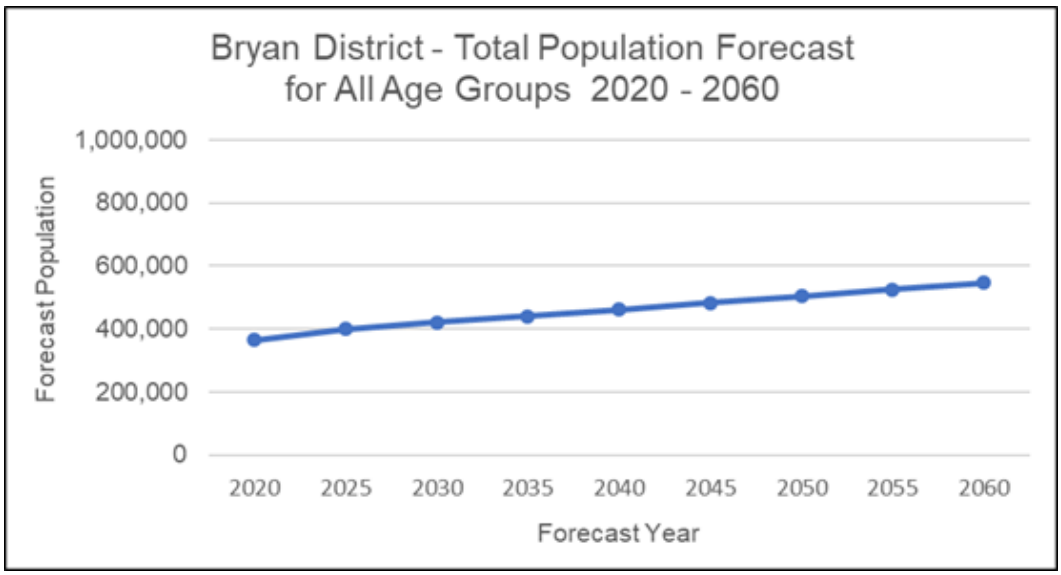


Figure 4.27. Bryan District – Total Population Forecast for All Age Groups, 2020 – 2060

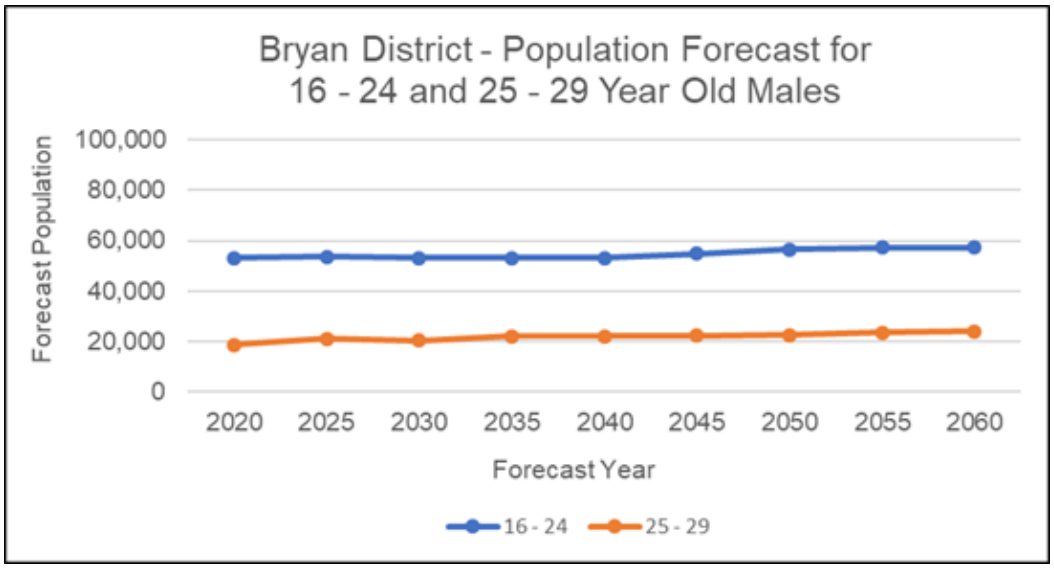


Figure 4.28. Bryan District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

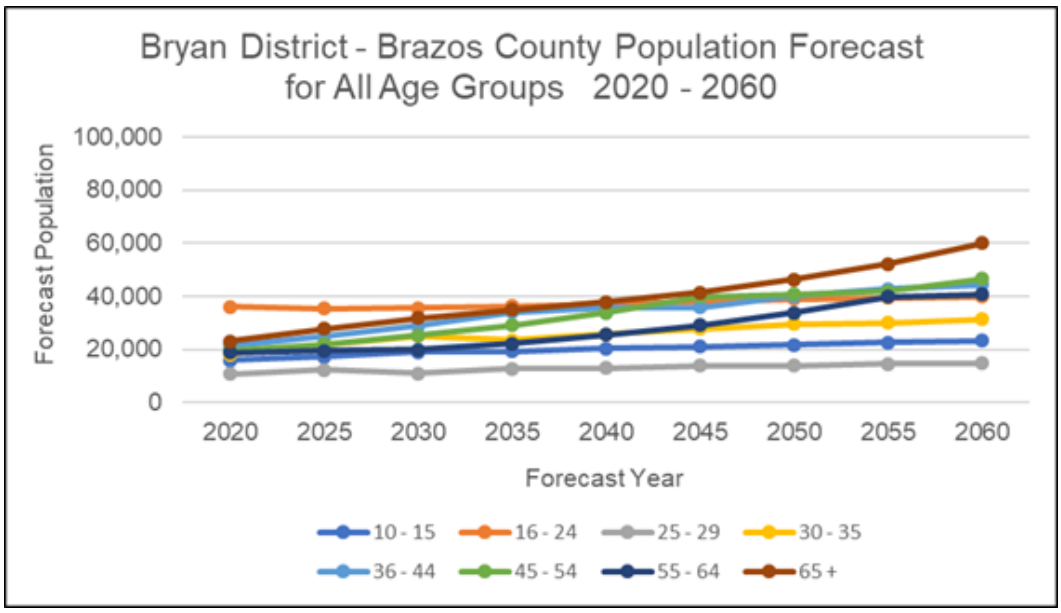


Figure 4.29. Bryan District – Brazos County Population Forecast for Different Age Groups, 2020 – 2060

4.1.8. Childress District

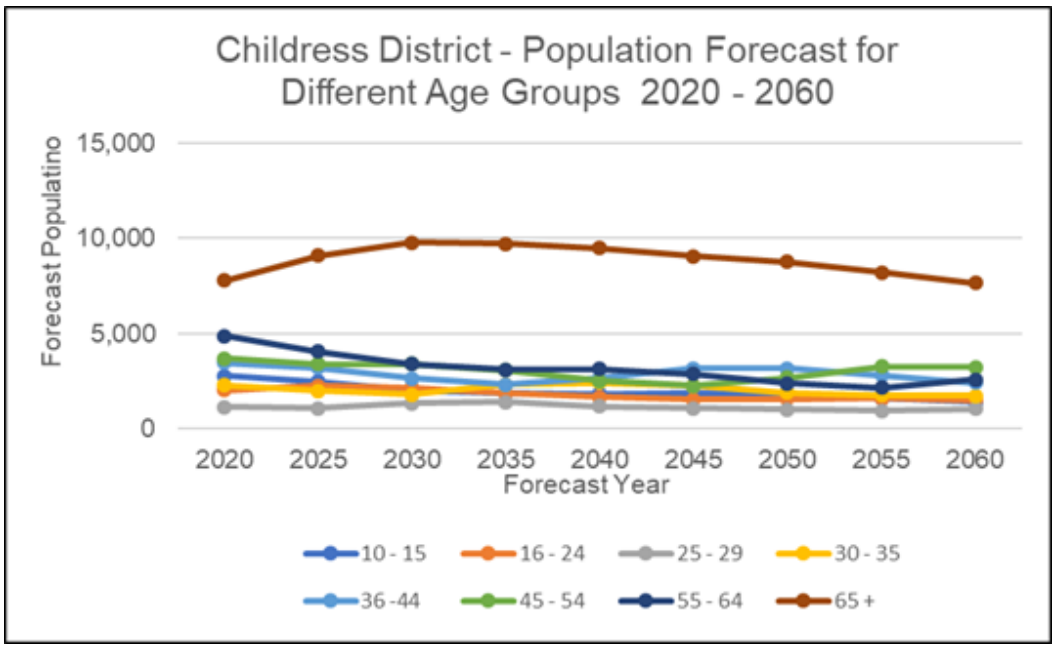


Figure 4.30. Childress District – Population Growth Forecast for Different Age Groups, 2020 – 2060

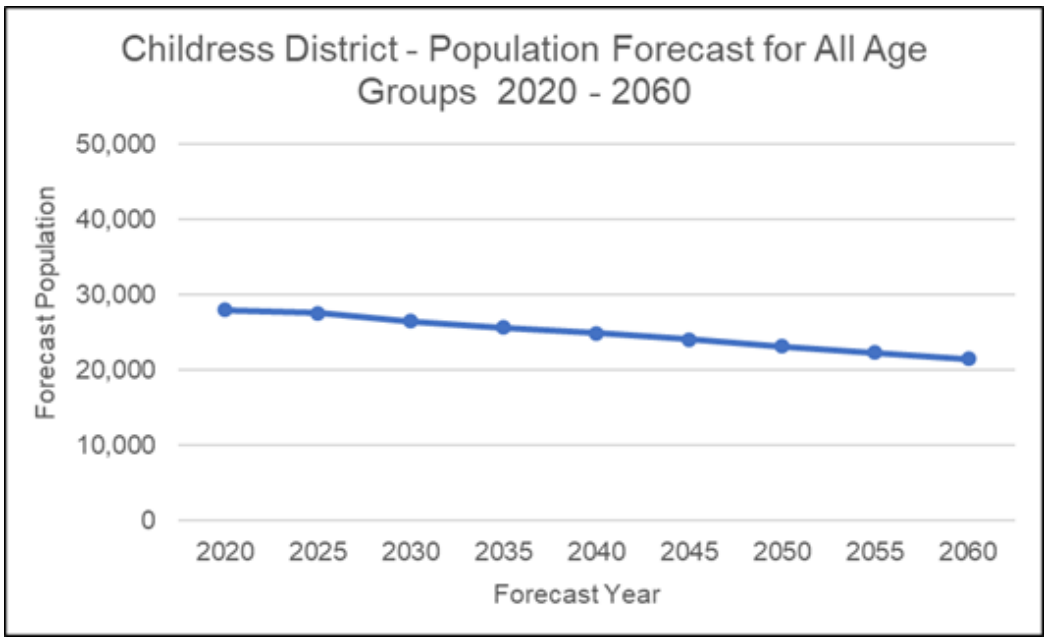


Figure 4.31. Childress District – Total Population Forecast for All Age Groups, 2020 – 2060

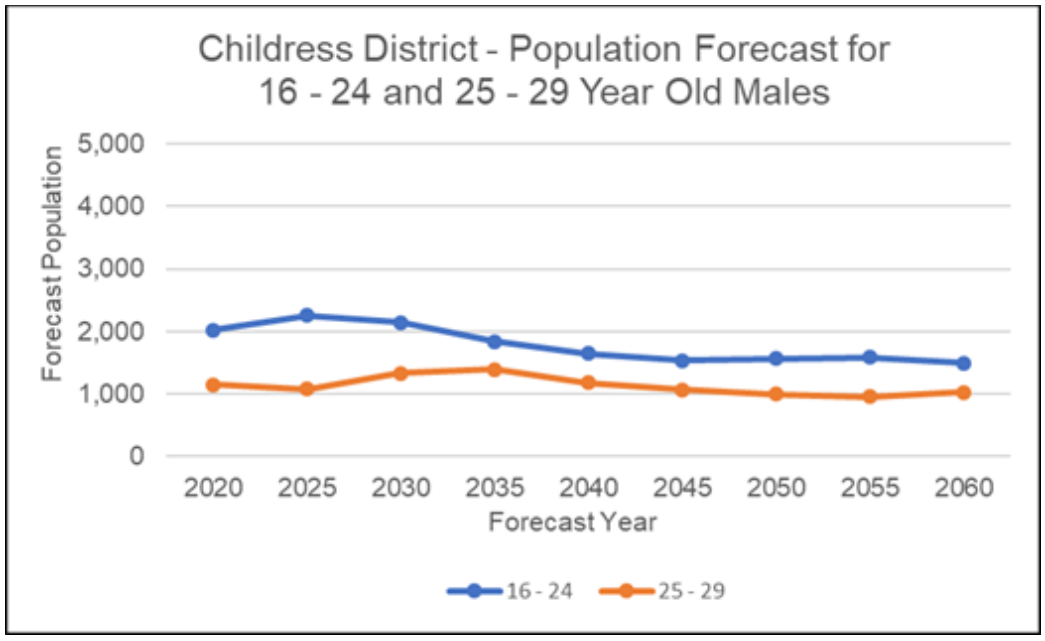


Figure 4.32. Childress District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

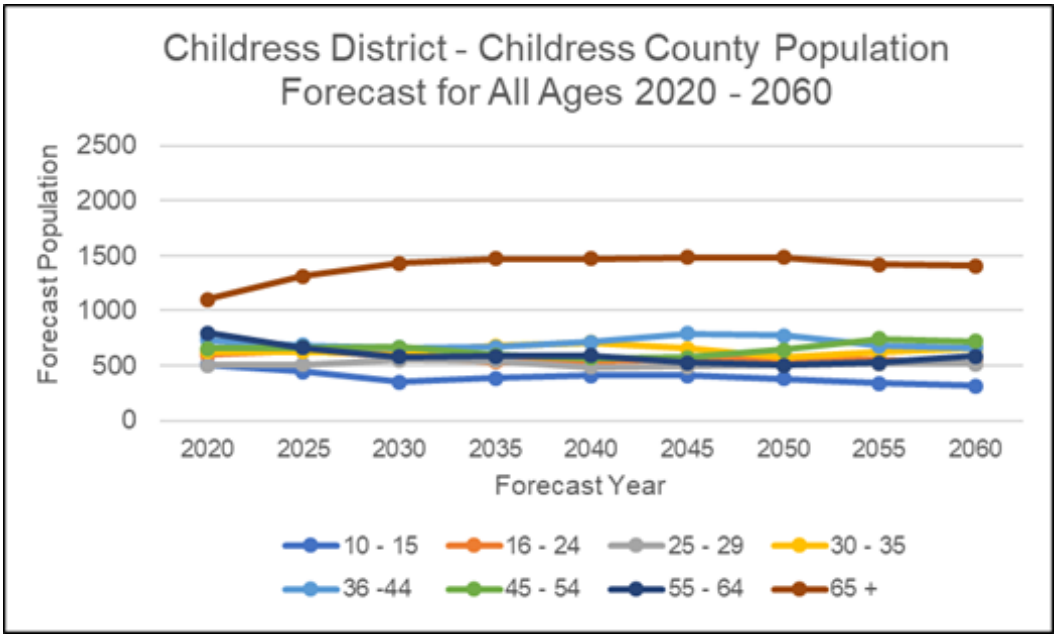


Figure 4.33. Childress District – Childress County Population Forecast for Different Age Groups, 2020 – 2060

4.1.9. Corpus Christi District

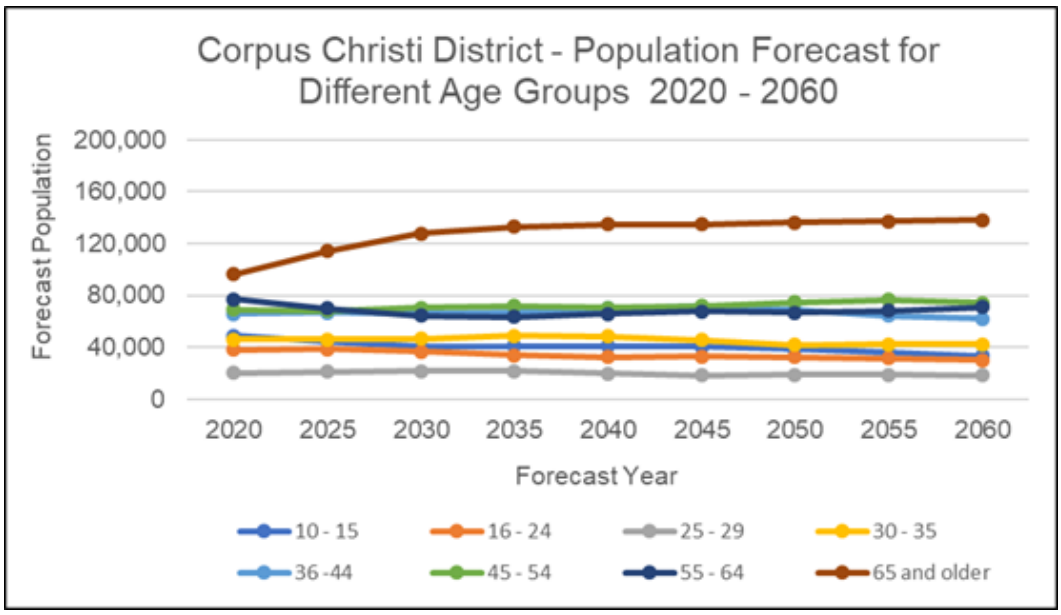


Figure 4.34. Corpus Christi District – Population Growth Forecast for Different Age Groups, 2020 – 2060

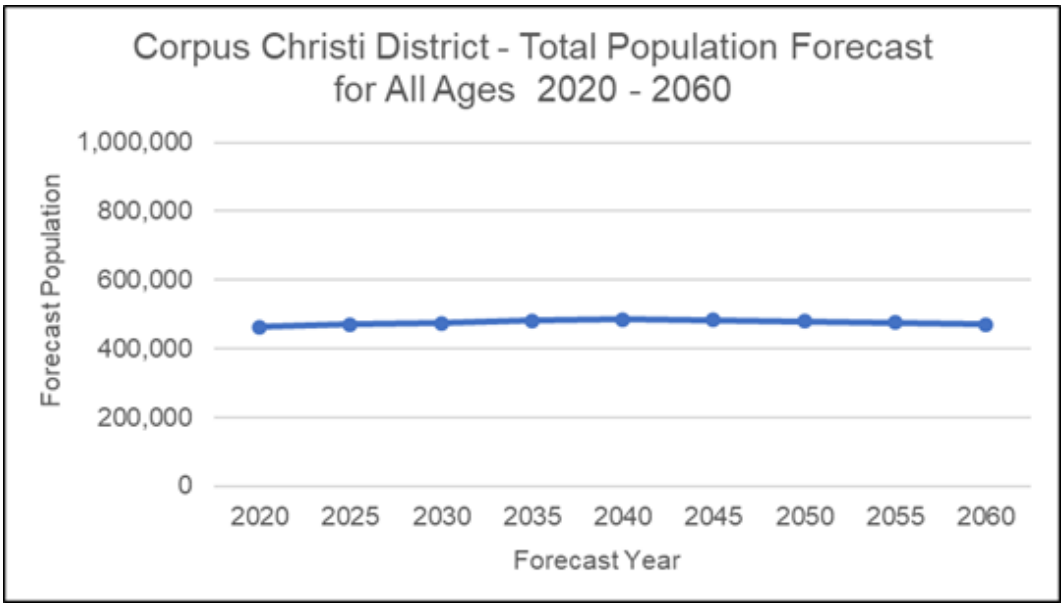


Figure 4.35. Corpus Christi District – Total Population Forecast for All Age Groups, 2020 – 2060

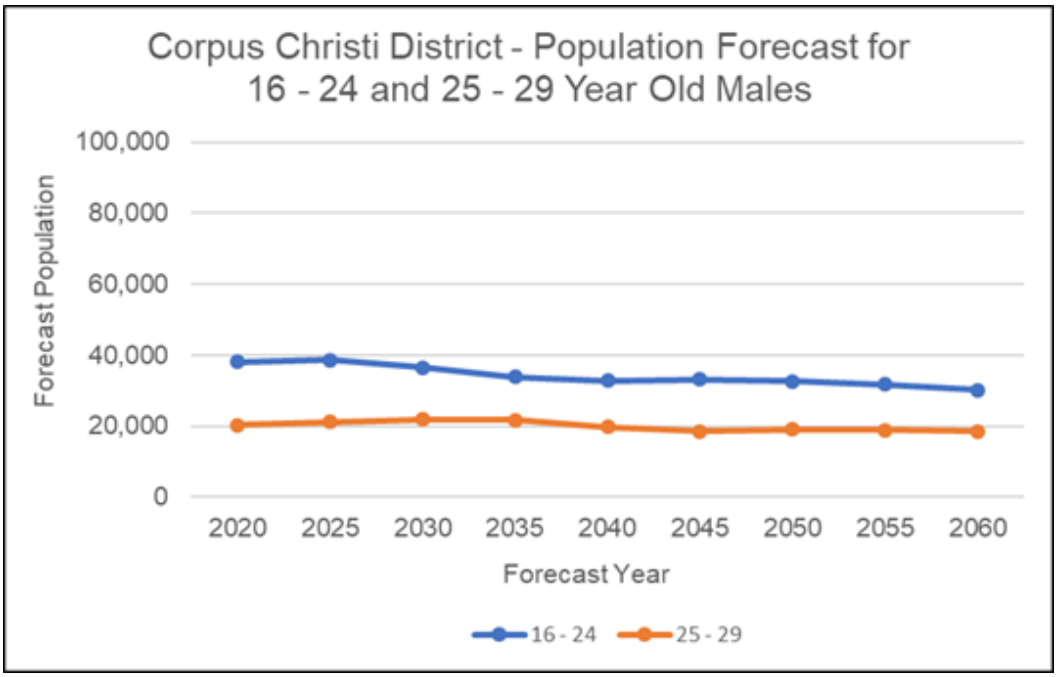


Figure 4.36. Corpus Christi District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

Corpus Christi shows a forecast decrease in males 16 – 24 and a nearly flat total population curve. This suggests that Corpus Christi is forecast to experience no change or perhaps a decrease in overall litter along highways based solely on forecast population changes.

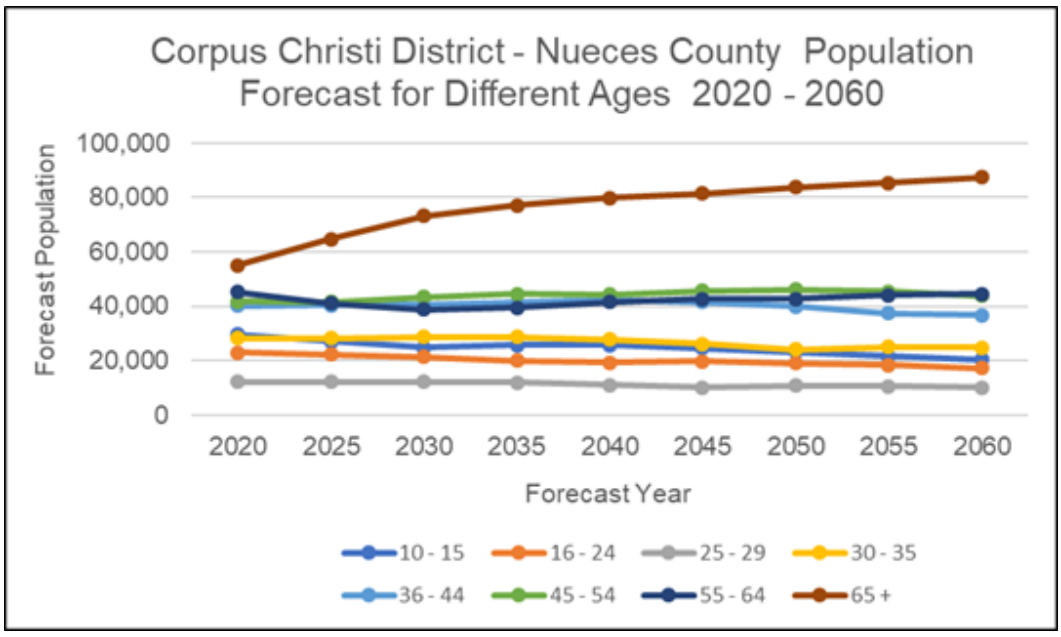


Figure 4.37. Corpus Christi District – Nueces County Population Forecast for Different Age Groups, 2020 – 2060

4.1.10. Dallas District

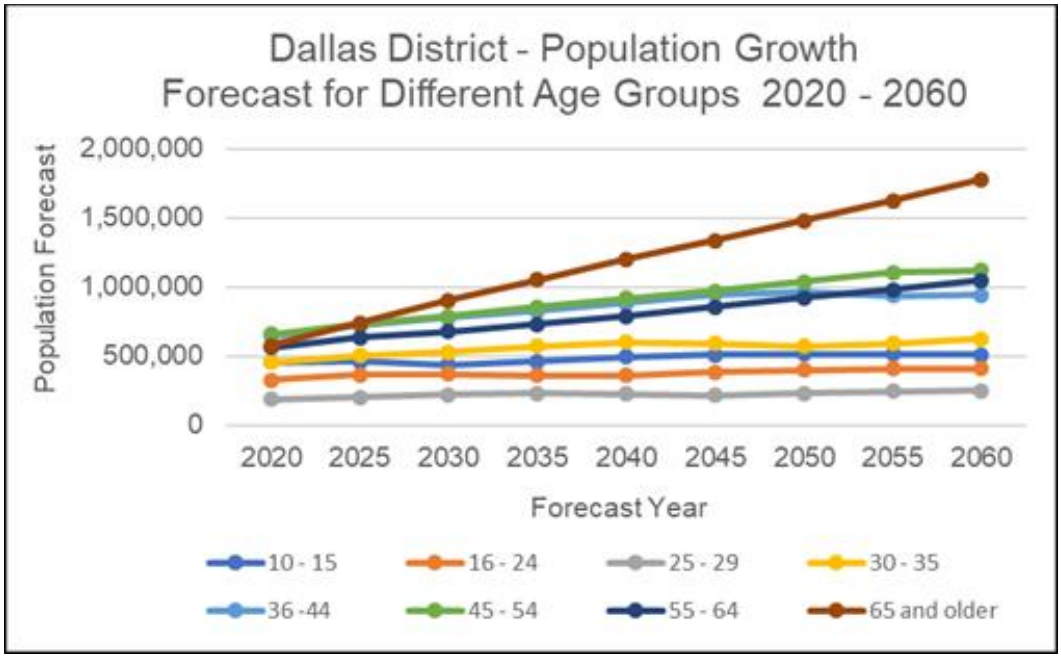


Figure 4.38. Dallas District - Population Growth Forecast for Different Age Groups, 2020 – 2060

The growth in the 65+ age category is significant in the Dallas District, which increases by over 1.2 million people.

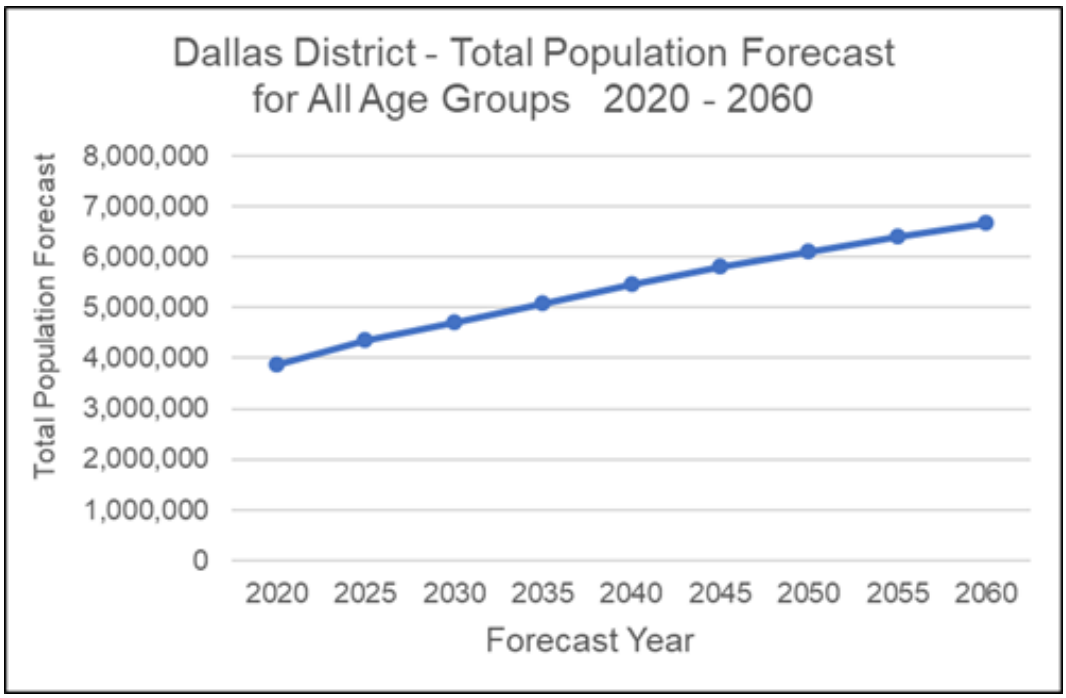


Figure 4.39. Dallas District - Total Population Forecast for All Age Groups, 2020 – 2060

The Dallas District has similar demographic trends to the Houston District (Figure 4.51) – large increases in the 65+ age category, and an overall increase of over 3 million people in the next 35 years. The job market in both Houston and Dallas is very strong which is attracting younger segments of the rural population to move to these Metro areas.

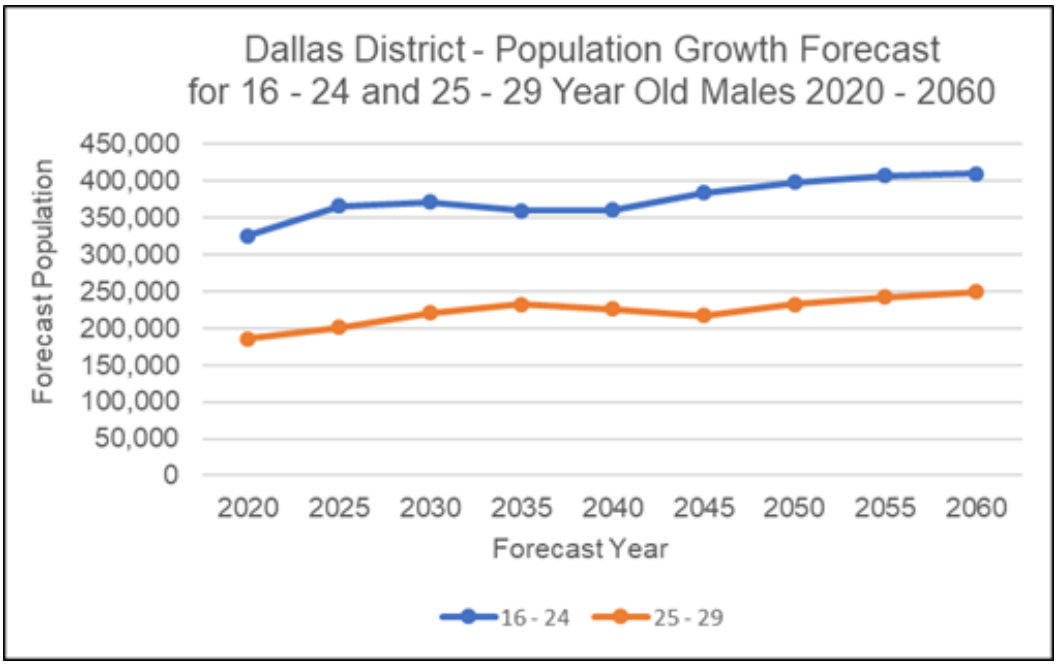


Figure 4.40. Dallas District - Population Growth Forecast for 16 - 24 and 25 - 29-Year-Old Males, 2020 – 2060

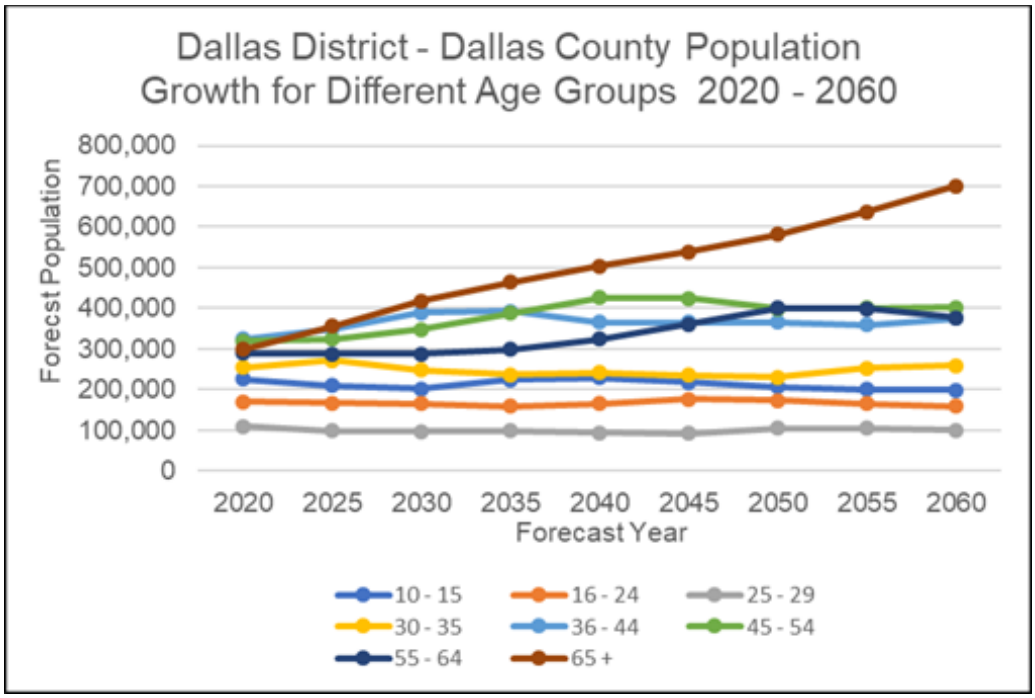


Figure 4.41. Dallas District - Dallas County Population Growth for Different Age Groups, 2020 – 2060

The age categories for young males shown in Figure 4.40 show modest growth of about 85,000 individuals in the 16 – 24-year-old category and perhaps 65,000 in the 25 – 29-year-old category. Overall population if forecast to grow significantly as shown in Figure 4.39.

4.1.11. El Paso District

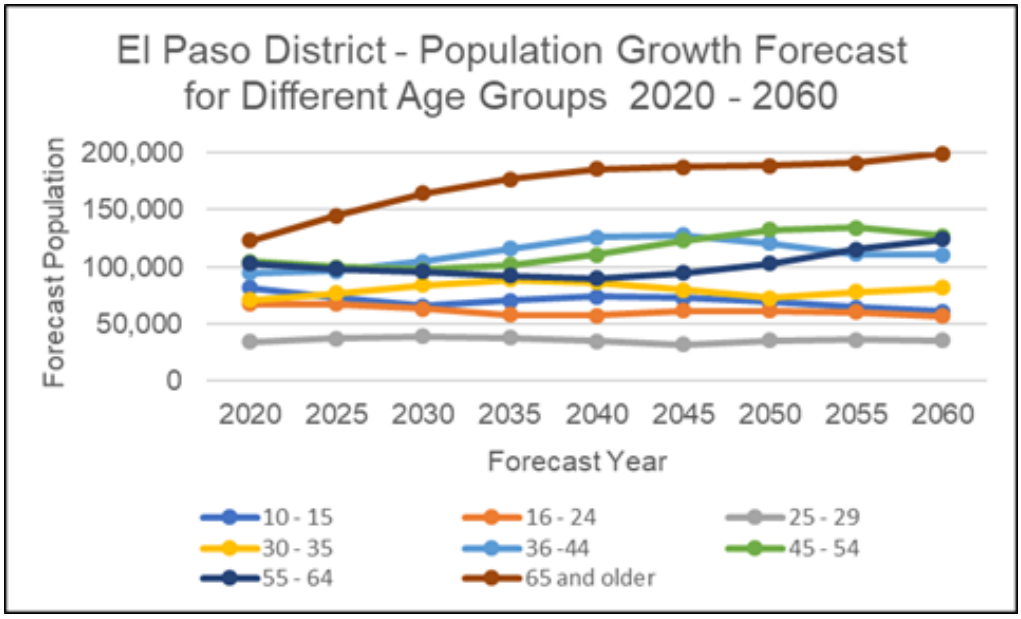


Figure 4.42. El Paso District – Population Growth Forecast for Different Age Groups, 2020 – 2060

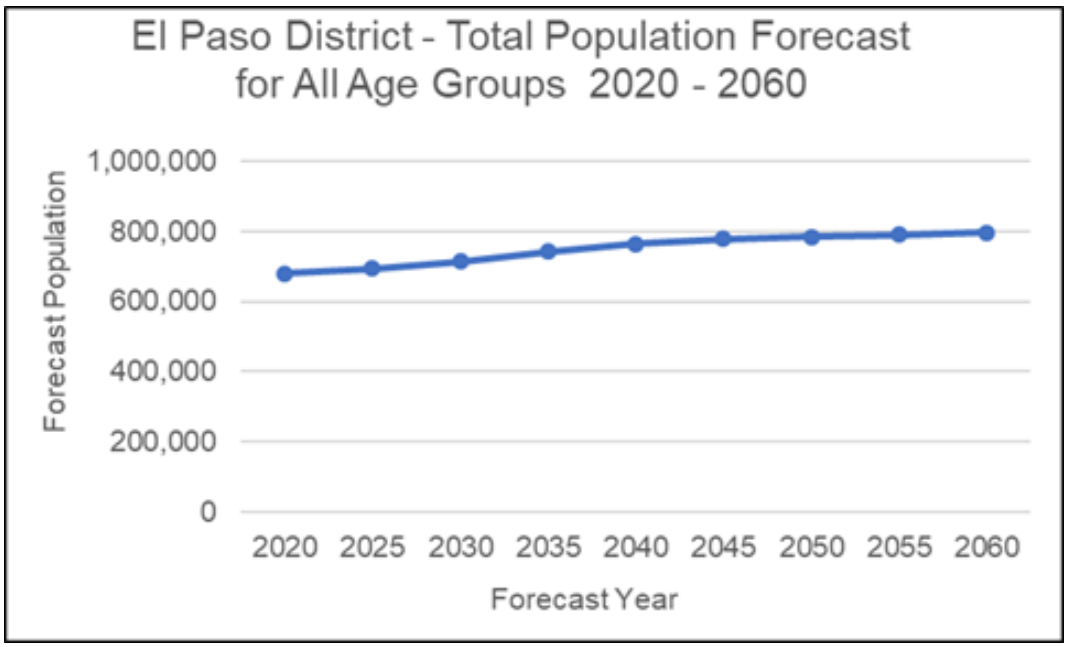


Figure 4.43. El Paso District – Total Population Forecast for All Age Groups, 2020 – 2060

Though the El Paso District shows significant growth in the 65+ age category, there is forecast to be approximately 100,000 persons in total population growth. In addition, the 16 – 24 and 25 – 29 age categories show decline or no change in population. This suggests little change in littering for the El Paso District based solely on population demographics.

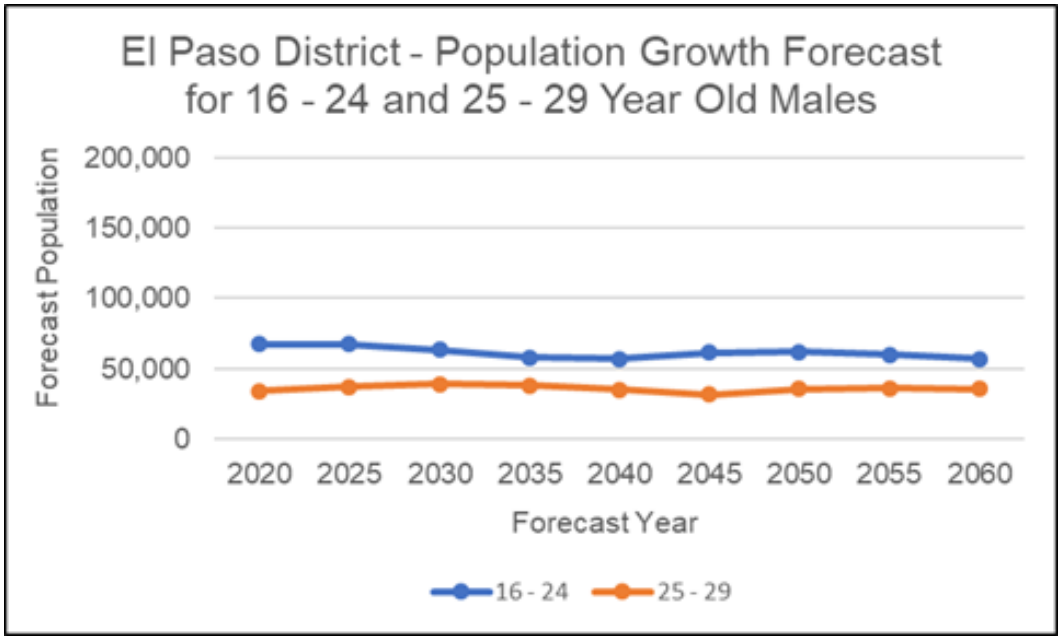


Figure 4.44. El Paso District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

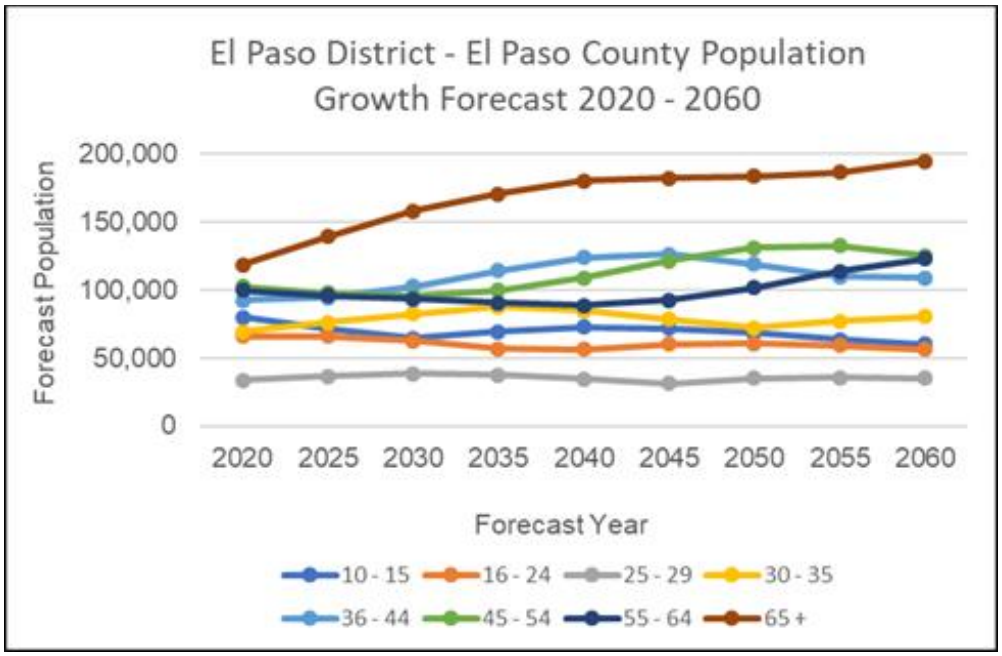


Figure 4.45. El Paso District – El Paso County Population Growth for Different Age Groups, 2020 – 2060

The variations in El Paso District's population for different age categories is more pronounced in almost every case compared to other Districts reviewed thus far. Though some categories show declines, others show growth or growth followed by declines. El Paso County, in particular, shows these variable trends which implies little change in littering in the long term.

4.1.12. Fort Worth District

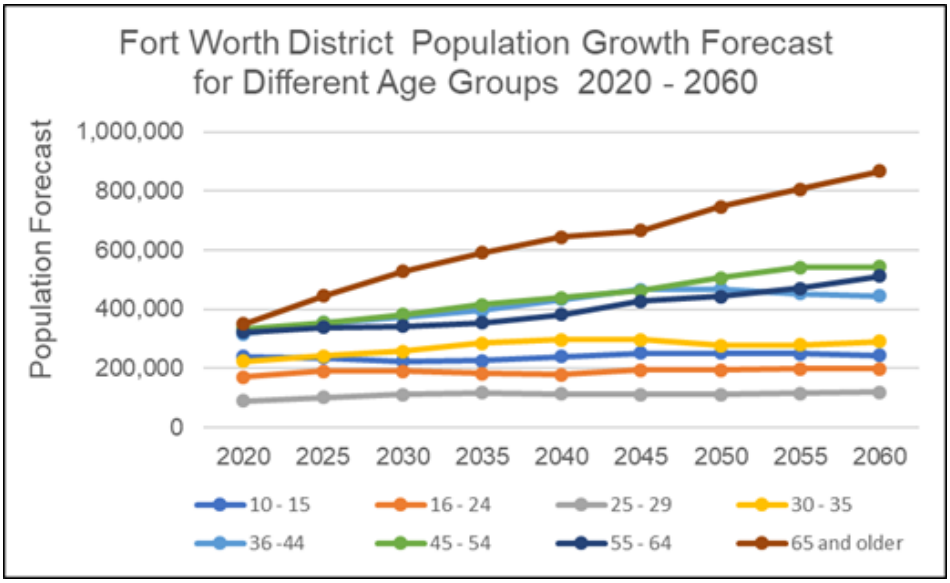


Figure 4.46. Fort Worth - District Population Growth Forecast for Different Age Groups, 2020 – 2060

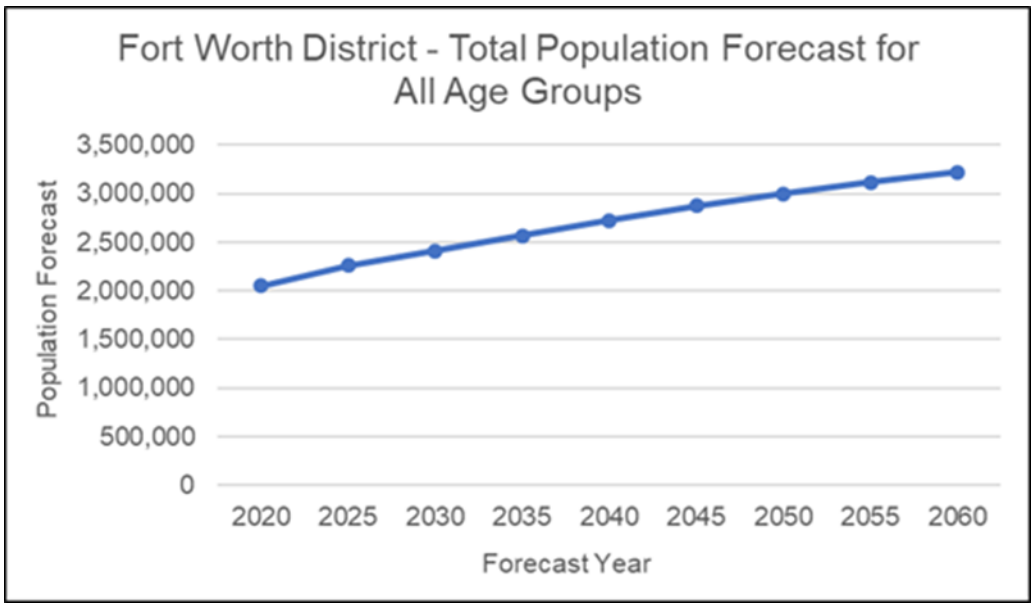


Figure 4.47. Fort Worth - Total Population Forecast for All Age Groups, 2020 – 2060

Fort Worth District (Figure 4.46) shows a slower increase in the 65+ age category from approximately 400,000 to 900,000 individuals over the 35-year period which is less than the Dallas District (Figure 4.38) but greater than the Austin District (Figure 4.14) which is approximately 740,000 people. The total District population increase is also slower with a total gain of approximately 1.2 million people.

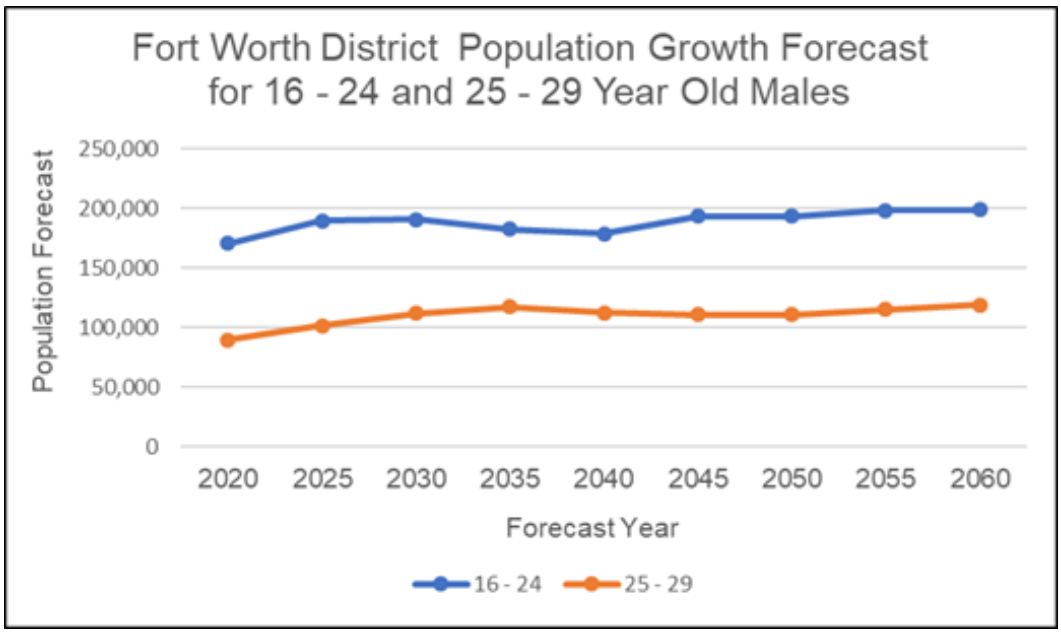


Figure 4.48. Fort Worth District - Population Growth Forecast for 16 - 24 and 25 -29-Year-Old Males, 2020 – 2060

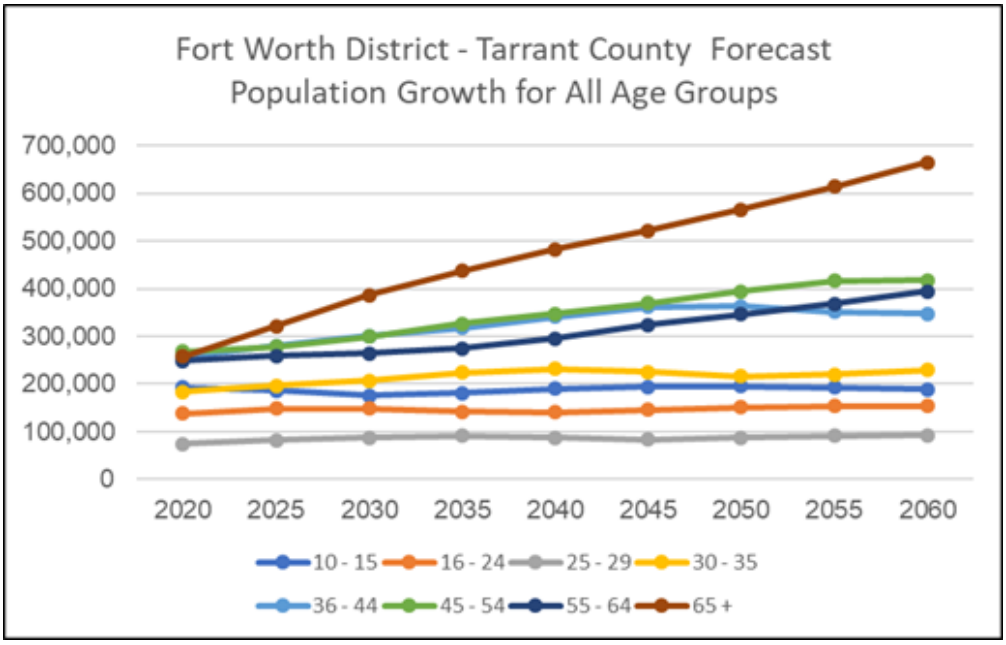


Figure 4.49. Fort Worth District - Tarrant County Population Growth for Different Age Groups, 2020 – 2060

Figure 4.48 shows that the 16 – 24 and 25 – 29-year-old male categories are forecast to increase little over the next 35 years. The Tarrant County growth rate forecast is similar to the District with larger increases in the 45 – 54 and 55 – 64 year old categories and no gain in the 36 – 44 age category.

4.1.13. Houston District

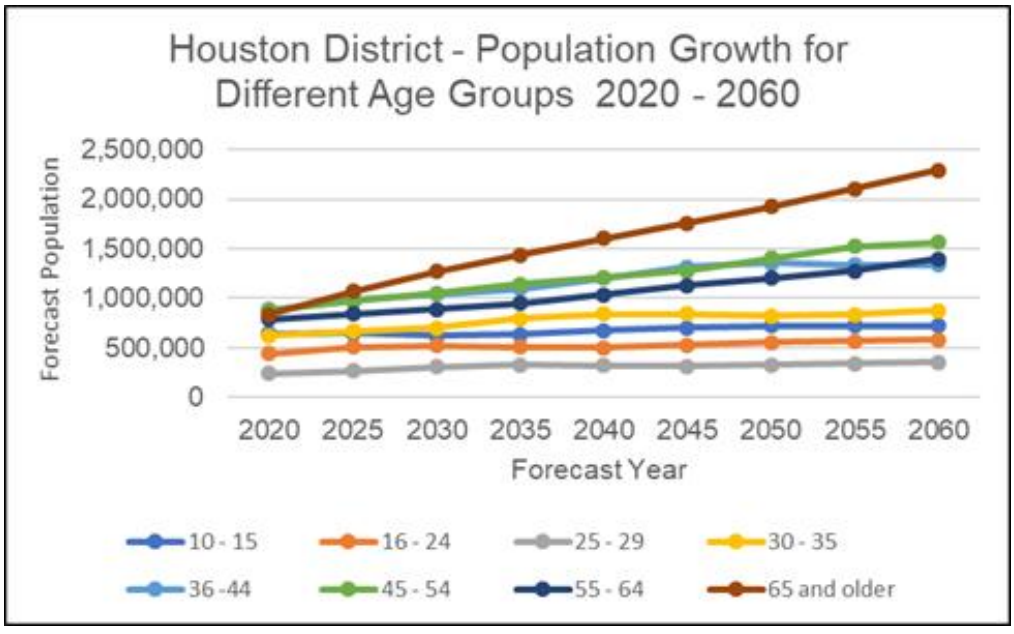


Figure 4.50. Houston District - Population Growth for Different Age Groups, 2020 – 2060

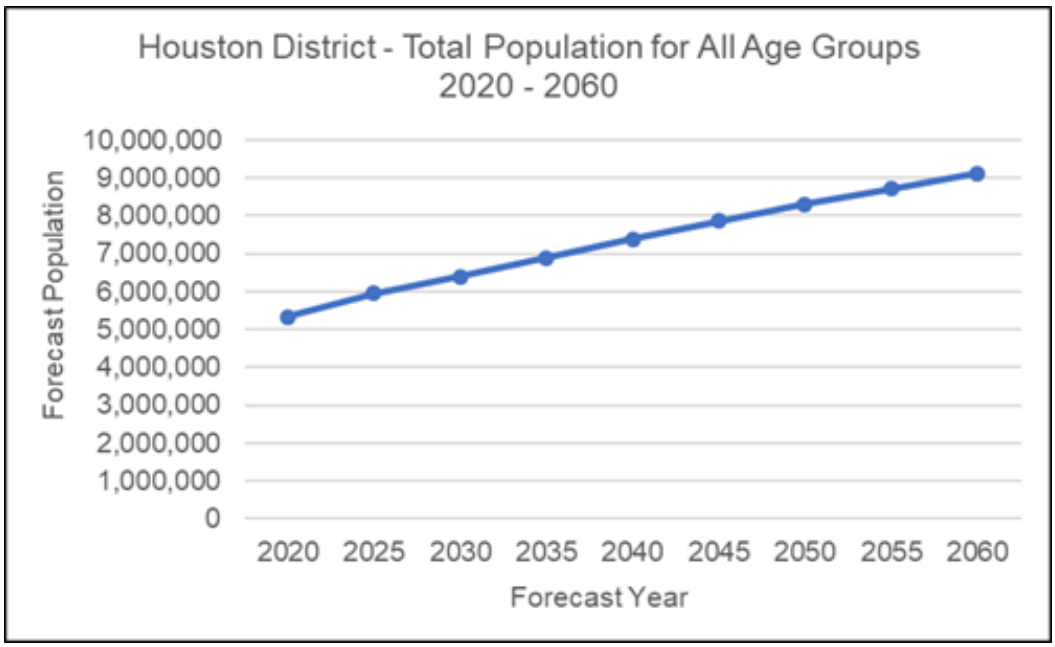


Figure 4.51. Houston District - Total Population Forecast for All Age Groups, 2020 – 2060

Figures 4.50 shows that the Houston District 65+ age group will significantly increase between 2020 to 2060, reaching approximately 22% of the population by 2060. The total Houston District population is forecast to significantly increase over this timeframe, as shown in Figure 4.51.

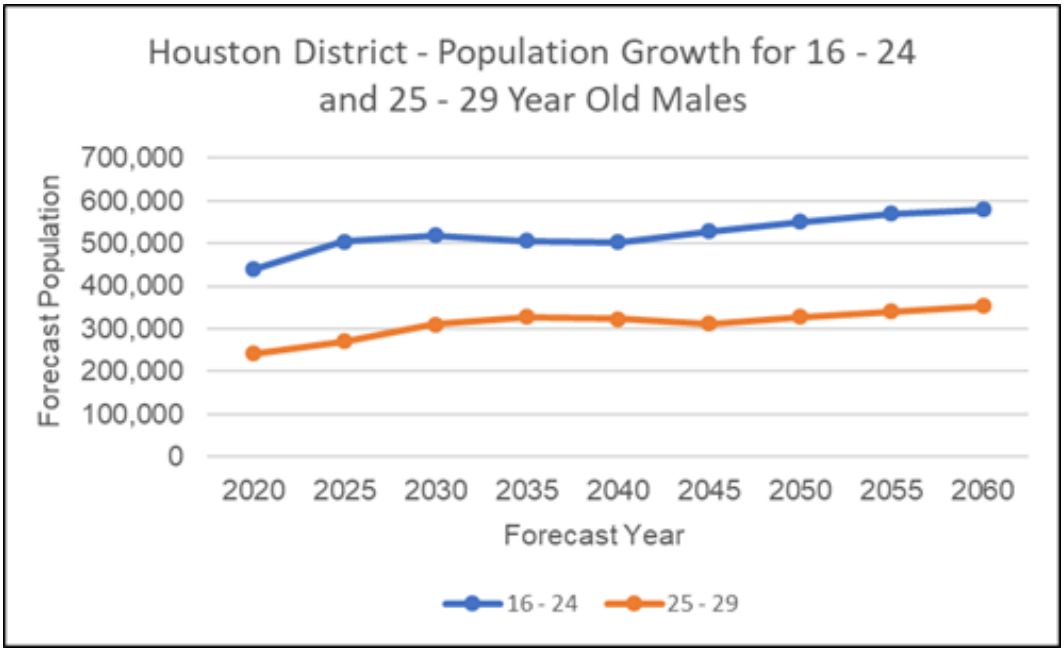


Figure 4.52. Houston District Population Forecast for 16 - 24 and 25 - 29-Year-Old Males, 2020 – 2060

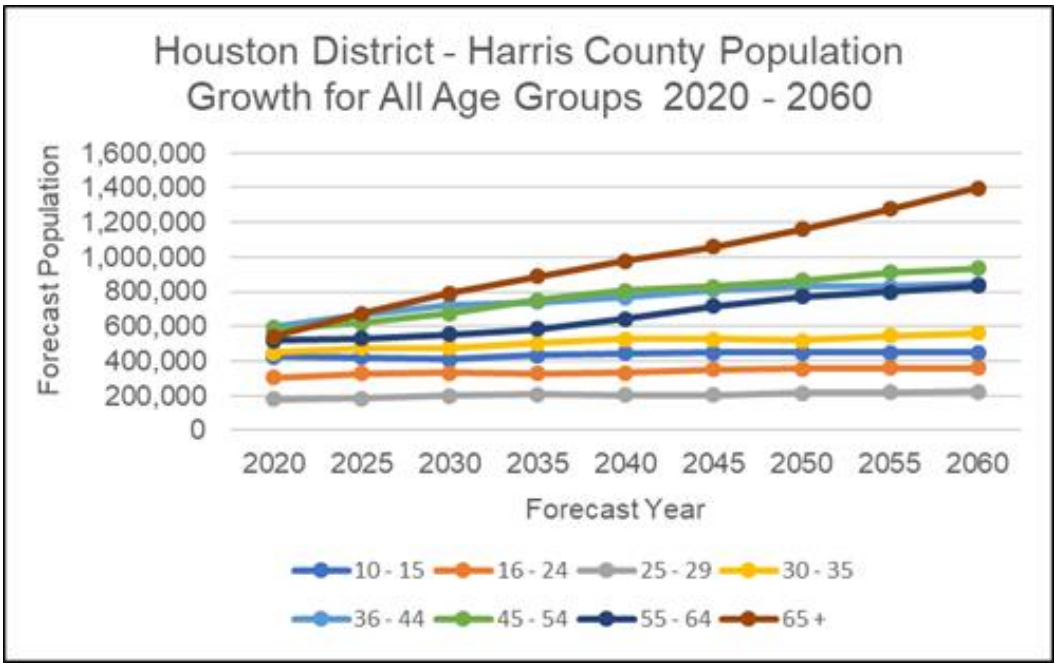


Figure 4.53. Houston District - Harris County Population Growth for Different Age Groups, 2020 – 2060

Figure 4.52 shows that the 16 – 24-year-old male category is forecast to increase by over 140,000 individuals and the 25 – 29-year-old male category is forecast to increase by approximately 110,000 individuals.

4.1.14. Laredo District

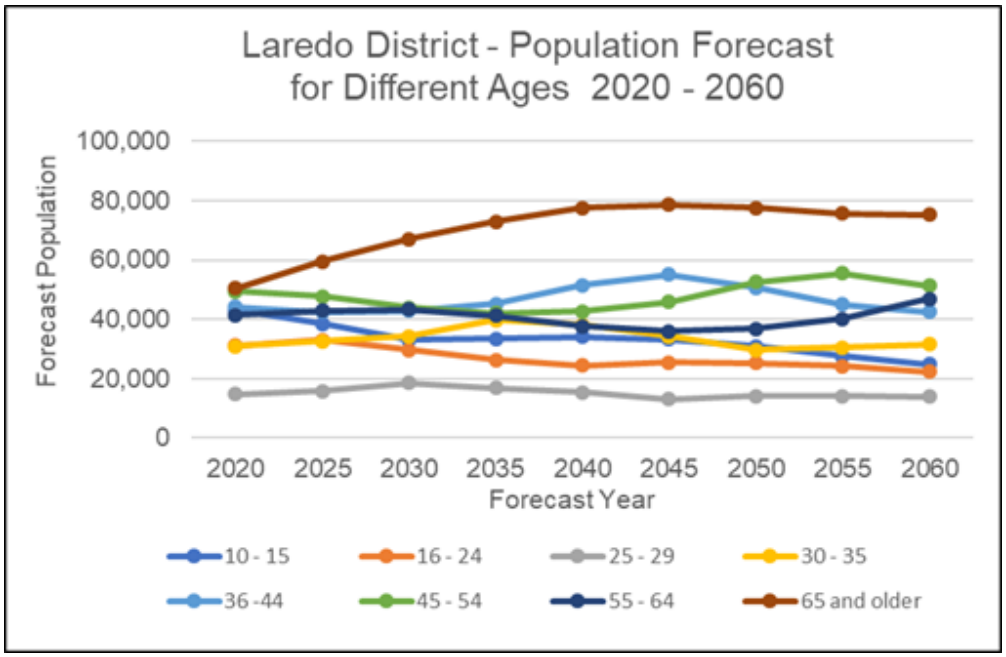


Figure 4.54. Laredo District – Population Growth Forecast for Different Age Groups, 2020 – 2060

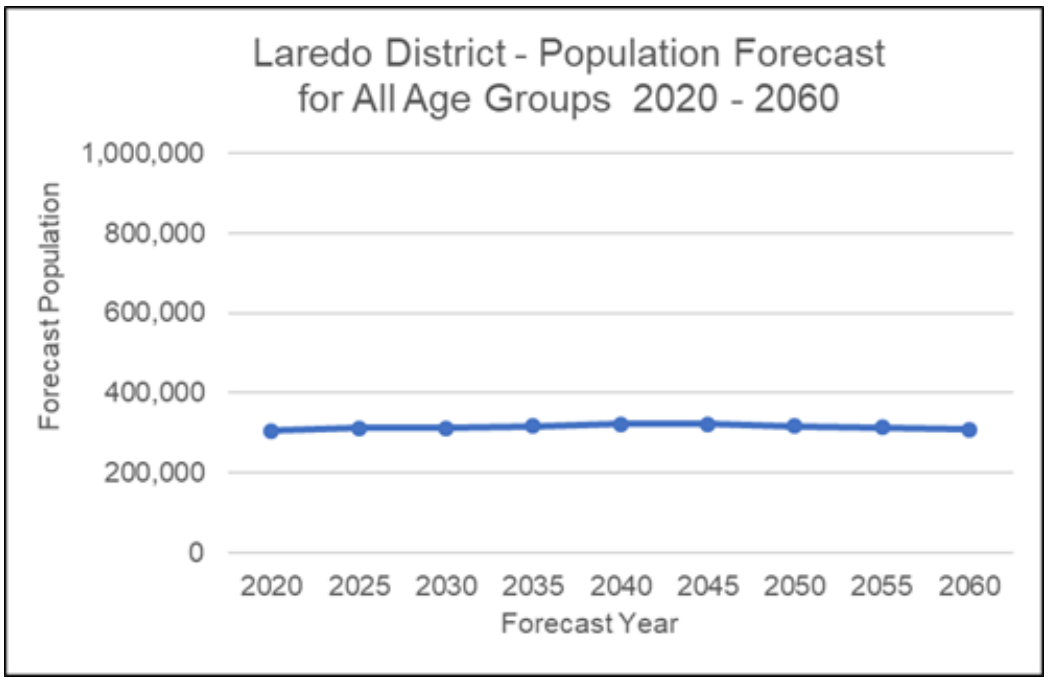


Figure 4.55. Laredo District – Total Population Forecast for All Age Groups, 2020 – 2060

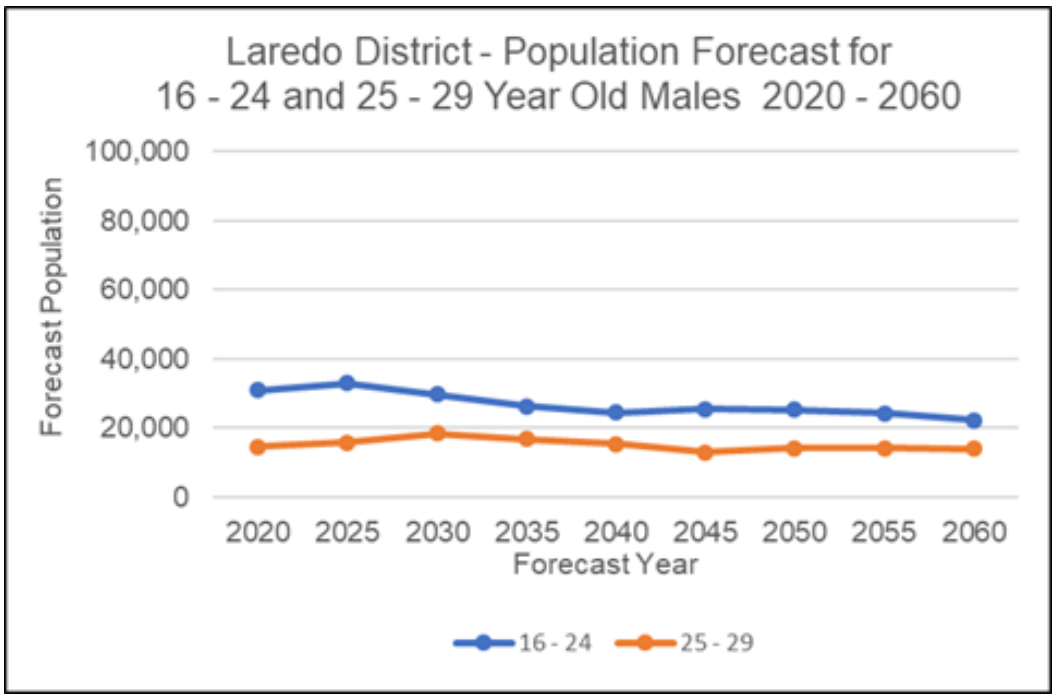


Figure 4.56. Laredo District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

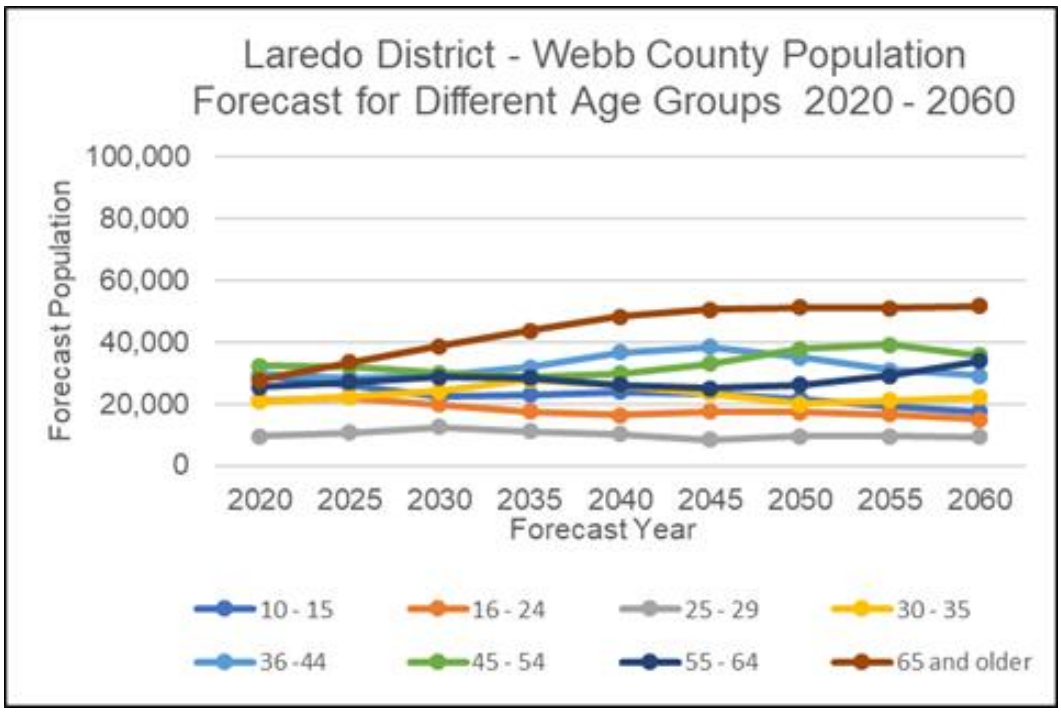


Figure 4.57. Laredo District – Webb County Population Forecast for Different Age Groups, 2020 – 2060

4.1.15. Lubbock District

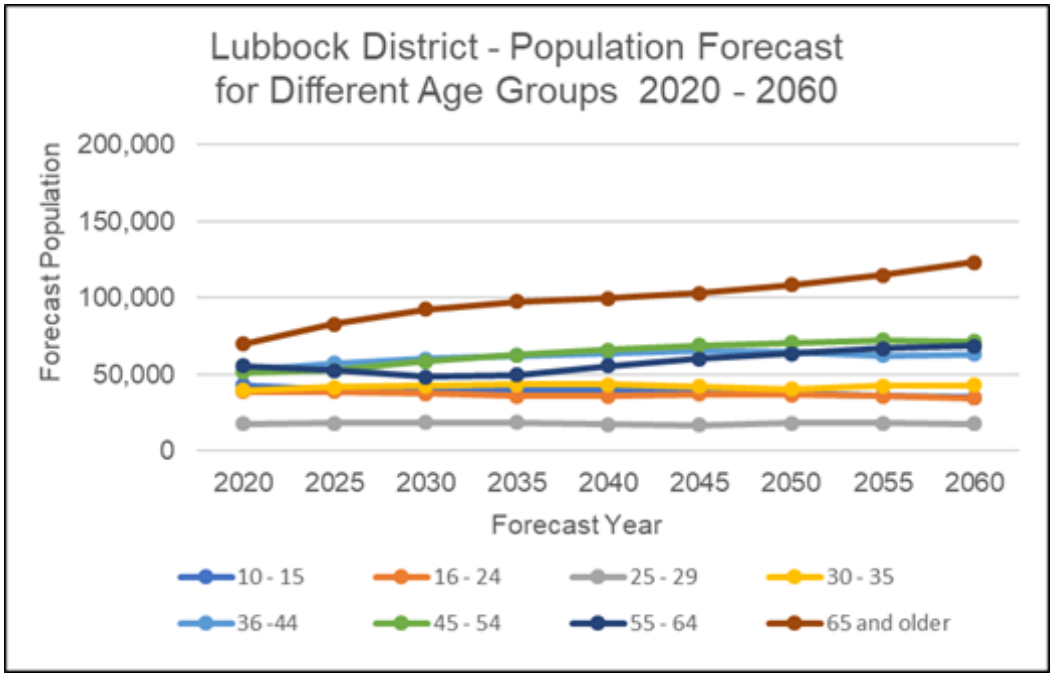


Figure 4.58. Lubbock District – Population Growth Forecast for Different Age Groups, 2020 – 2060

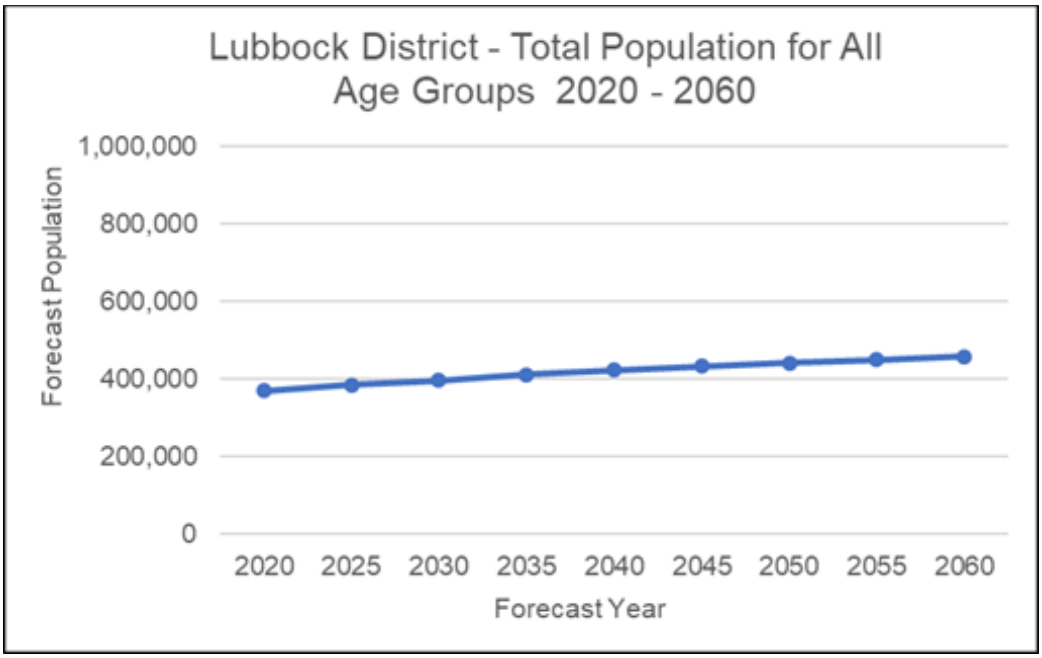


Figure 4.59. Lubbock District – Total Population Forecast for All Age Groups, 2020 – 2060

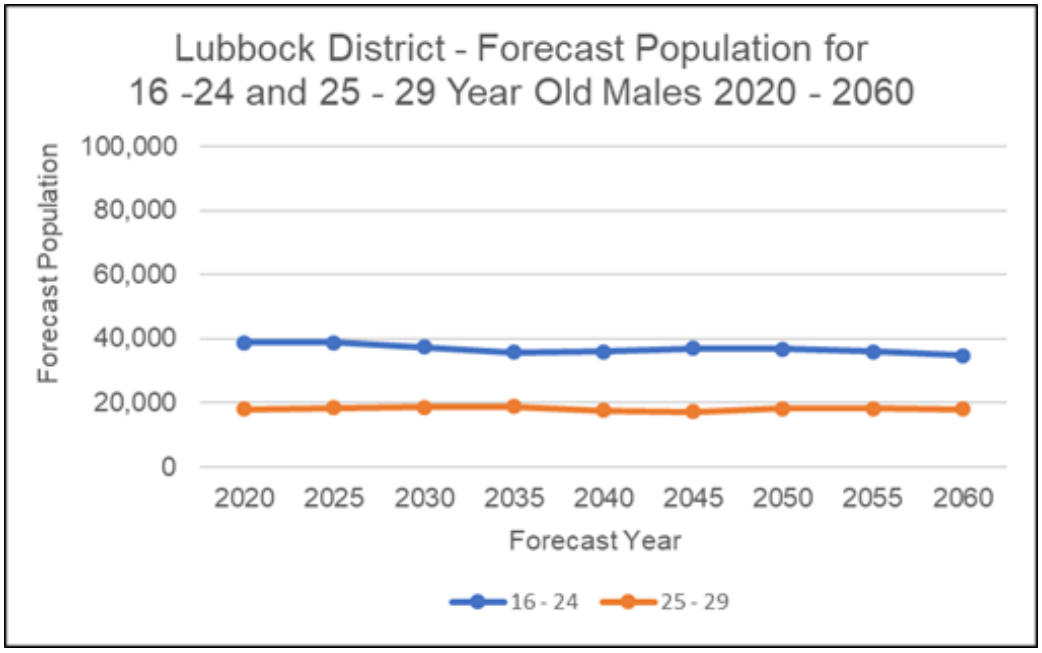


Figure 4.60. Lubbock District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

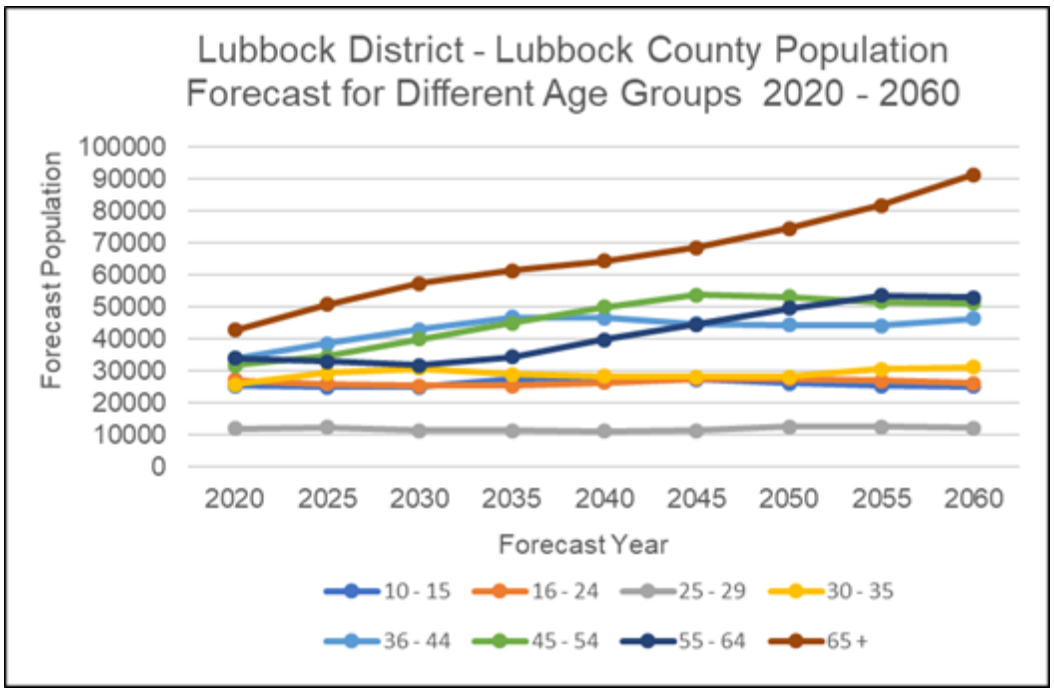


Figure 4.61. Lubbock District – Lubbock County Population Forecast for Different Age Groups, 2020 – 2060

4.1.16. Lufkin District

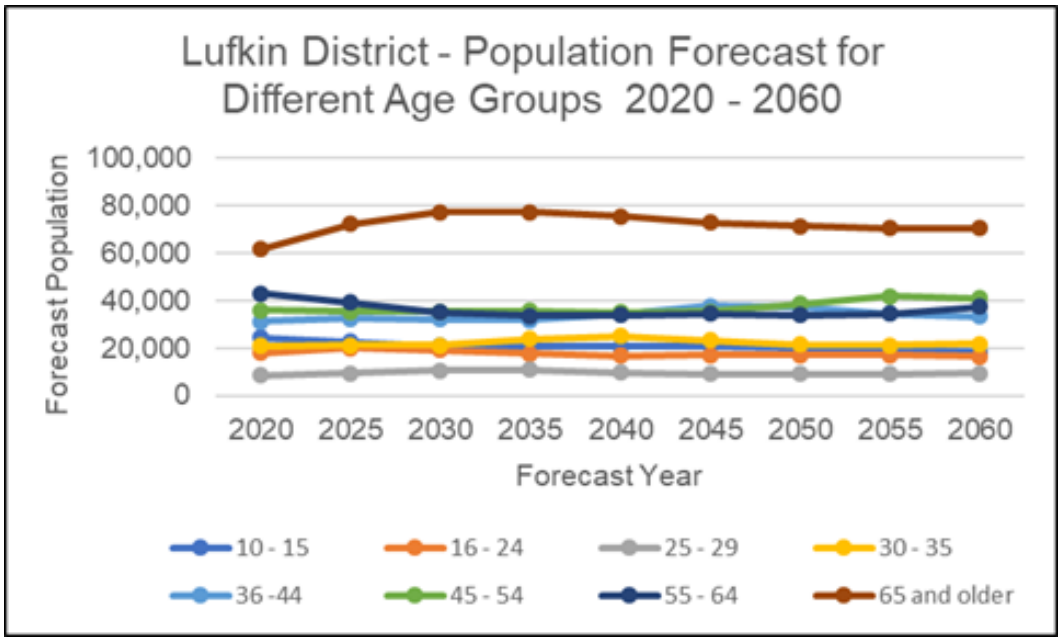


Figure 4.62. Lufkin District – Population Growth Forecast for Different Age Groups, 2020 – 2060

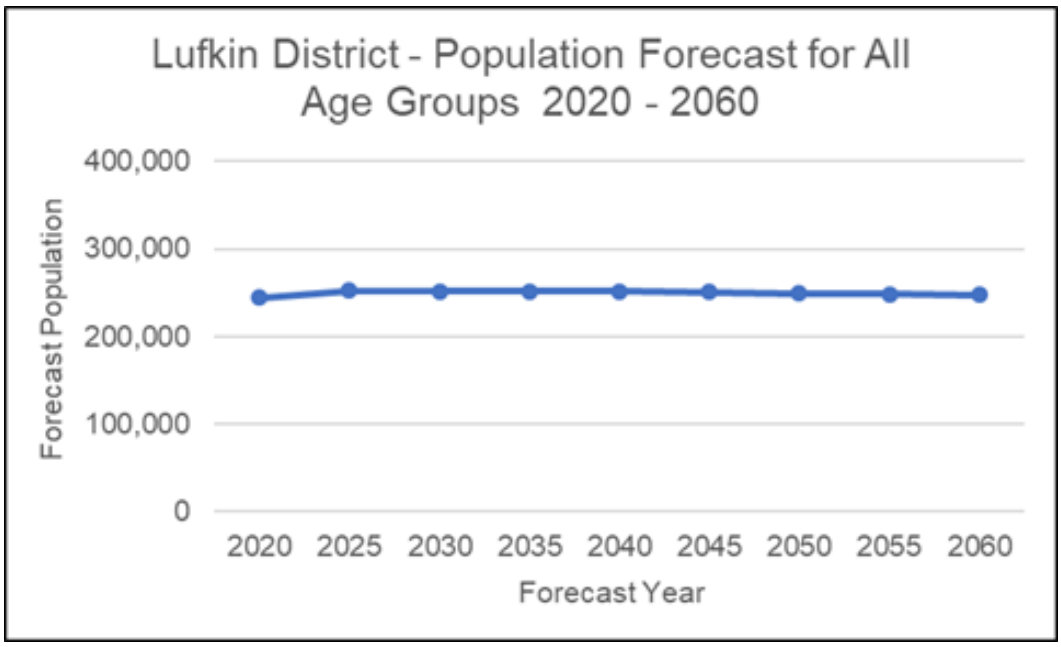


Figure 4.63. Lufkin District – Total Population Forecast for All Age Groups, 2020 – 2060

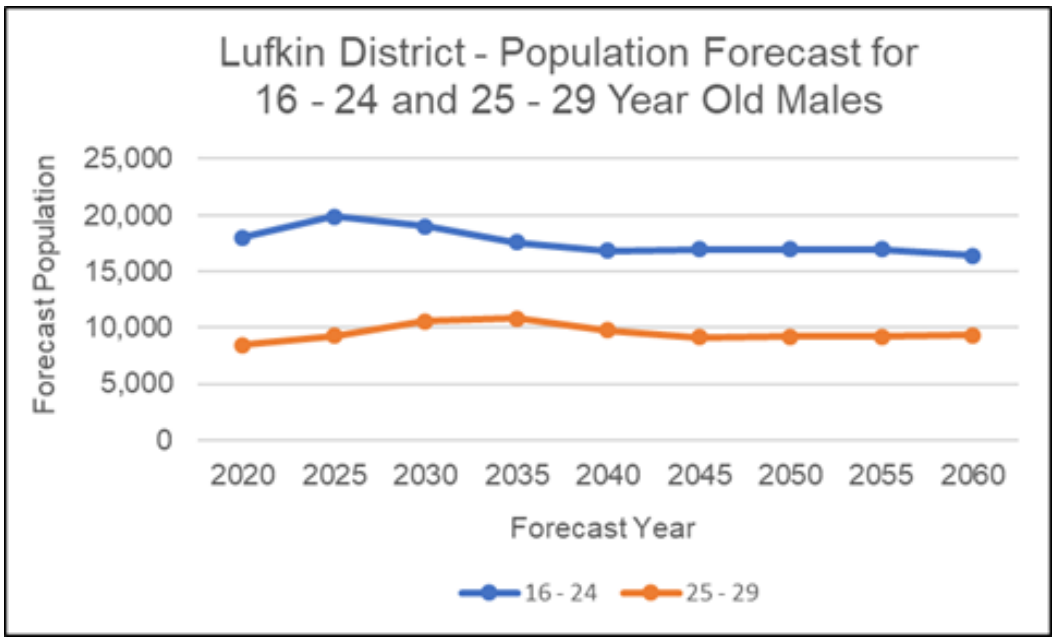


Figure 4.64. Lufkin District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

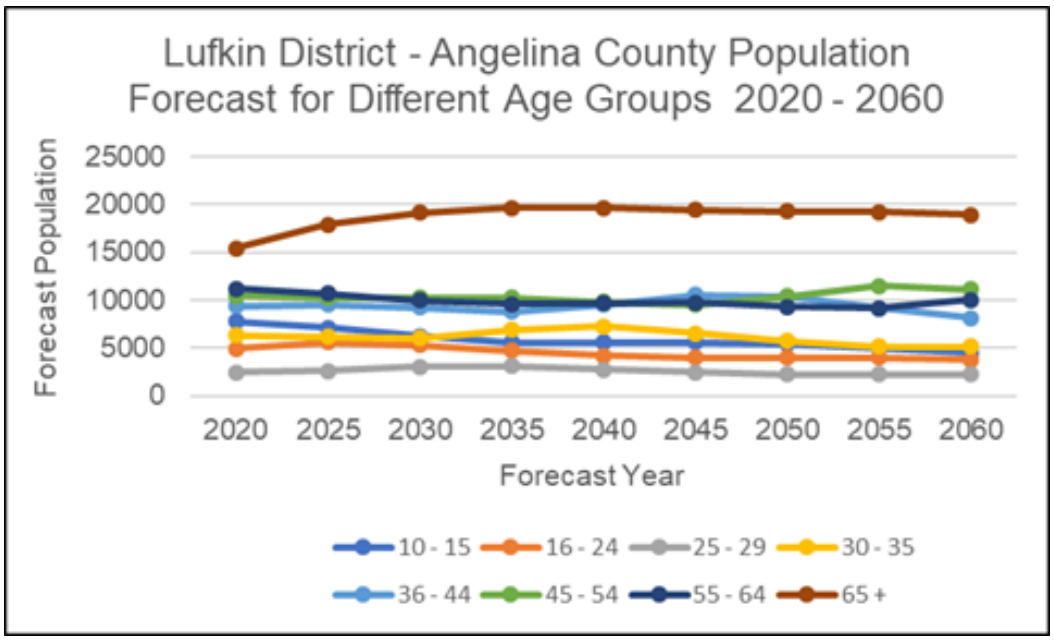


Figure 4.65. Lufkin District – Angelina County Population Forecast for Different Age Groups, 2020 – 2060

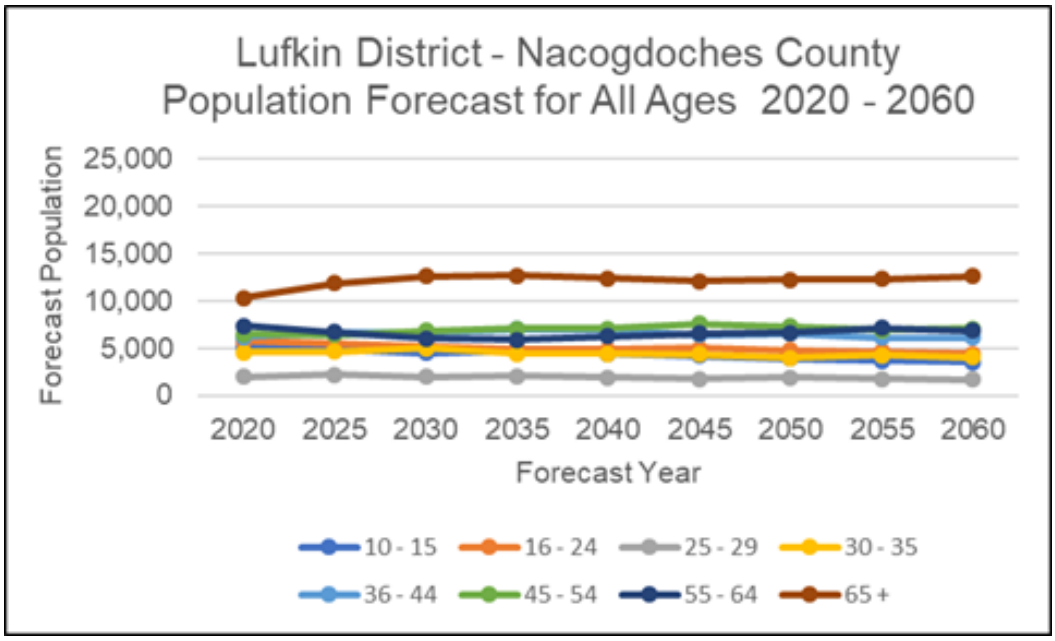


Figure 4.66. Lufkin District – Nacogdoches County Population Forecast for Different Age Groups, 2020 – 2060

Lufkin District shows little population growth over the next 35 years. There is a small decline in the 16 – 24-year-old male population and a small increase in the 25 – 29-year-old male population. The 65+ age group is forecast to increase initially and then flatten out in population growth in both Angelina and Nacogdoches Counties.

4.1.17. Odessa District

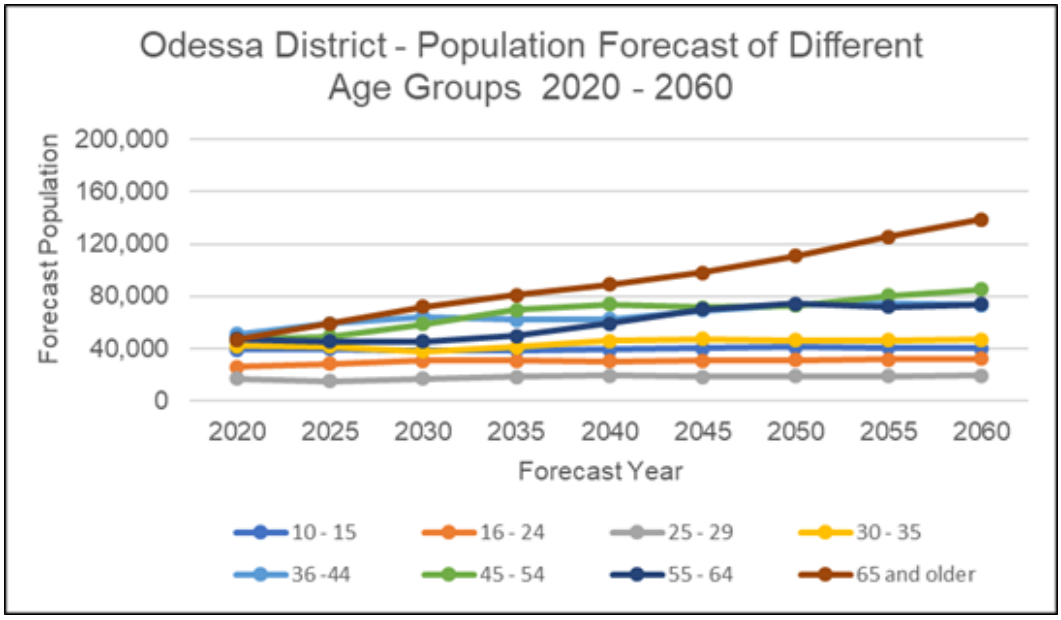


Figure 4.67. Odessa District – Population Growth Forecast for Different Age Groups, 2020 – 2060

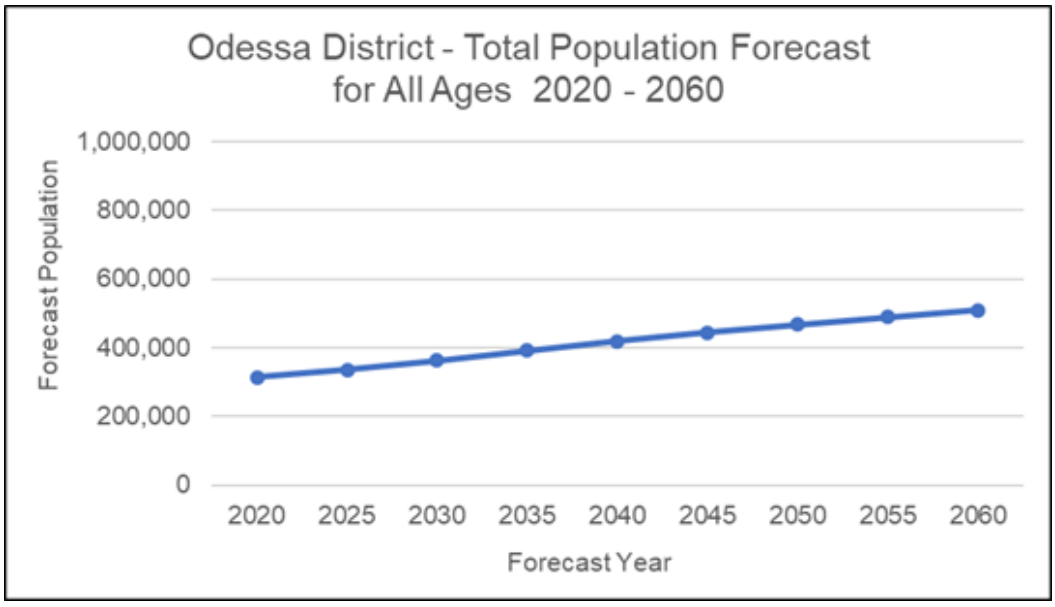


Figure 4.68. Odessa District – Total Population Forecast for All Age Groups, 2020 – 2060

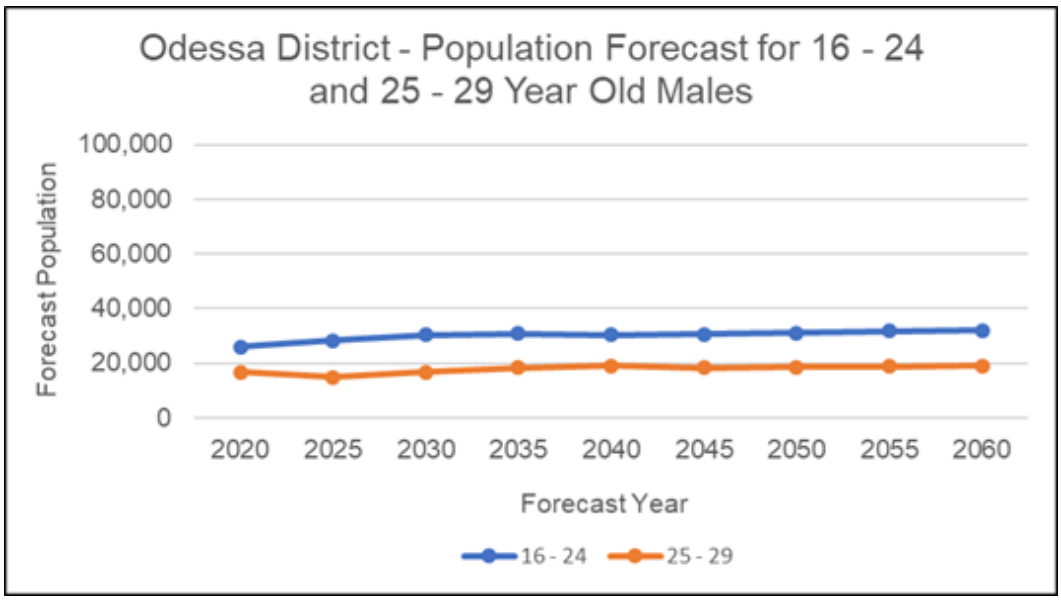


Figure 4.69. Odessa District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

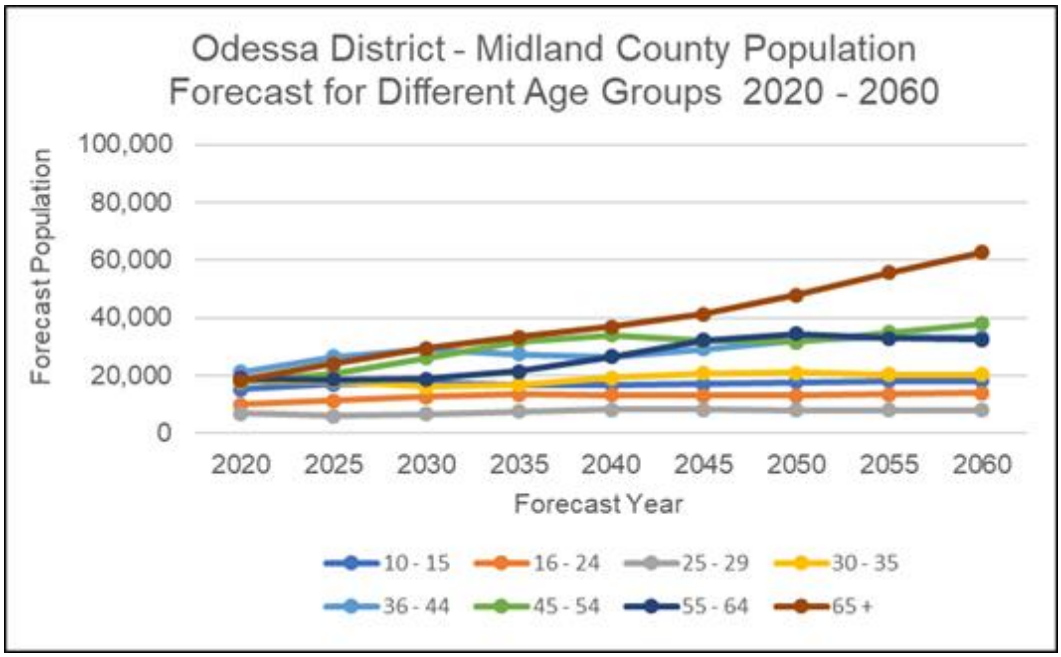


Figure 4.70. Odessa District – Midland County Population Forecast for Different Age Groups, 2020 – 2060

The forecast population increase of 16 – 24 and 25 – 29-year-old males will remain relatively flat over the next 35 years. The forecast population of the mature workforce and 65+ individuals will be the fastest growing population segments. Overall, the total population of the age groups considered in this analysis are projected to increase by approximately 200,000 individuals.

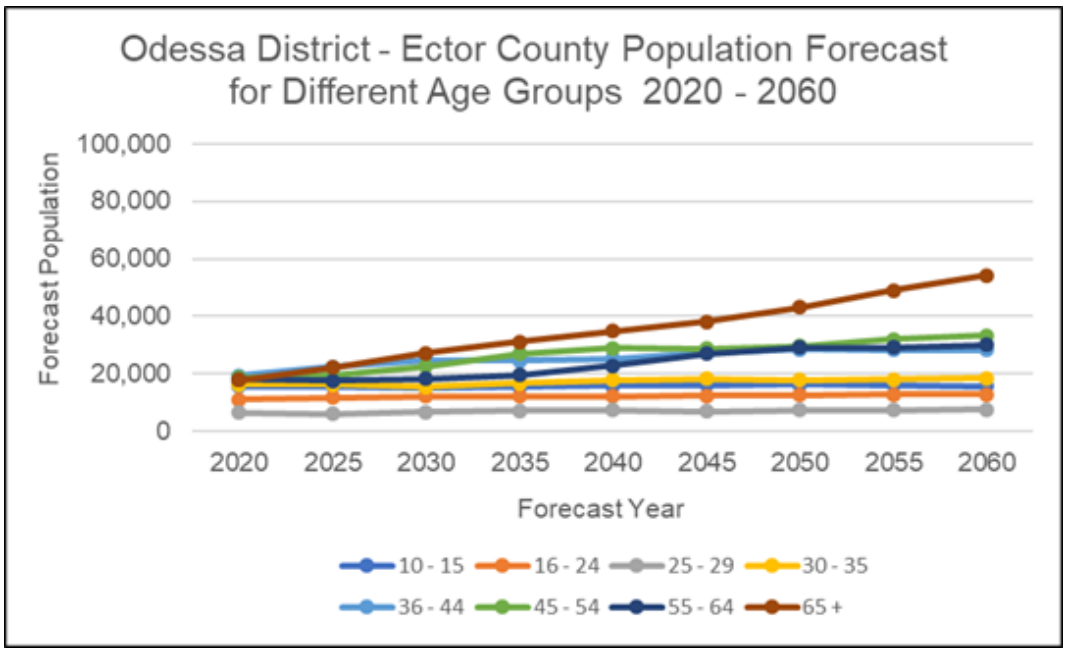


Figure 4.71. Odessa District – Ector County Population Forecast for Different Age Groups, 2020 – 2060

4.1.18. Paris District

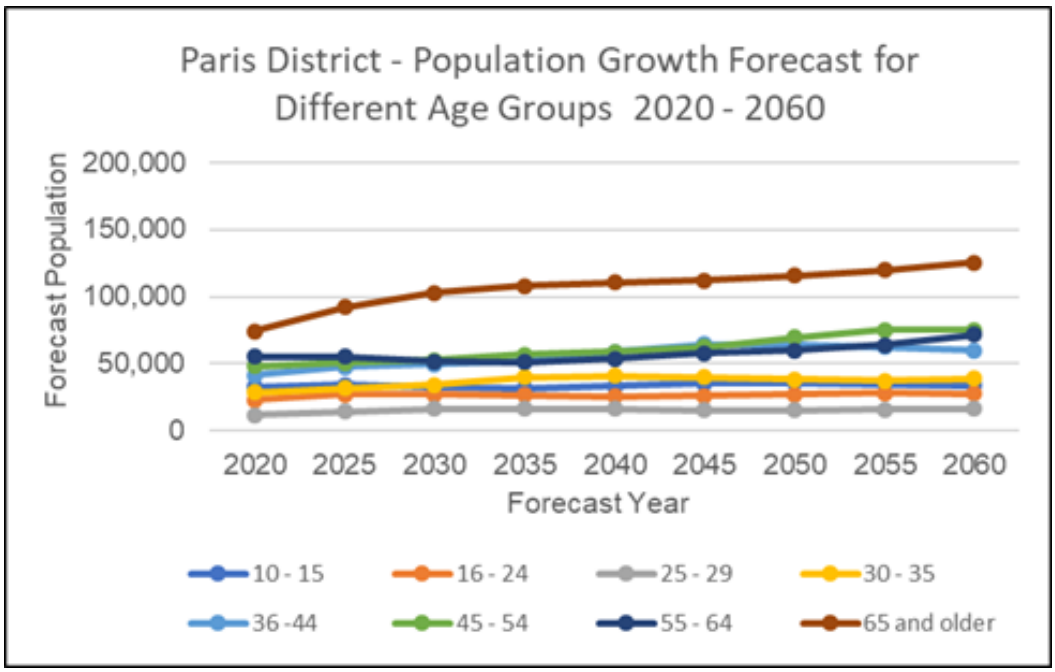


Figure 4.72. Paris District – Population Growth Forecast for Different Age Groups, 2020 – 2060

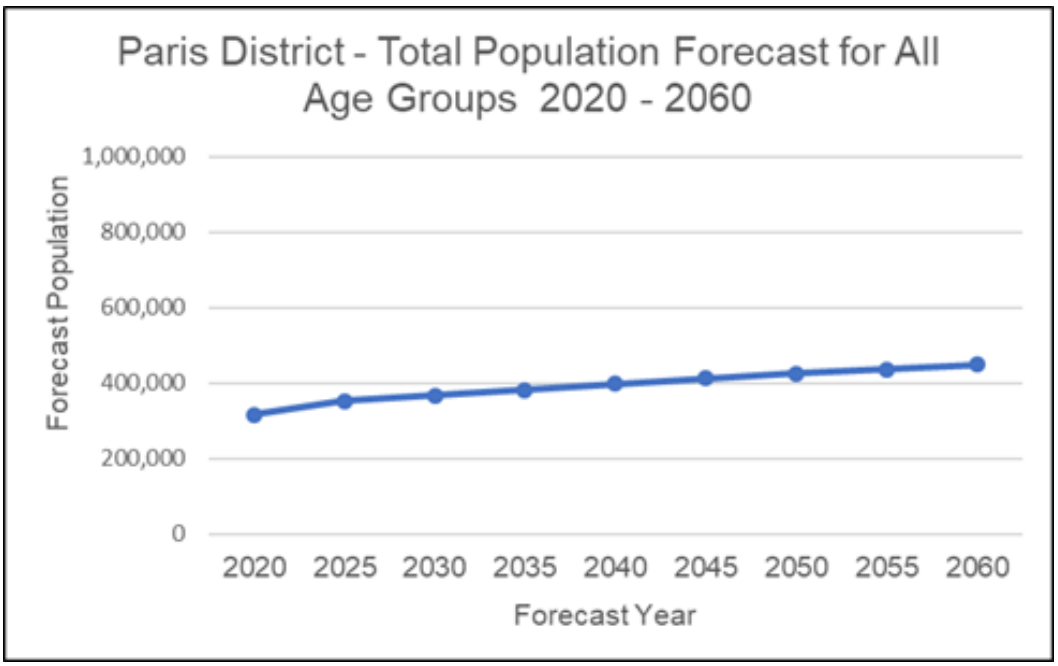


Figure 4.73. Paris District – Total Population Forecast for All Age Groups, 2020 – 2060

Paris District is somewhat similar to Beaumont District (Figure 4.19) in terms of modest overall population growth with increases in the 65+ age category and nearly flat growth in the 16 – 24 and 25 – 29-year-old male categories. As with Beaumont District some other age categories show variable growth trends including short term growth followed by decreases.

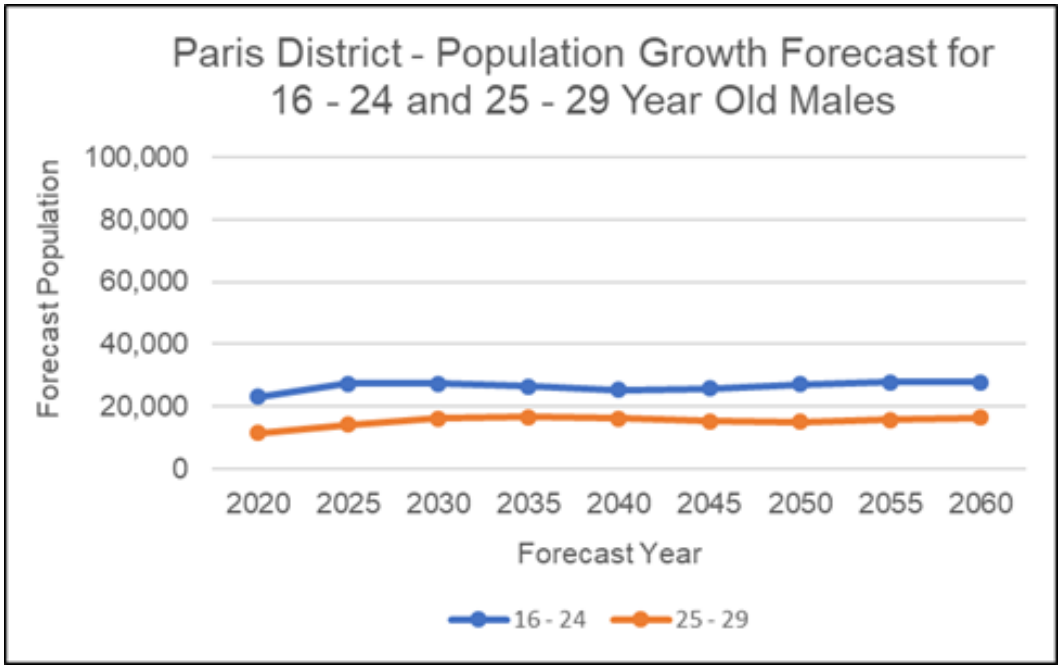


Figure 4.74. Paris District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

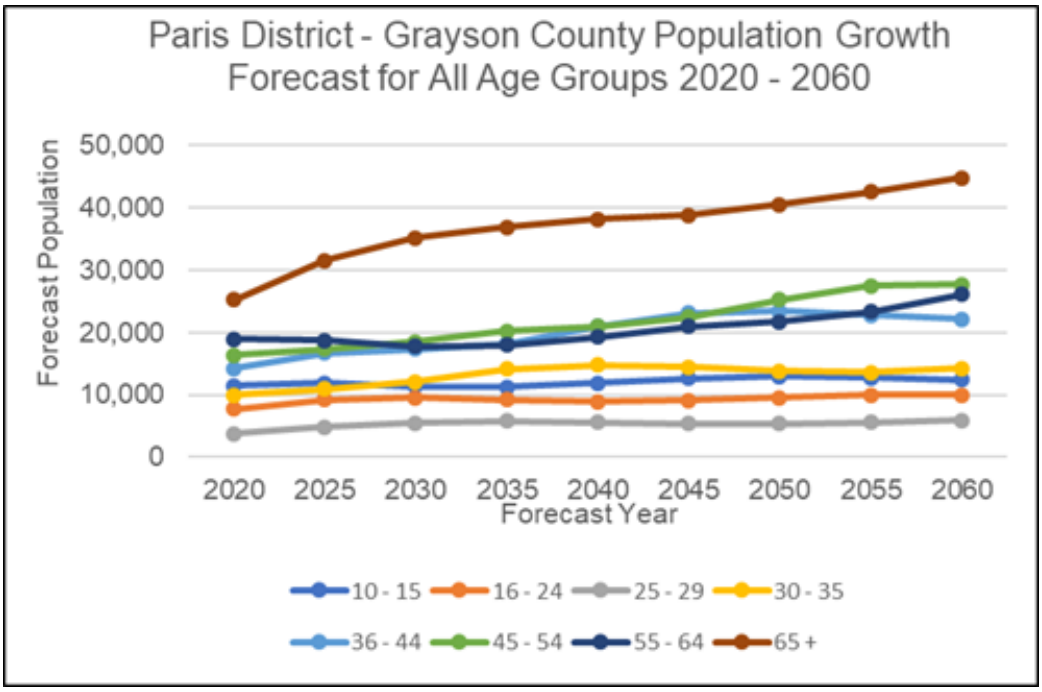


Figure 4.75. Paris District – Grayson County Population Forecast for Different Age Groups, 2020 – 2060

4.1.19. Pharr District

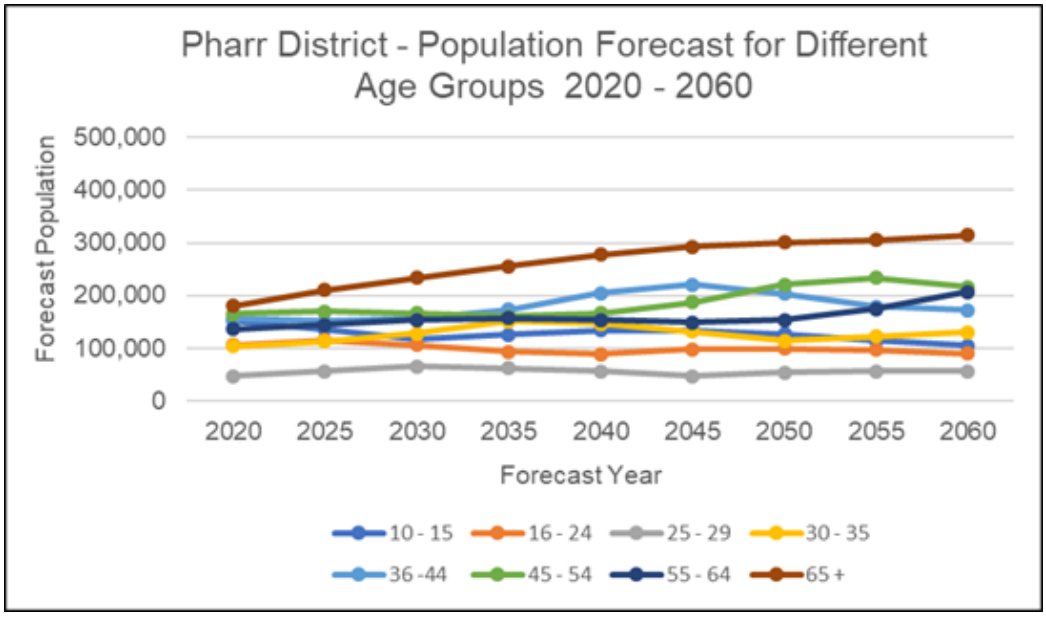


Figure 4.76. Pharr District – Population Growth Forecast for Different Age Groups, 2020 – 2060

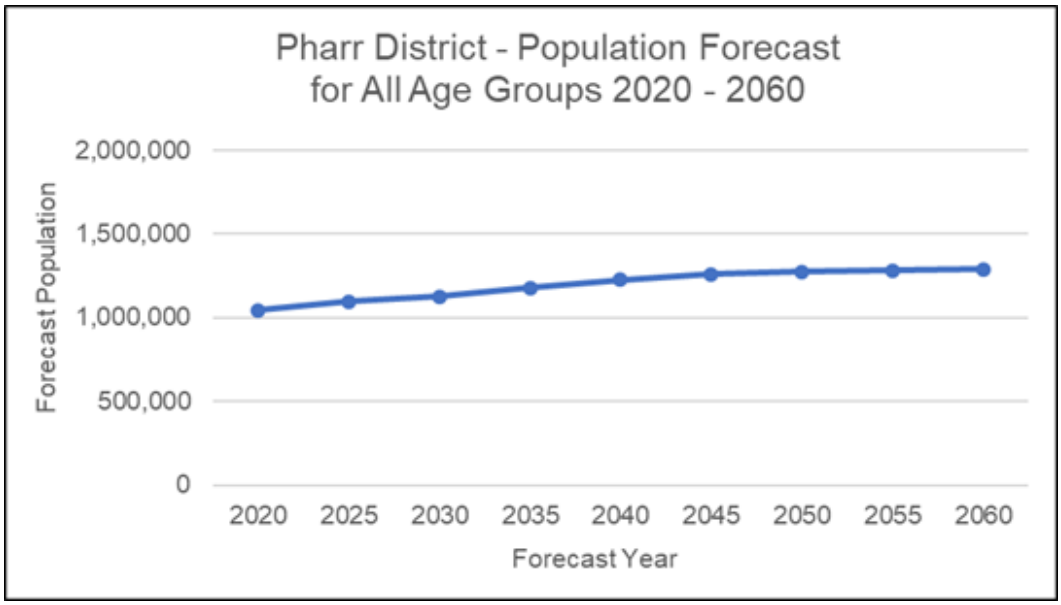


Figure 4.77. Pharr District – Total Population Forecast for All Age Groups, 2020 – 2060

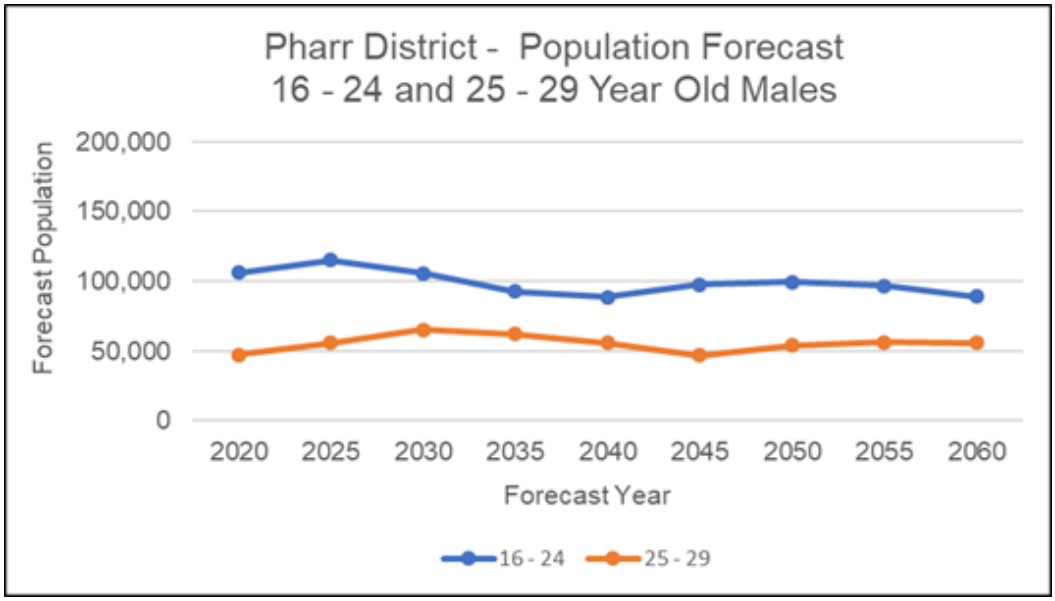


Figure 4.78. Pharr District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

The 16 – 24 and 25 – 29 male population is forecast to decrease or remain nearly flat in terms of growth. The forecast total population is projected to increase by approximately 250,000 individuals with possible increases in the 36 – 44-year-old and mature workforces and the 65+ age group.

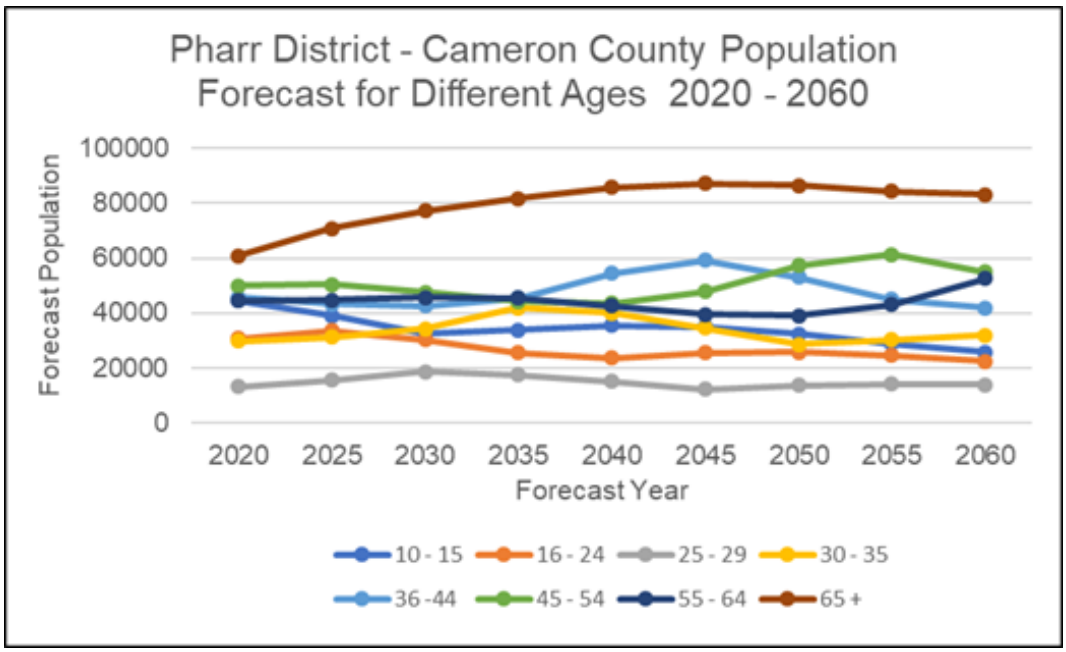


Figure 4.79. Pharr District – Cameron County Population Forecast for Different Age Groups, 2020 – 2060

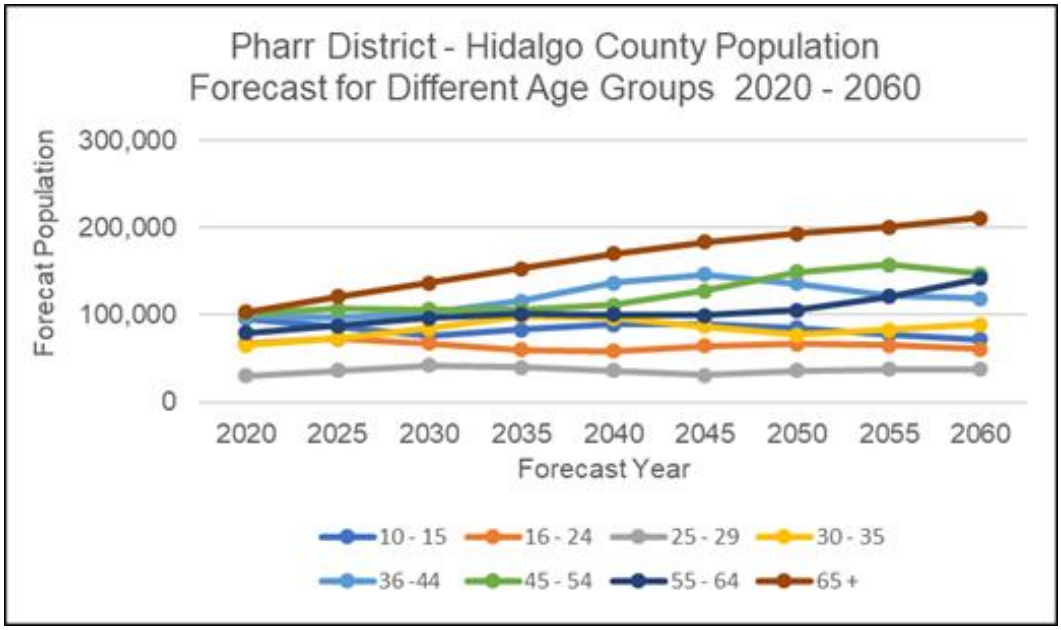


Figure 4.80. Pharr District – Hidalgo County Population Forecast for Different Age Groups, 2020 – 2060

The population forecasts in Cameron County (Figure 4.79) fluctuate more, showing increases and decreases over the 35-year period compared to Hidalgo County (Figure 4.80). Hidalgo County forecast population increase surpass Cameron County with the 65+ age group more than twice as large in Hidalgo County. The workforce populations are forecast to increase especially in the last half of the analysis period.

4.1.20. San Angelo District

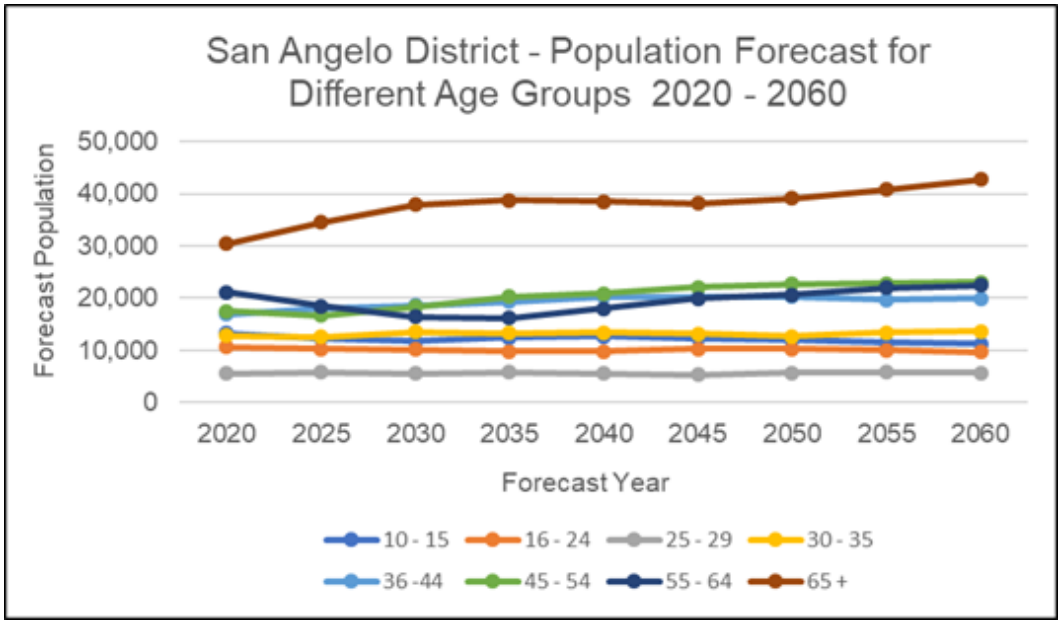


Figure 4.81. San Angelo District – Population Growth Forecast for Different Age Groups, 2020 – 2060

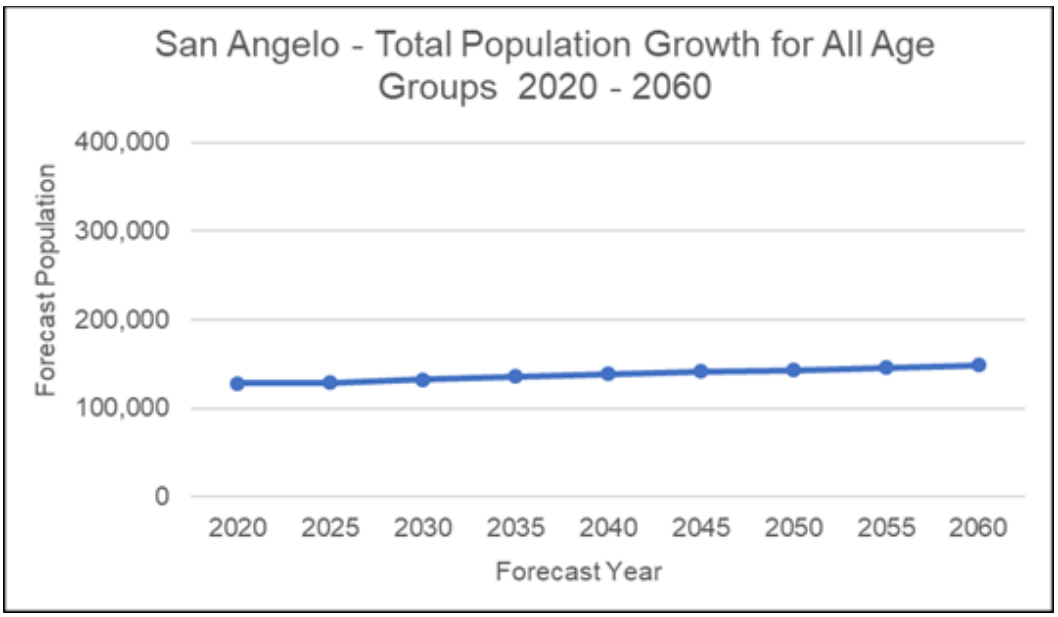


Figure 4.82. San Angelo District – Total Population Forecast for All Age Groups, 2020 – 2060

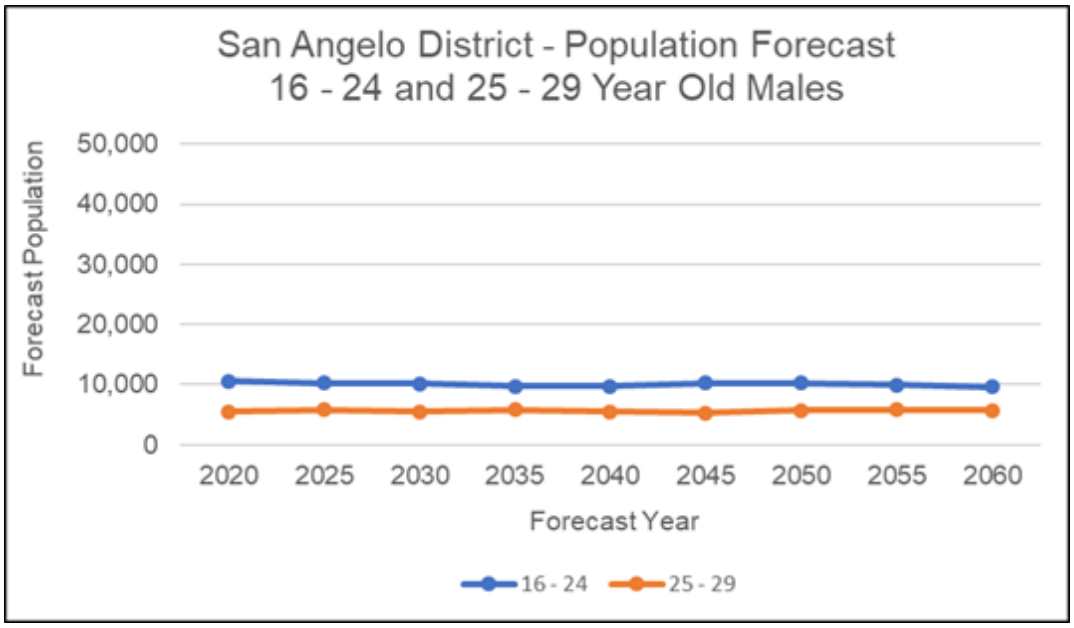


Figure 4.83. San Angelo District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

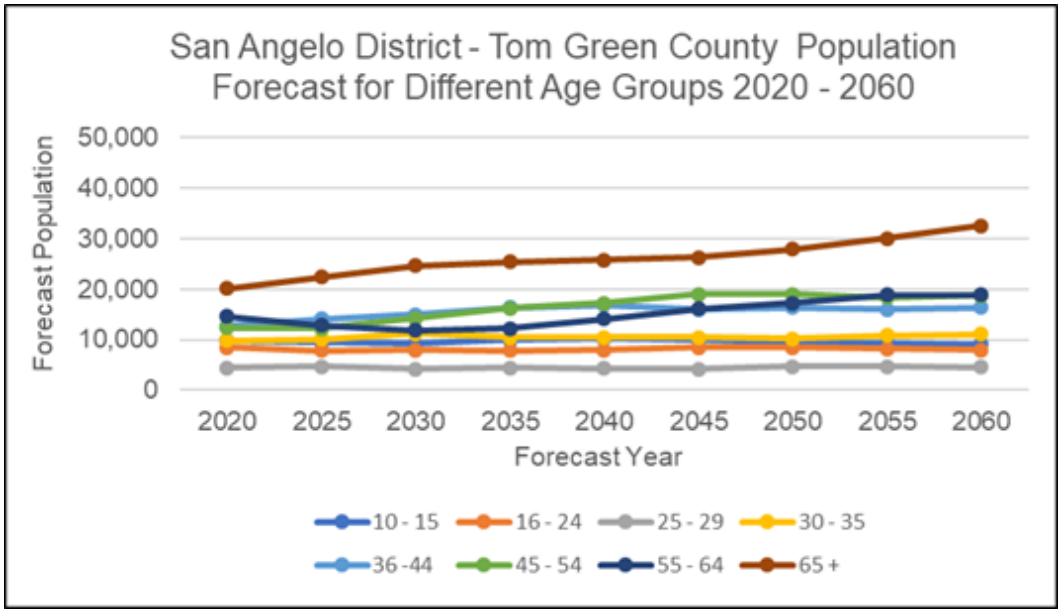


Figure 4.84. San Angelo District – Tom Green County Population Forecast for Different Age Groups, 2020 – 2060

Forecast population growth for the San Angelo District is relatively flat as is the 16 – 24 and 25 – 29-year-old male forecast populations. The fastest growing segment is the 65+ age group, which is forecast to increase by over 50%. The workforce and mature workforce age groups are forecast to make small gains in population.

4.1.21. San Antonio District

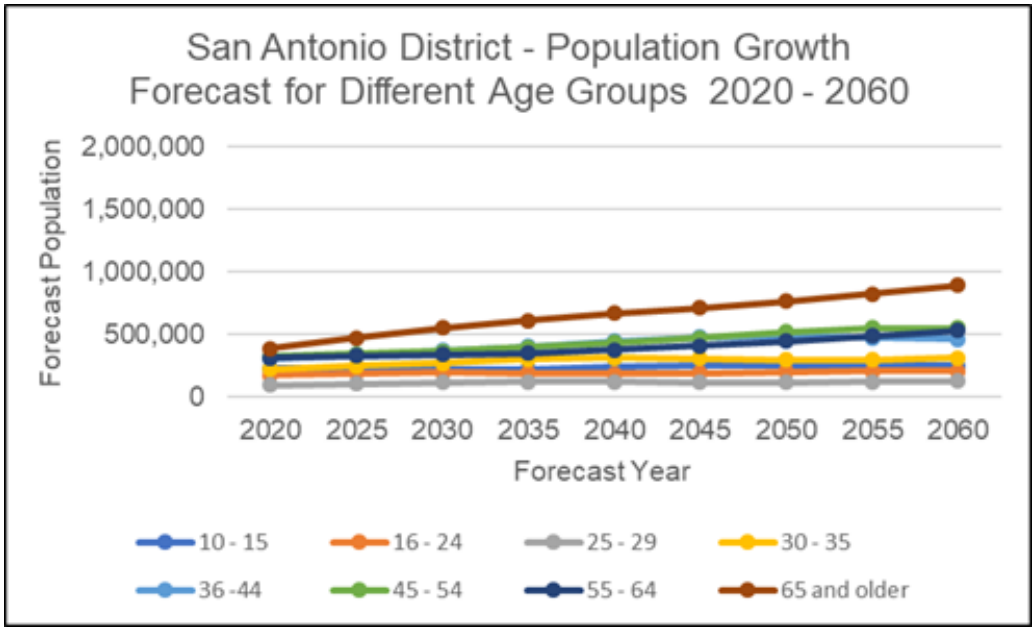


Figure 4.85. San Antonio District Population Growth Forecast for Different Age Groups, 2020 – 2060

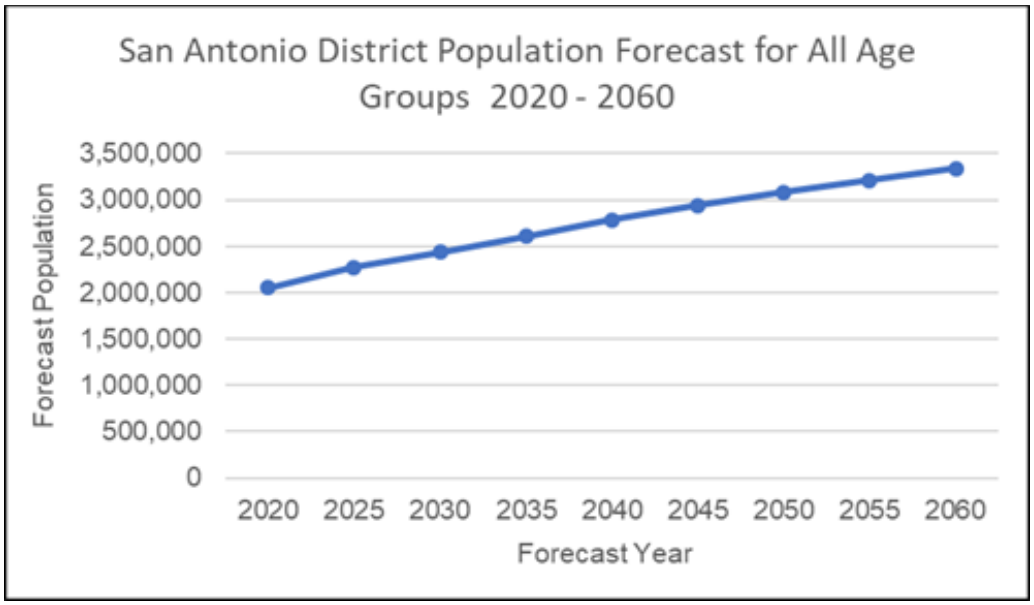


Figure 4.86. San Antonio District Total Population Forecast for All Age Groups, 2020 – 2060

San Antonio District forecast growth rates are similar to Fort Worth District (Figure 4.47) especially regarding the total population increase. Figure 4.85 shows a modest increase in the 65+ age category and other age categories. Figure 4.86 shows that about 1.4 million people is forecast to be added to the district population.

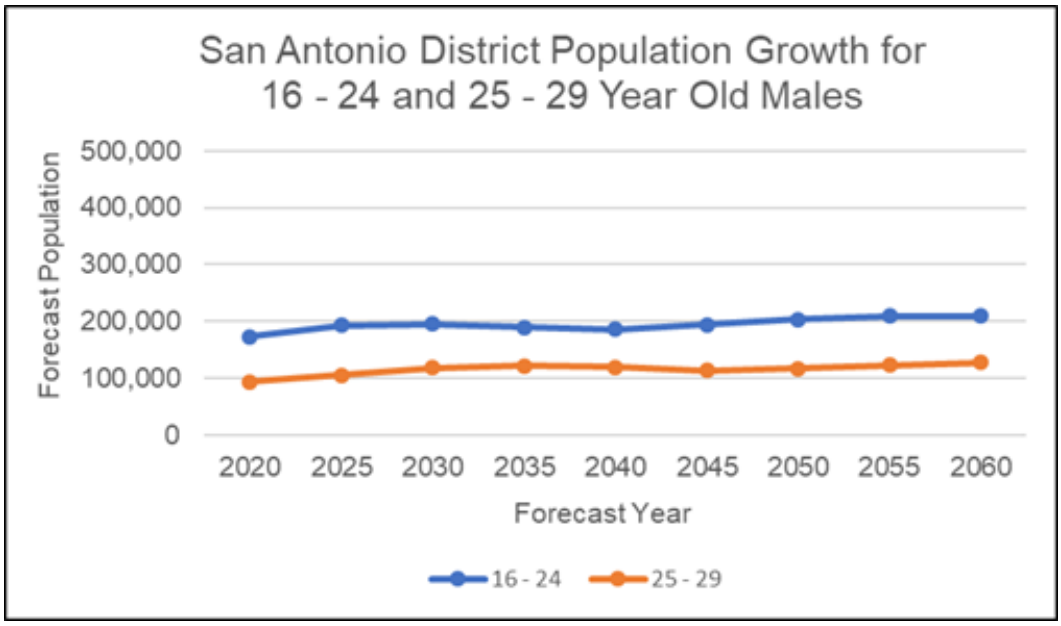


Figure 4.87. San Antonio District Population Growth for 16 - 24 and 25 - 29-Year-Old Males, 2020 – 2060

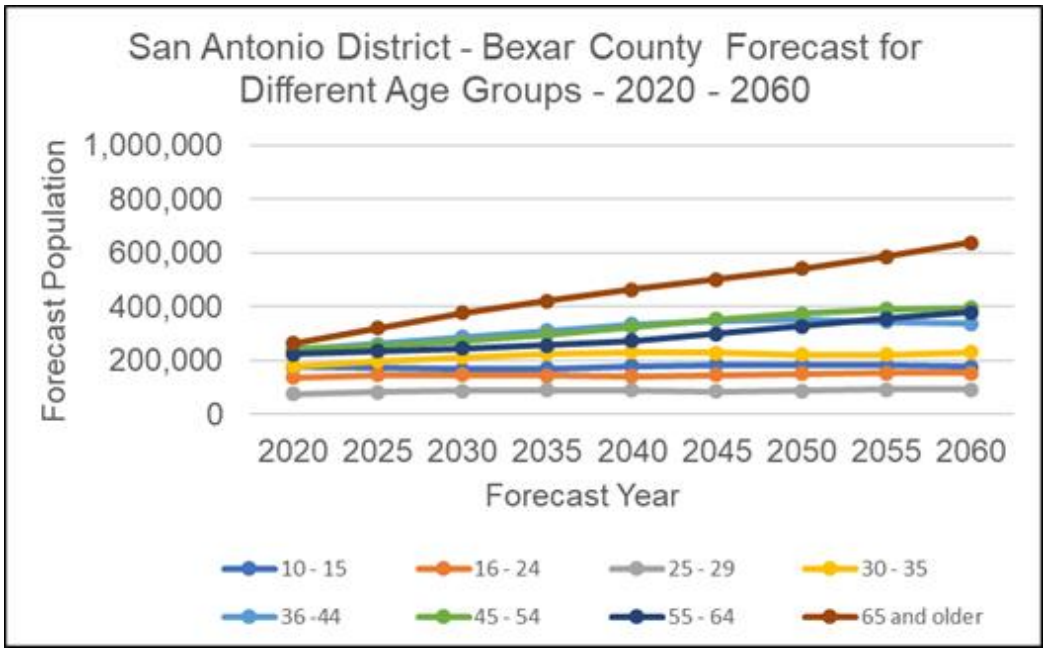


Figure 4.88. San Antonio District - Bexar County Population Growth for Different Age Groups, 2020 – 2060

Figure 4.88 shows forecast increases in the 30 – 44-year-old workforce and 45 – 54-year-old mature workforce in Bexar County. The 65+ population is forecast to increase at the fastest rate with other age categories showing little change in comparison.

4.1.22. Tyler District

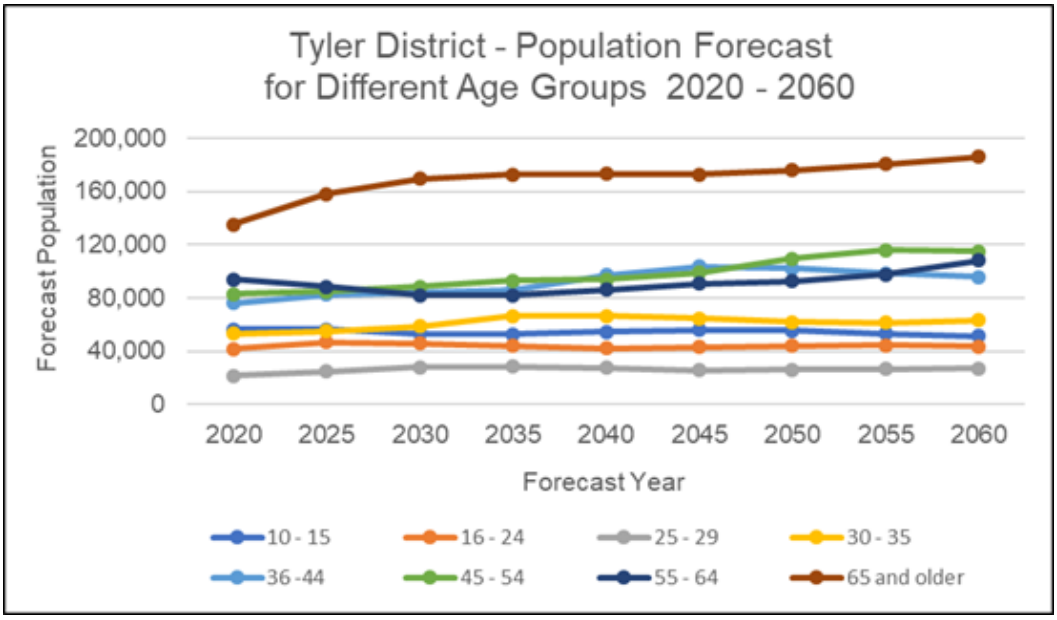


Figure 4.89. Tyler District – Population Growth Forecast for Different Age Groups, 2020 – 2060

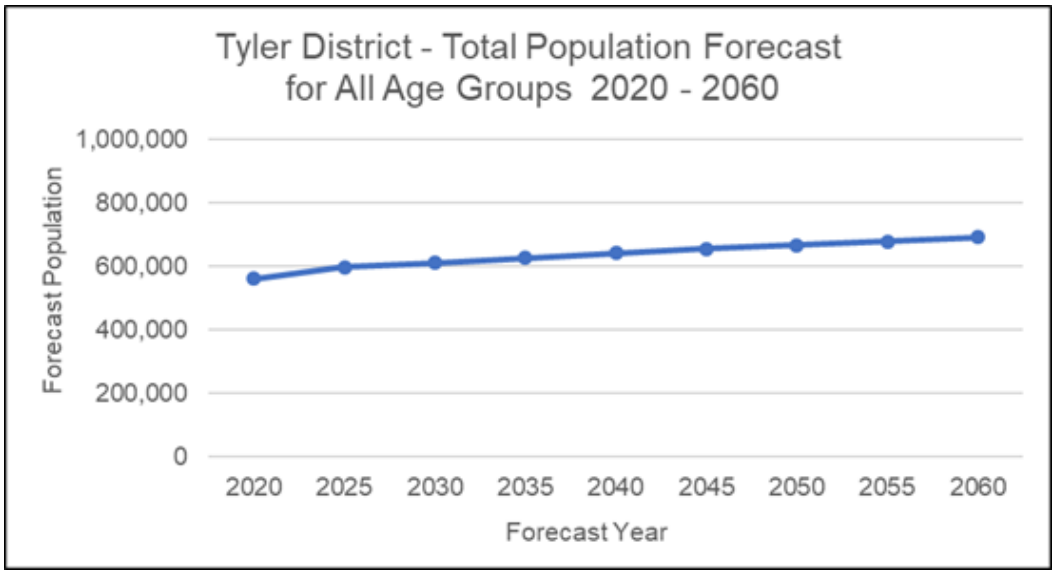


Figure 4.90. Tyler District – Total Population Forecast for All Age Groups, 2020 – 2060

A forecast increase in the Tyler District of about 110,000 individuals over the 35-year analysis period. The majority of this growth is associated with the forecast increase in the 65+ category. Nearly flat growth is forecast for 16 – 24 and 25 – 29-year-old males.

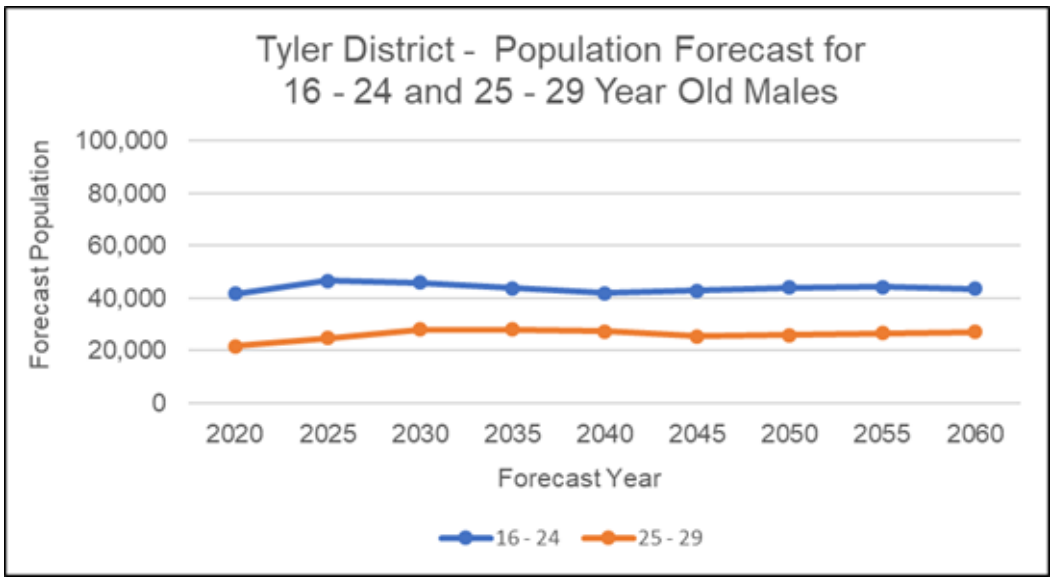


Figure 4.91. Tyler District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

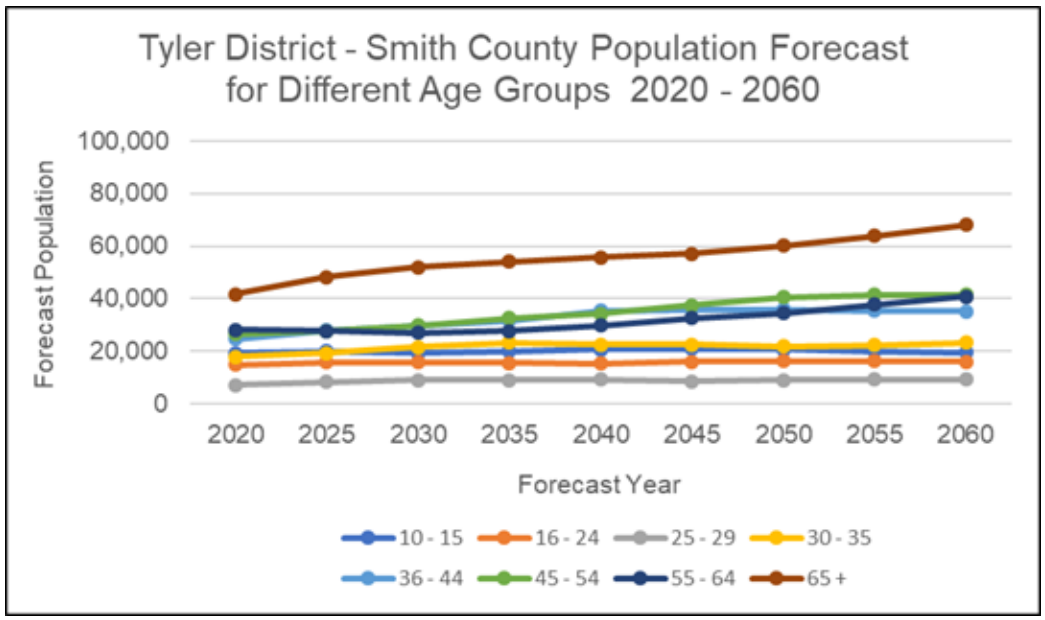


Figure 4.92. Tyler District – Smith County Population Forecast for Different Age Groups, 2020 – 2060

Smith County is forecast to have an increase of approximately 30,000 people in the 65+ category. Growth is also forecast for the 36- 44-year-old workforce and 55 – 64-year-old mature workforce.

4.1.23. Waco District

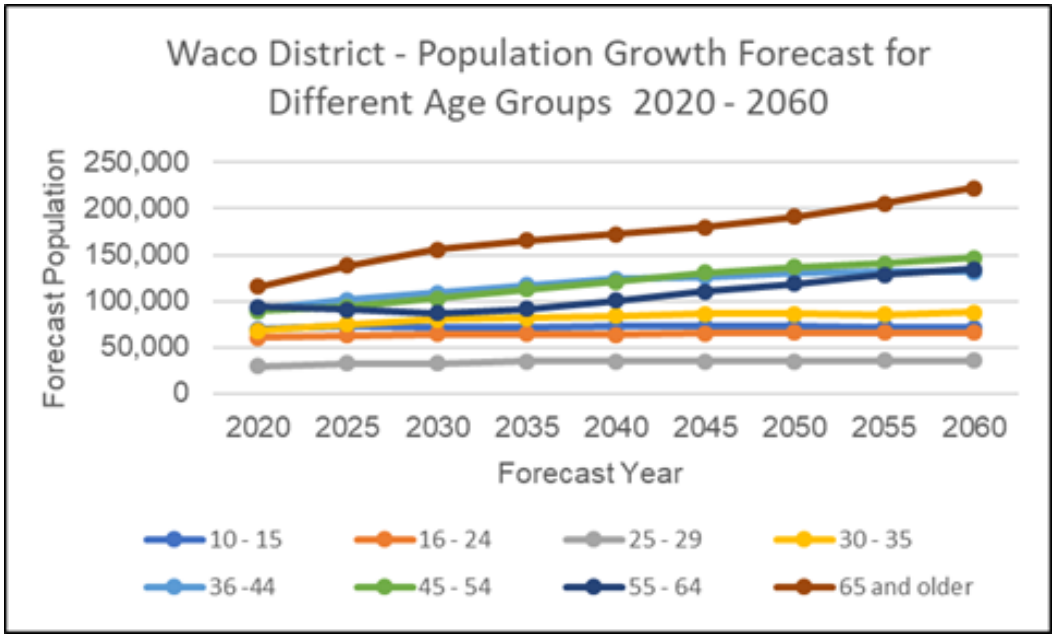


Figure 4.93. Waco District – Population Growth Forecast for Different Age Groups, 2020 – 2060

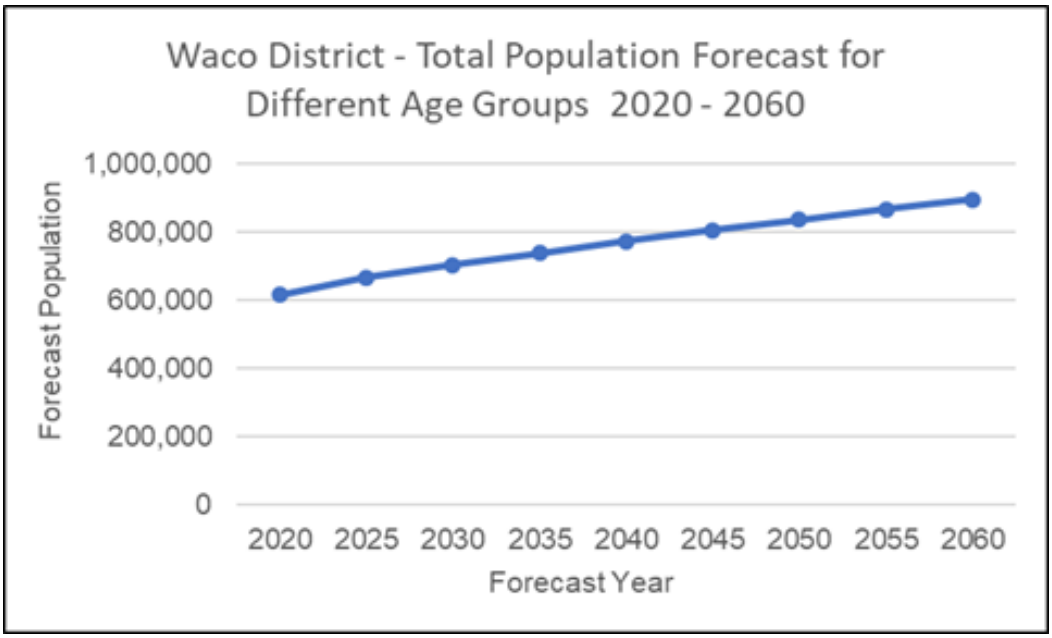


Figure 4.94. Waco District – Total Population Forecast for All Age Groups, 2020 – 2060

The Waco District is forecast to exhibit approximately a 50% increase in population with a significant amount of this growth occurring in the 65+ age group. The 16 – 24 and 25 – 29-year-old male categories are forecast to remain essentially at the same population levels over the next 35 years as shown in Figure 4.95.

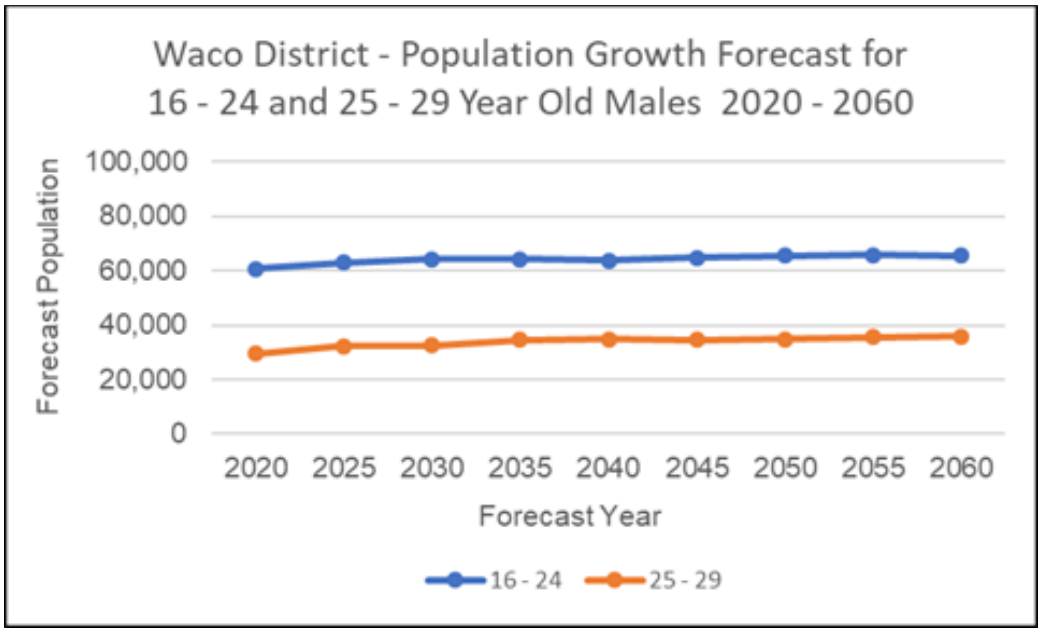


Figure 4.95. Waco District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

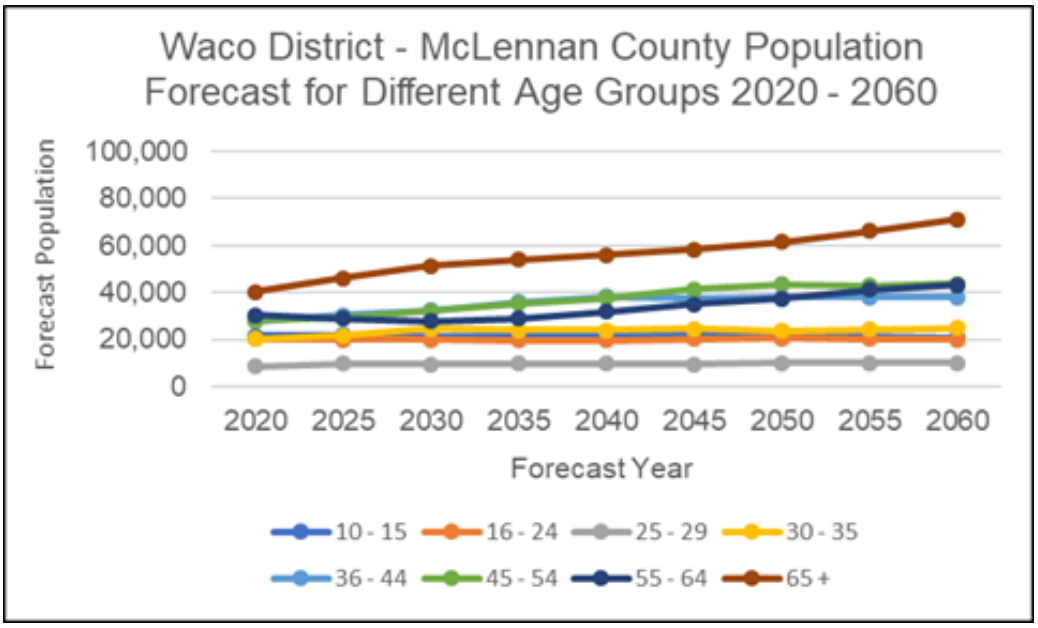


Figure 4.96. Waco District – McLennan County Population Forecast for Different Age Groups, 2020 – 2060

McLennan County shows similar forecast population changes for all age categories as the Waco District (Figure 4.93). Some growth is forecast in the age categories associated with the workforce and mature workforce.

4.1.24. Wichita Falls District

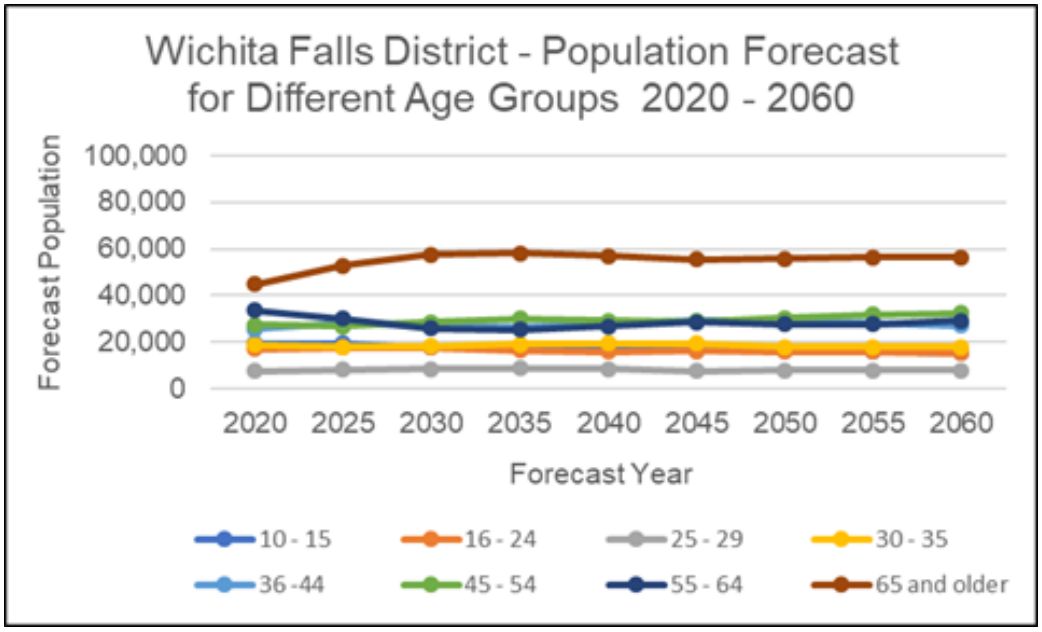


Figure 4.97. Wichita Falls District – Population Growth Forecast for Different Age Groups, 2020 – 2060

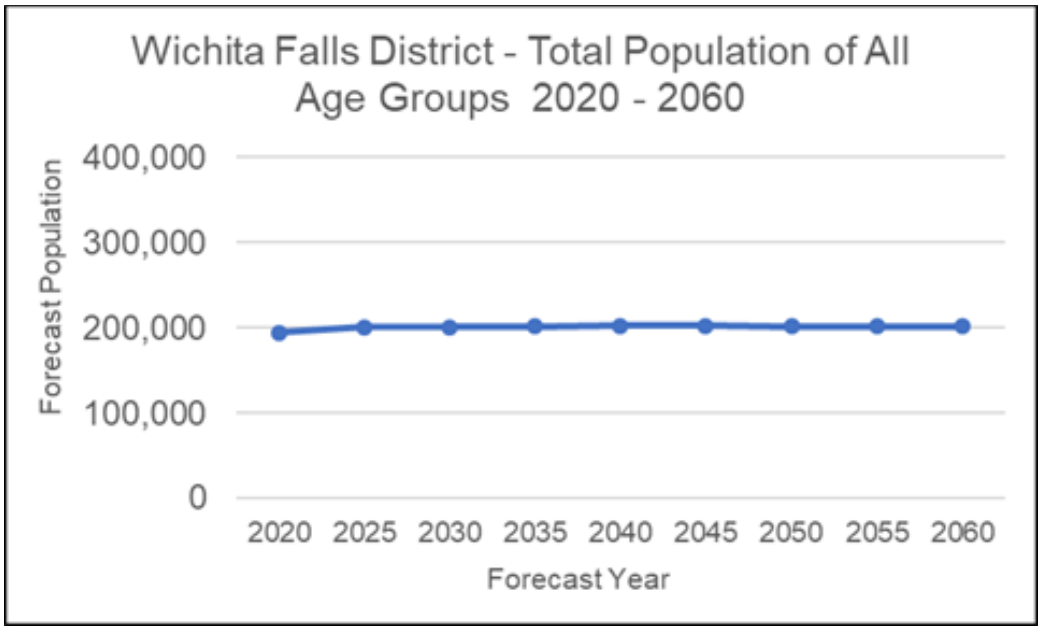


Figure 4.98. Wichita Falls District – Total Population Forecast for All Age Groups, 2020 – 2060

Wichita Falls District shows no forecast population growth over the next 35 years. There is a moderate increase in the 65+ age group of about 17,000 individuals. The 16 – 24 and 25 – 29 male age categories show slight decreases (Figure 4.99). This suggests that litter

amounts in the Wichita Falls district is forecast to show little or no change due to population changes.

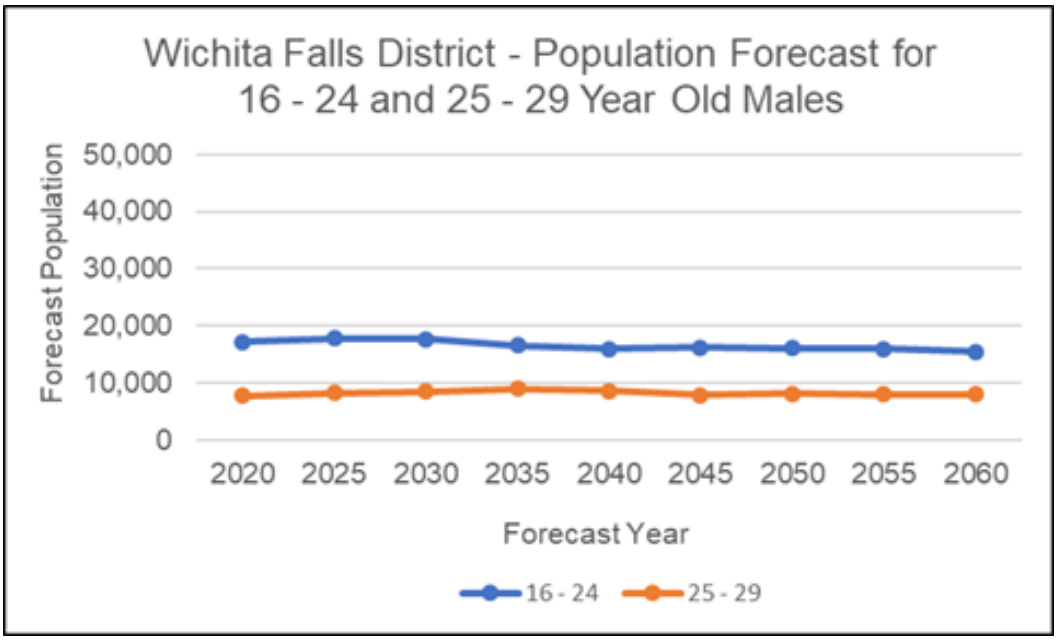


Figure 4.99. Wichita Falls District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

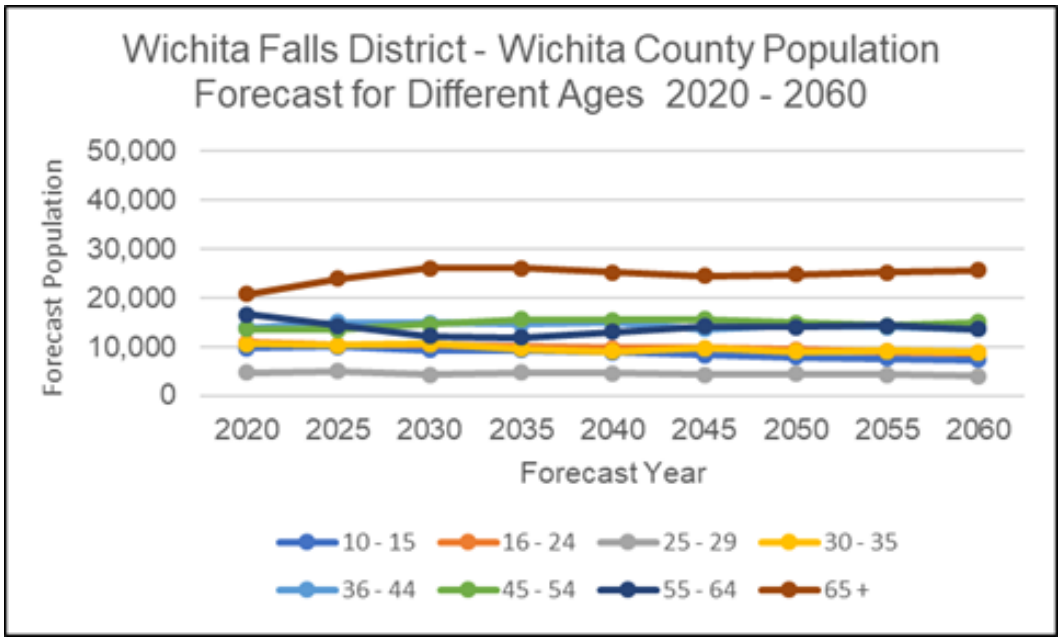


Figure 4.100. Wichita Falls District – Wichita County Population Forecast for Different Age Groups, 2020 – 2060

Wichita County shows a similar forecast population trend compared to the Wichita Falls District. Little change in litter rates is expected.

4.1.25. Yoakum District

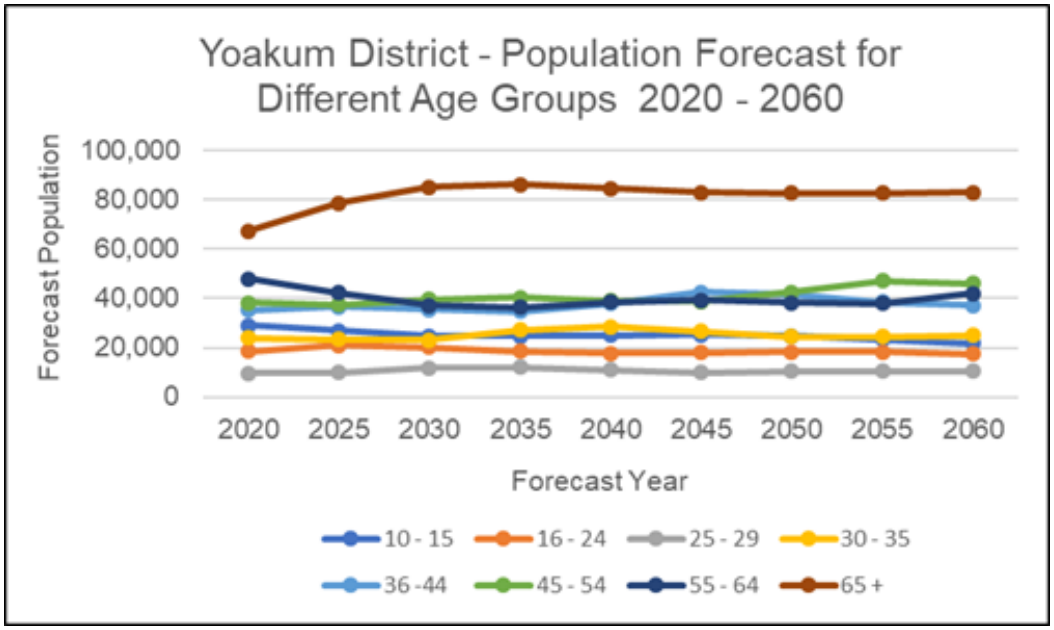


Figure 4.101. Yoakum District – Population Growth Forecast for Different Age Groups, 2020 – 2060

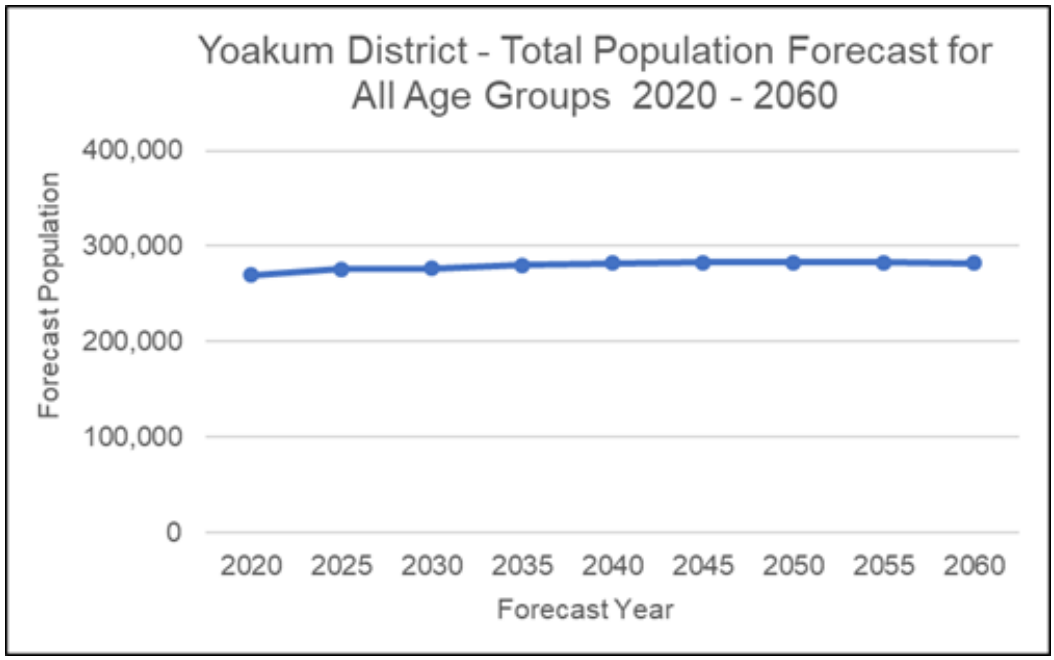


Figure 4.102. Yoakum District – Total Population Forecast for All Age Groups, 2020 – 2060

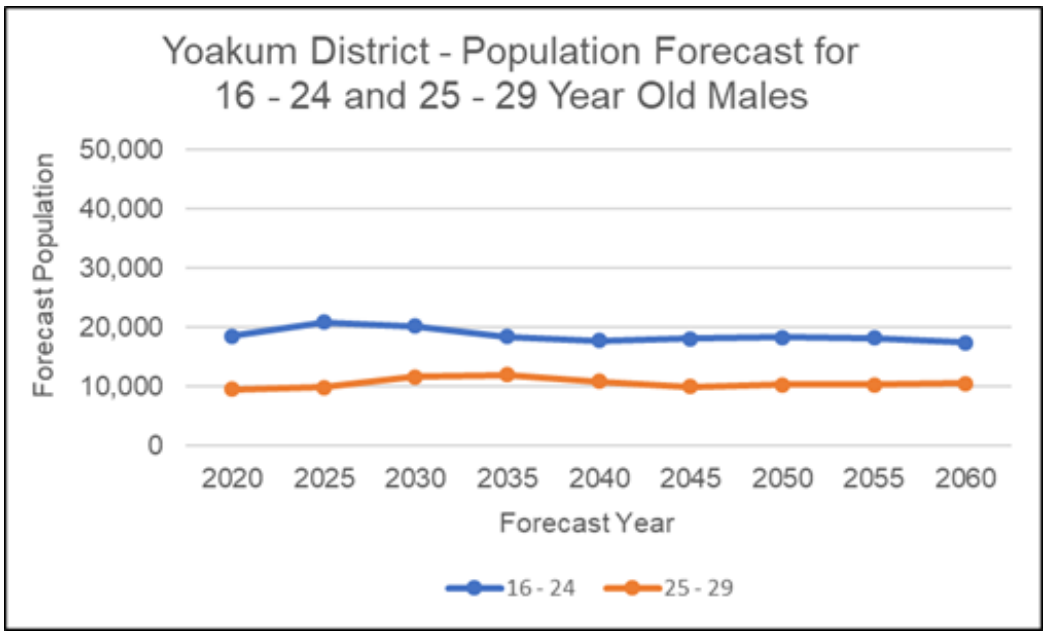


Figure 4.103. Yoakum District – Population Growth Forecast for 16 – 24 and 25 – 29-Year-Old Males, 2020 – 2060

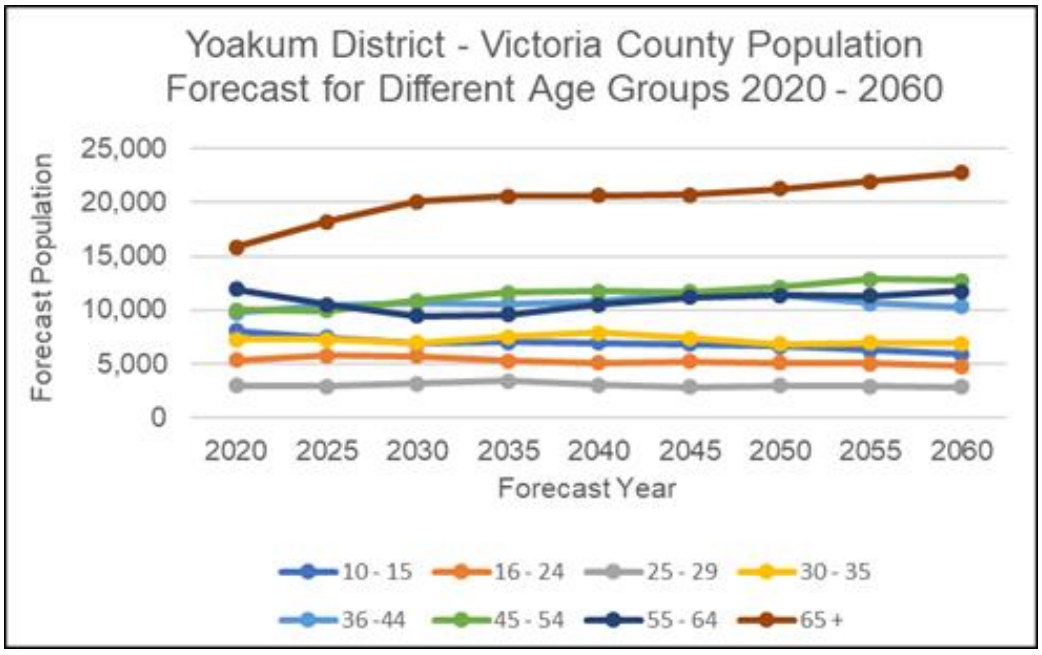


Figure 4.104. Yoakum District – Victoria County Population Forecast for Different Age Groups, 2020 – 2060

4.1.26. Summary of Population Changes

The graphs shown in Section 4.1.1 – Section 4.1.25 and the supporting commentary revealed several segments of the Texas population that are forecast to grow significantly, and other segments with steady growth, no growth or decline. The Texas population in

2020 was 29,145,500 and will increase by 13,452,500 (rounded) to approximately 42,598,000 in 2060 based on the mid-migration TDC forecasts. These numbers are based on the total forecast population including all age groups from < 1 year old infants to the 65+ population. The previous graphs do not include the < 1-year-old infant to 9-year-old children nor does it include females in the 16 – 24 and 25 – 29 age categories. This is because the < 1-year-old to 9-year-old age category has been studied by various researchers and found to follow parents and other influential adults litter guidance and habits. The literature also emphasizes that young males tend to litter more than other age categories and that females in these age groups tend to litter much less than males.

The current Texas population is described as 'aging' by the TDC. Due to significant increases in the 65-year-old + population, Texas will be 'ultra-aged' in 2060. Table 4.1 provides the 2020 and 2060 population forecasts for each district and the total change for specific age groups of interest to changes in littering. The Districts are listed in alphabetical order as are the previous set of Figures.

The literature indicates that 16 – 24 and 25 – 29-year-old males are known to litter large and micro items at a greater rate than other segments of the population. As individuals mature, there is a tendency to litter less due to a sense of responsibility for keeping public places litter free and a desire to be a good role model to their children and grandchildren. As individuals reach 65 years old and older, there is less traveling by car for many individuals and a greater tendency not to litter. It is emphasized that the 65+ age group shows significant population increases and will grow faster than any other age group between 2020 and 2060.

The Workforce between 30 – 44 years old and the Mature Workforce between 45 and 64 years old will increase and provide a stable source of workers for the new businesses and factories that continue to move to Texas. Individuals in this age group tend to litter less than younger age groups.

Based on the literature including close examination of the TxDOT littering behavior and survey results, the following weight factors were developed for the different age groups.

Age Group	Weight Factor	Percentage Littering
Youths 10 – 15	2	7.4%
Males 16 – 24	10	37.0%
Males 25 – 29	8	29.6%
Worker 30 – 44	4	14.8%
Mature Worker 45 – 64	2	7.2%
Senior 65+	1	3.7%
Total	27	100.0%

Table 4.1 contains data for each District including the total population in 2020 and 2060, by age group and the total litter amount based on the 2020 litter survey. Projected litter amounts for 2060 are calculated using weight factors and population increases. The forecast percent change in litter amount is also provided based only on population changes.

Table 4.1. Summary of 2020 and 2060 Populations and Possible Future Litter Change for Each TxDOT District

District	Forecast Population Change, 2020 to 2060							Possible Future Litter Change
	Total Population 2020 - 2060	Youths 10 - 15	Males 16 - 24	Males 25 -29	Workforce 30 - 44	Mature Workforce 45 - 64	65 +	
Abilene	233,476	21,841	17,801	10,089	52,800	62,746	43,639	9% Increase
2020 litter	9,608	712	3,559	2,847	1,423	712	356	
2060 pop.	273,358	18,648	17,839	11,488	63,247	76,280	60,003	
2060 litter	10,475	608	3,567	3,242	1,705	865	489	
Amarillo	336,301	35,459	24,716	12,926	76,046	92,387	59,048	No Change
2020 litter	4,863	360	1,801	1,441	721	360	180	
2060 pop.	378,523	26,493	22,264	13,626	81,208	110,710	90,600	
2060 litter	4,888	269	1,622	1,519	770	432	276	
Atlanta	279,787	27,579	18,253	8,831	57,313	82,276	59,653	No Change
2020 litter	6,307	467	2,336	1,869	934	467	234	
2060 pop.	277,848	18,911	16,108	9,628	55,065	81,246	72,598	
2060 litter	6,062	320	2,061	2,038	898	461	284	
Austin	2,098,996	189,127	310,461	197,540	559,400	546,323	296,145	53% Increase
2020 litter	15,484	1,147	5,735	4,588	2,294	1,147	573	
2060 pop.	4,030,796	266,891	437,038	262,236	842,172	1,184,653	1,037,806	
2060 litter	23,732	1,619	8,073	6,090	3,453	2,487	2,010	
Beaumont	472,015	51,316	34,400	19,937	118,448	151,766	96148	12% Increase
2020 litter	30,582	2,265	11,327	9,061	4,531	2,265	1,133	
2060 pop.	591,835	44,533	36,245	23,013	137,306	191,030	159708	
2060 litter	34,343	1,966	11,935	10,459	5,252	2,851	1,881	

Table 4.1. Summary of 2020 and 2060 Populations and Possible Future Litter Change for Each TxDOT District (Cont'd)

District	Forecast Population Change, 2020 to 2060							Possible Future Litter Change
	Total Population 2020 - 2060	Youths 10 - 15	Males 16 - 24	Males 25 -29	Workforce 30 - 44	Mature Workforce 45 - 64	65 +	
Brownwood	112,194	10,015	6,862	3,100	20,404	33,427	28,816	9% Increase
2020 litter	4,448	329	1,647	1,318	659	329	165	
2060 pop.	115,220	7,846	6,876	3,985	22,771	32,341	30,846	
2060 litter	4,833	258	1,650	1,694	735	319	176	
Bryan	364,751	33,411	53,112	18,758	85,040	103,243	71,187	28% Increase
2020 litter	15,831	1,173	5,863	4,691	2,345	1,173	586	
2060 pop.	546,322	40,511	57,305	24,145	129,381	164,542	130,438	
2060 litter	20,297	1,422	6,326	6,038	3,568	1,869	1,074	
Childress	28,024	2,762	2,022	1,150	5,742	8,559	7,789	22% Decrease
2020 litter	2,172	161	804	644	322	161	80	
2060 pop.	21,953	1,409	1,500	1,031	4,550	5,811	7,652	
2060 litter	1,699	82	596	577	255	109	79	
Corpus Christi	462,141	48,794	38,138	20,396	112,053	146,360	96,400	12% Decrease
2020 litter	2,520	187	933	747	373	187	93	
2060 pop.	470,814	33,627	30,273	18,584	104,661	145,359	138,310	
2060 litter	2,218	129	741	681	349	185	134	
Dallas	3,866,334	457,048	325,071	185,454	1,102,915	1,221,469	574,377	40% Increase
2020 litter	84,648	6,270	31,351	25,081	12,540	6,270	3,135	
2060 pop.	6,674,623	509,141	409,196	249,106	1,563,605	2,166,061	1,777,514	
2060 litter	118,738	6,985	39,464	33,689	17,779	11,119	9,702	

Table 4.1. Summary of 2020 and 2060 Populations and Possible Future Litter Change for Each TxDOT District (Cont'd)

District	Forecast Population Change, 2020 to 2060							Possible Future Litter Change
	Total Population 2020 - 2060	Youths 10 - 15	Males 16 - 24	Males 25 -29	Workforce 30 - 44	Mature Workforce 45 - 64	65 +	
El Paso	679,823	81,648	67,399	34,316	165,657	207,718	123,085	No Change
2020 litter	25,245	1,870	9,350	7,480	3,740	1,870	935	
2060 pop.	868,321	61,121	57,070	35,754	192,153	323,338	198,885	
2060 litter	25,871	1,400	7,917	7,793	4,338	2,911	1,511	
Fort Worth	2,212,545	239,610	170,432	89,575	540,377	656,210	516,341	28% Increase
2020 litter	55,590	4,118	20,589	16,471	8,236	4,118	2,059	
2060 pop.	2,976,561	243,453	198,811	118,780	736,540	1,055,415	867,015	
2060 litter	71,348	4,184	24,017	21,841	11,225	6,623	3,457	
Houston	5,335,285	638,134	439,521	241,959	1,504,399	1,674,176	837,096	48% Increase
2020 litter	110,944	8,218	41,090	32,872	16,436	8,218	4,109	
2060 pop.	9,116,585	720,362	579,068	353,940	2,211,763	2,959,825	2,291,627	
2060 litter	161,440	9,277	54,136	48,085	24,164	14,529	11,249	
Laredo	349,016	43,202	31,096	14,684	75,160	91,006	50,521	13% Decrease
2020 litter	3,626	269	1,343	1,074	537	269	134	
2060 pop.	341,972	24,925	22,264	13,978	74,040	98,087	75,200	
2060 litter	3,157	155	962	1022	529	289	200	
Lubbock	369,103	42,892	38,738	18,012	92,384	107,126	69,951	No Change
2020 litter	11,904	882	4,409	3,527	1,764	882	441	
2060 pop.	457,180	34,863	34,740	17,875	106,345	140,386	122,971	
2060 litter	12,132	717	3,954	3,500	2,030	1,156	775	

Table 4.1. Summary of 2020 and 2060 Populations and Possible Future Litter Change for Each TxDOT District (Cont'd)

District	Forecast Population Change, 2020 to 2060							Possible Future Litter Change
	Total Population 2020 - 2060	Youths 10 - 15	Males 16 - 24	Males 25 -29	Workforce 30 - 44	Mature Workforce 45 - 64	65 +	
Lufkin	244,081	24,465	18,009	8,445	52,213	79,192	61,757	No Change
2020 litter	9,429	698	3,492	2,794	1,397	698	349	
2060 pop.	247,764	18,144	16,434	9,313	54,928	78,571	70,374	
2060 litter	9,347	518	3,187	3,081	1,470	693	398	
Odessa	314,704	38,906	25,960	16,750	92,735	93,503	46,850	30% Increase
2020 litter	43,272	3,205	16,027	12,821	6,411	3,205	1,603	
2060 pop.	508,467	39,918	32,016	19,144	119,774	158,654	138,961	
2060 litter	56,181	3,288	19,766	14,653	8,280	5,439	4,754	
Paris	315,535	32,772	23,165	11,498	70,240	103,505	74,355	32% Increase
2020 litter	2,415	179	894	716	358	179	89	
2060 pop.	448,807	33,514	27,742	16,464	99,172	146,764	125,151	
2060 litter	3,189	183	1,071	1,025	505	254	151	
Pharr	1,044,916	151,769	106,095	47,129	258,918	300,887	180,118	5% Increase
2020 litter	4,631	343	1,715	1,372	686	343	172	
2060 pop.	1,289,965	104,628	89,327	55,983	303,079	422,696	314,252	
2060 litter	4,894	236	1,444	1,630	803	482	299	
San Angelo	128,167	13,275	10,591	5,537	29,685	38,612	30,467	No Change
2020 litter	6,270	464	2,322	1,858	929	464	232	
2060 pop.	148,360	11,174	9,634	5,683	33,578	45,517	42,774	
2060 litter	6,335	391	2,112	1,907	1,051	548	326	

Table 4.1. Summary of 2020 and 2060 Populations and Possible Future Litter Change for Each TxDOT District (Cont'd)

District	Forecast Population Change, 2020 to 2060							Possible Future Litter Change
	Total Population 2020 - 2060	Youths 10 - 15	Males 16 - 24	Males 25 -29	Workforce 30 - 44	Mature Workforce 45 - 64	65 +	
San Antonio	2,051,175	230,487	172,834	89,575	533,081	638,372	386,826	28% Increase
2020 litter	15,760	1,167	5,837	4,670	2,335	1,167	584	
2060 pop.	2,697,761	246,786	209,043	127,422	773,608	448,573	892,329	
2060 litter	20,507	1,250	7,060	6,643	3,388	820	1,346	
Tyler	560,834	56,458	41,710	21,692	129,146	176,668	135,160	15% Increase
2020 litter	7,130	528	2,641	2,113	1,056	528	264	
2060 pop.	690,013	51,098	43,522	27,042	158,897	223,330	186,124	
2060 litter	8,200	478	2,756	2,634	1,300	668	364	
Waco	702,815	69,518	60,606	29,438	159,492	182,417	115,379	22% Increase
2020 litter	35,400	2,622	13,111	10,489	5,244	2,622	1,311	
2060 pop.	989,419	70,981	65,456	35,730	219,009	280,968	222,503	
2060 litter	43,336	2,677	14,160	12,731	7,201	4,039	2,528	
Wichita Falls	215,726	19,525	17,149	7,671	44,449	61,019	44,684	No Change
2020 litter	7,960	590	2,948	2,359	1,179	590	295	
2060 pop.	221,225	15,268	15,452	7,915	44,971	61,591	56,450	
2060 litter	7,711	461	2,656	2,434	1,193	595	372	
Yoakum	269,810	28,979	18,560	9,623	59,099	86,139	67,410	No Change
2020 litter	4,368	324	1,618	1,294	647	324	162	
2060 pop.	282,536	21,698	17,485	10,558	62,002	87,972	82,821	
2060 litter	4,357	242	1,524	1,420	679	330	162	

To summarize, fourteen districts are forecast to experience increases in litter due solely to population increases in the various age categories documented. Eight districts are forecast to experience no change in litter amount and three districts will experience a decrease in litter amounts.

The forecast changes in Table 4.1 are for total litter and are not intended to distinguish between large or micro litter, large or micro tire litter. These changes do not consider behavioral changes that could occur due to the DMWT campaign which might change the littering behavior of an unknown number of people over the next 35 years.

Additional comments made by researchers at the Texas Demographic Center and other groups further support these litter forecasts between 2020 and 2060 (World Bank 2019; TDC 2025a):

- 139 counties will lose population;
- The Texas Triangle metro regions will increase their portion of Texas' population from 67% to 74%;
- Counties surrounding the metropolitan statistical areas within the Texas Triangle will also gain population;
- In 2020, 150 Texas counties were ultra-aged. In 2060 almost all Texas counties will be ultra-aged;
- An aging population has over 7% of its population aged 65 or older;
- An aged population has over 14% of its population aged 65 or older;
- An ultra-aged (also called super-aged) population has over 21% of its population aged 65 or older; and
- The Texas workforce will maintain a stable share of the total population.

In Section 4.2, Daily Vehicle Miles Traveled (DVMT) for light vehicles and trucks are examined to determine the relationships between traffic volume and future litter amounts

4.2 Traffic Volume and Litter Amounts

The literature indicates that a correlation typically exists between traffic volume and the amount of roadside litter. The greater the traffic volume, the greater the amount of litter is expected. For this reason, as reported in the TxDOT litter surveys, litter density tends to be greatest on Interstate Highways. The 2019 Litter survey provides information in Table 3, page 8 of the amount of litter per mile for IH, US, SH and FM roads. Table 4.2 below is based on Table 3 from the 2019 Litter Survey Report (ER Planning 2020).

Table 4.2. 2019 TxDOT Litter Survey – Litter amounts by Road Type

Road Type	2013 Survey	2019 Survey	Change	% Change
IH	1,773	1,481	(292)	-16.5
US	921	765	(156)	-16.9
SH	1,007	832	(175)	-17.4
FM	770	620	(150)	-19.5

The litter surveys conducted in 2019 and 2023 listed the locations of the litter survey sites in each district in the Appendices. In 2023, the table summarizing the average amount of litter observed also listed the number of test sites in each District. The correlation analysis performed in the TxDOT 2019 litter survey were based on the "average amount of litter observed and the Average Daily Traffic". The study team thinks that the correlation analysis was performed using the Average Daily Vehicle Miles Traveled based on information listed on page 3, Table 1 of the survey and the average litter amounts for each district. This type of correlation would evaluate the litter intensity or density based on the average of the litter survey sites, rather than the total amount of litter obtained by summing litter categories for all sites in each district. The results of these two correlations could yield different results as presented in the following sections.

The analysis in this study uses the total amount of litter for each litter category: Large, Micro, Large Tire and Micro Tire for each District. The total litter amount is calculated by multiplying the number of Test sites by the average amount of litter for each category in each district. The traffic data was obtained from the District – County Statistics (DISCOS) databases available online at the TxDOT website. The total on-system DVMT was disaggregated for each district to provide the DVMT for light duty vehicles (passenger cars, pickups, SUVs etc.) and the DVMT for Trucks.

Table 4.3 lists the DVMT for light Vehicles, the DVMT for trucks, and the 4 litter categories for each district based on the number of survey sites multiplied times the average litter amount based on the 2019 survey. The 2019 survey was used since it is the closest in time to the 2020 DISCOS data used to arrive at the DVMT amounts. The correlation coefficient in each case was calculated and the list of District DVMT LV or DVMT Truck with the corresponding amounts of Large Litter, Micro Litter, Large Tire Litter, Micro Tire Litter and Total litter amount for all 4 categories.

The correlation coefficients are shown in the bottom of Table 4.3. As can be seen, the correlations for each category vary from 0.645 for the correlation between Total DVMT for each district and the Micro Tire litter total amount, to correlations over 0.85 for either DVMT Light Vehicles or DVMT Trucks and Large Litter amounts. Thus, the correlations are Strong or Very Strong for district DMVT values and the litter categories.

This suggests that as DVMT for Light Vehicles and DVMT for Trucks increase, the litter amounts will increase as well. The exact amount of increase in each category of litter for a

given increase in DVMT cannot be determined with the available data. Considering this fact and the results from the analysis in Section 4.1 on forecast population changes from 2020 to 2060, it is anticipated that some districts may experience slower increases in DVMT in the future as population growth rates flatten and a larger percentage of the population is in the 65+ category. However, the study team realizes that districts with Interstate Highways and US Highways carry a significant amount of traffic that is not related to the population of a district.

At present, the strength of the correlations suggest that more studies are needed to determine how to obtain sufficient data about future DVMT values and litter amounts within the near term in order to forecast litter amounts well into the future. It is suggested that a model containing population, DVMT, Highway Route types and perhaps other variables could be constructed to forecast litter trends.

Table 4.3. Correlation Coefficient Analysis of District Daily Vehicle Miles Traveled (DVMT) and District Litter Categories

District	DVMT LV	DVMT Trk	Total DVMT	L Litter	M Litter	Large Tire	Micro Tire	Total Litter
Abilene	7,068,377	2,216,843	9,285,220	136	6,168	192	3,112	9,608
Amarillo	7,602,524	2,255,061	9,857,585	336	2,648	296	1,584	4,864
Atlanta	8,676,691	2,504,385	11,181,076	518	5,425	189	175	6,307
Austin	42,364,071	4,315,790	46,679,861	504	14,784	84	112	15,484
Beaumont	14,505,557	2,221,481	16,727,037	423	23,643	243	6,273	30,582
Brownwood	3,994,041	944,485	4,938,526	296	3,580	44	528	4,448
Bryan	13,309,181	3,056,570	16,365,750	549	13,437	144	1,701	15,831
Childress	1,921,634	925,853	2,847,488	75	1,704	42	351	2,172
Corpus Christi	13,876,012	2,436,442	16,312,454	400	2,000	60	60	2,520
Dallas	66,269,078	8,595,885	74,864,964	3,864	65,016	1,344	14,424	84,648
El Paso	13,854,927	2,452,424	16,307,352	342	15,723	261	8,919	25,245
Fort Worth	42,144,362	4,794,824	46,939,186	2,006	48,229	493	4,862	55,590
Houston	90,725,766	9,658,601	100,384,366	2,624	95,872	640	11,808	110,944
Laredo	6,370,429	2,110,754	8,481,183	350	1,057	280	1,939	3,626
Lubbock	9,352,232	1,776,176	11,128,408	416	9,680	48	1,760	11,904
Lufkin	7,652,853	1,455,563	9,108,416	329	8,099	182	819	9,429
Odessa	12,020,303	4,658,666	16,678,970	576	33,504	272	8,920	43,272
Paris	10,396,009	2,073,882	12,469,891	385	1,645	266	119	2,415
Pharr	20,206,635	1,936,824	22,143,459	440	3,586	132	473	4,631
San Angelo	5,352,645	1,736,995	7,089,640	128	4,108	154	1,880	6,270
San Antonio	46,815,308	6,183,995	52,999,303	992	11,264	576	2,928	15,760
Tyler	15,767,319	2,508,277	18,275,596	580	6,160	150	240	7,130
Waco	17,554,463	3,823,833	21,378,296	610	27,460	290	7,040	35,400
Wichita Falls	6,312,321	1,365,777	7,678,098	284	4,576	108	2,992	7,960
Yoakum	11,965,888	3,134,323	15,100,211	518	1,526	98	2,226	4,368
Totals	496,078,625	79,143,709	575,222,334	17,681	410,894	6,588	85,245	520,408
Correlation Coefficient DVMT LV for each Category				0.86	0.87	0.75	0.63	0.85
Correlation Coefficient DVMT Truck for each Category				0.87	0.88	0.82	0.75	0.88
Correlation Coefficient DVMT Total for each Category				0.87	0.87	0.76	0.65	0.86

Section 4.3 provides a summary based on the analyses that have been performed and the conclusions obtained.

4.3 Chapter Conclusion

Chapter 4 evaluates the future amount of litter along Texas highways based on forecast population changes. Population data was obtained from the Texas Demographic Center for the mid-migration scenario which provides data from 2020 to 2060. The mid-migration scenario assumes that population movement between Texas counties and to/from other U.S. states and Texas will continue at the same rate as during the last two decades. In addition, changes in Texas population include immigration from other countries based on the previous twenty years.

The forecast population data was used to calculate changes in population from 2020 to 2060 on 5-year increments for each Texas County

The population age categories used in the analysis reflect findings from TxDOT litter surveys and the literature, which identify teens and young males as higher-frequency litterers and show lower littering rates among older age groups as individuals mature.

A set of weighting factors was developed based on these age categories and used to allocate amounts of litter to each age category from the 2019 litter survey litter amounts. The 2019 TxDOT litter survey was used instead of the slightly more recent 2023 litter survey since the population data begins with the 2020 Census data, so the litter survey and initial population calculations are closest in time. The 2060 population forecasts were used to develop a ratio for each age category based on the number of individuals forecast in 2060 divided by the number of individuals from Census data in 2020. The ratio for each age category was multiplied by the amount of 2020 litter determined from the weighting factors to arrive at the forecast amount of litter in 2060.

Metro districts in the Texas Triangle tended to have larger forecast population increases and a corresponding larger increase in forecast litter amounts. Rural, west and southwest districts which tended to have smaller population growth or in some cases, a population decline had either small litter increases, no change in litter amounts or a decrease in litter. These forecasts were based solely on population change and do not take into account the potential impact of DMWT behavioral changes that might also reduce the amount of future littering.

- Future litter increases will concentrate in Texas Triangle metropolitan districts, with Houston, Dallas, Austin, Fort Worth, and San Antonio projecting 28%–53% growth. The relationship between freight corridor development and litter growth warrants investigation;
- Geographic divergence in the amount of future total litter (−22% to +53%) suggests differentiated resource allocation strategies may improve efficiency over uniform statewide approaches;

- The aging population's low littering propensity is incorporated into forecasts but represents an unexplored dimension for targeted behavioral interventions;
- More study is needed regarding the littering behavior and amounts for females aged 16 – 24 and 25 – 29; and
- Daily Vehicle Miles Traveled (DVMT) by district demonstrates strong correlation with total litter accumulation by district (r = 0.85 to 0.88), providing possible, empirical support for traffic-based resource allocation alongside demographic forecasting.

A correlation analysis was conducted to evaluate the total amount of litter for each litter category in each district with respect to the amount of traffic based on the DVMT for light vehicles and DVMT for trucks. Strong correlations were found for DVMT and each litter category and for the total litter amount in each district.

The 2025 statewide behavioral survey in Chapter 5 is expected to provide the causal and attitudinal context needed to draw stronger conclusions from these structural correlations, including validation of demographic weighting, corridor risk profiles, and intervention responsiveness.

Further study is needed to determine how to use DVMT to forecast changes in litter in the future.

Chapter 5. Texas Statewide Resident Survey on DMWT Campaign Effectiveness

Chapter 5 provides a comprehensive analysis and summary of the structured Qualtrics™ surveys regarding Texas resident's opinion on DMWT effectiveness. Specifically, the survey results of Age Group 16–34 is analyzed because this age group includes many new and frequent road users, representing a key stage when long-term littering and civic habits are formed, and is highly influenced by digital and peer-driven communication channels where public campaigns compete for attention. The survey was distributed to more than 9.4 million Texas residents. In addition, a separate structured Qualtrics™ survey designated for youth (under 18 years old) is developed to collect younger generation's understanding and perception of the campaign. The link to the youth survey is provided at the end of Texas resident survey and it is required that the survey should be completed under an adult's supervision. Both surveys are developed in English and Spanish.

Chapter 5 consists of four major sections and four appendices:

- **Section 5.1** introduces the objective, scope, and major efforts conducted;
- **Section 5.2** details the survey distribution and data processing procedures as well as the analysis of Texas resident survey responses, including a focused study for the Age Group 16-34;
- **Section 5.3** highlights the analysis of the youth survey;
- **Section 5.4** summarizes the findings and conclusions;
- **Appendix A** presents the English version of Texas resident survey;
- **Appendix B** presents the Spanish version of Texas resident survey;
- **Appendix C** provides the English version of youth survey; and
- **Appendix D** provides the Spanish version of youth survey

5.1 Introduction

Chapter 5 develops structured survey questions in both English and Spanish to collect Texas resident's opinions on the DMWT campaign effectiveness (major focus) as well as AAH program. To achieve this goal, the study team developed a Qualtrics™ online survey and distributed the survey link to over 9.4 million Texas residents.

Key questions include:

- General demographic-related (e.g., age, race, gender, education, regional location, etc.) questions;
- DMWT slogan:
    - Whether the respondent has ever heard of DMWT slogan;
    - How the respondent learned about the DMWT slogan;
    - Whether the respondent fully understands the meaning of DMWT slogan;

    - Whether the DMWT slogan has changed the behavior of the respondent regarding littering;
    - Whether the respondent likes and supports the DMWT slogan;
    - Types of litter the respondent has seen on Texas highways;
    - The reason why people litter;
    - How effective is the DMWT slogan in confronting someone who litters;
    - Whether the DMWT slogan has helped reduce litter in the respondent's community;
    - Overall effectiveness of the DMWT slogan; and
    - Additional comments and suggestions for the continuation of the DMWT slogan
- AAH program:
    - Whether the respondent has ever heard of the Adopt-a-Highway (AHH) program;
    - How likely the respondent would volunteer for the AAH program;
    - What are the potential barriers that prevent the respondent from taking part in the AAH program;
    - Whether the AAH program has helped reduce litter in the respondent's community;
    - Overall effectiveness of the AAH program; and
    - Additional comments and suggestions for the continuation of the AAH program

The full list of Texas resident survey questions is provided in Appendix A (English version) and Appendix B (Spanish version), respectively.

In addition, the study team developed a separate structured Qualtrics™ survey designated for youth (under 18 years old) to collect younger generation's understanding and perception on the DMWT campaign. The question set up is similar to the Texas resident survey but with no AAH program related questions. The link to the youth survey is provided at the end of Texas resident survey and it is required that the survey should be completed under an adult's supervision. The full list of youth survey questions is provided in Appendix C (English version) and Appendix D (Spanish version).

The study team conducted the following major activities to achieve the objectives:

- Developed two Qualtrics™ surveys using 'fill in the blank', 'single choice', 'multiple choice' and 'Yes, No, Unsure' response formats to collect responses from Texas resident as well as youth under 18 years old;
- Validated emails and sent survey email invitations to over 9.4 million Texas residents;
- Processed and analyzed valid survey response data; and
- Summarized and interpreted survey results.

In Chapter 5, the study team performed a comprehensive data analysis, and the findings were derived solely from all valid survey response data.

5.2 Texas Resident Survey

Section 5.2 details the Texas resident survey distribution and data processing procedures as well as the analysis of survey responses, which is organized as follows: Section 5.2.1 documents the respondent identification and survey distribution processes; Section 5.2.2 presents the survey data processing and validation procedure; Section 5.2.3 provides the detailed survey data analysis; and Section 5.2.4 summarizes the survey data analysis for the Age Group 16-34.

5.2.1. Survey Preparation and Distribution

The study team developed a structured Qualtrics™ survey with 37 questions regarding the overall effectiveness of the DMWT slogan (major focus) as well as AAH program. There are no mandatory questions and respondents provide answers on a voluntary basis. To make the survey experience more personalized, efficient, and engaging, the study team developed an adaptive survey. An adaptive survey is a type of survey that dynamically changes based on the respondent's answers. Instead of presenting the same set of questions to every participant, the survey adapts in real time, showing different questions or skipping irrelevant ones based on previous responses. For example, if a respondent answers "Yes" to "Have you ever heard of the DMWT slogan" question, the survey will show follow-up questions on the frequency and how the respondent learned about the slogan. If they answer "No", those questions are skipped. No personal identifying information is collected in either survey. The survey went through the university's Institutional Review Board (IRB) review. Appendix A and Appendix B contains the blank Texas resident survey in English and Spanish, respectively.

Considering the objective is to conduct a state-wide survey, this study utilized the database previously obtained by the study team, which contains a set of approximately 11.24 million Texas resident email addresses. The study team worked with a professional company that provides accurate, fast, and secure email validation service to eliminate invalid records (e.g., wrong emails, duplicated emails, incomplete emails, etc.). As a result, over 9.4 million (9,405,545) valid email records were retained, which served as survey candidates and formed the basis for further analysis.

The study team used an online survey platform (Qualtrics™) and distributed a survey invitation email with a survey link to validated customer email addresses. The survey was made available in both English and Spanish—a toggle switch at the top of the survey page allowed switching between languages. As requested by the University and Qualtrics™ company, the study team sent out the survey invitation batches starting November 12, 2025 until December 14, 2025, the details of which is presented in Table 5.1.

Table 5.1. Texas Resident Survey Distribution Efforts

Date	Number of Email Invitations Sent (per day)
Nov. 12, 2025 – Nov. 25, 2025	200,000
Nov. 26, 2025 – Dec. 11, 2025	355,000
Dec. 13, 2025	455,000
Dec. 14, 2025	470,545
Total	9,405,545

As of January 28, 2026, the study team has received a total of 39,031 responses for the Texas resident survey and 1,004 responses for youth survey

5.2.2. Survey Processing and Validation

To ensure survey response accuracy, reliability, and meaningful insights, the study team carefully examined each response and removed invalid surveys before conducting detailed analysis in Section 5.2.3. The study team used the following criteria to identify invalid responses:

- Speeding: survey completion time is too short, e.g., less than 1 minute;
- Non-sense answers: irrelevant answers – the answer is not what the question asks;
- Incomplete or partial responses: too many skipped and unfinished questions;
- Self-contradictory or inconsistent answers; and
- Duplicate answers: duplicated answers from the same respondent often cause inflated or biased results.

For the surveys with some questions left blank (unanswered questions), the study team retained the survey to see if the answers provided were useful for the analysis.

A total of 2,921 Texas resident surveys were identified as invalid and removed from subsequent analysis, resulting in 36,110 valid responses.

The validation results of youth survey are detailed in Section 5.3.

5.2.3. Survey Analysis for All Age Groups

Since the survey contains no mandatory questions and each question can be answered at the respondent's discretion, the number of valid responses may vary for each question. The following analyses are organized by the question order in the survey. Questions are asked for every respondent unless otherwise stated. The analysis follows the survey question order attached in Appendix A and Appendix B.

Q5.2.3.1. Please indicate your age group

Number of valid responses: 36,088. The valid response percentage distribution is presented in Figure 5.1.

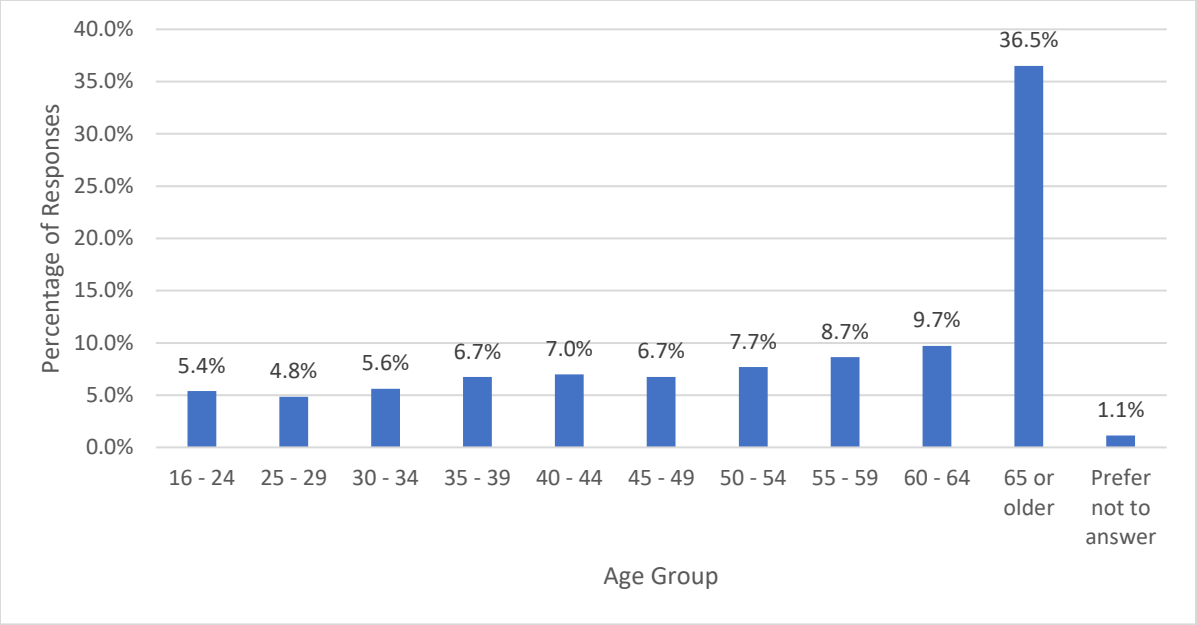


Figure 5.1. Percentages of Valid Responses by Age Group

The age distribution of respondents is skewed toward older adults, with those aged 65 or older representing the largest group at 13,173 respondents (about 36.5%). Participation steadily increases across middle-age groups, particularly from ages 50–64 (9,399 or 26.0% in total), which together account for a substantial portion of the sample, indicating strong representation of late-career and retirement-age individuals. Younger respondents aged 16–34 make up a smaller share of the sample (5,712 or 15.8% in total). Only a very small percentage (about 1%) preferred not to disclose their age.

Q5.2.3.2. What is your gender?

Number of valid responses: 35,799. The valid response percentage distribution is presented in Figure 5.2.

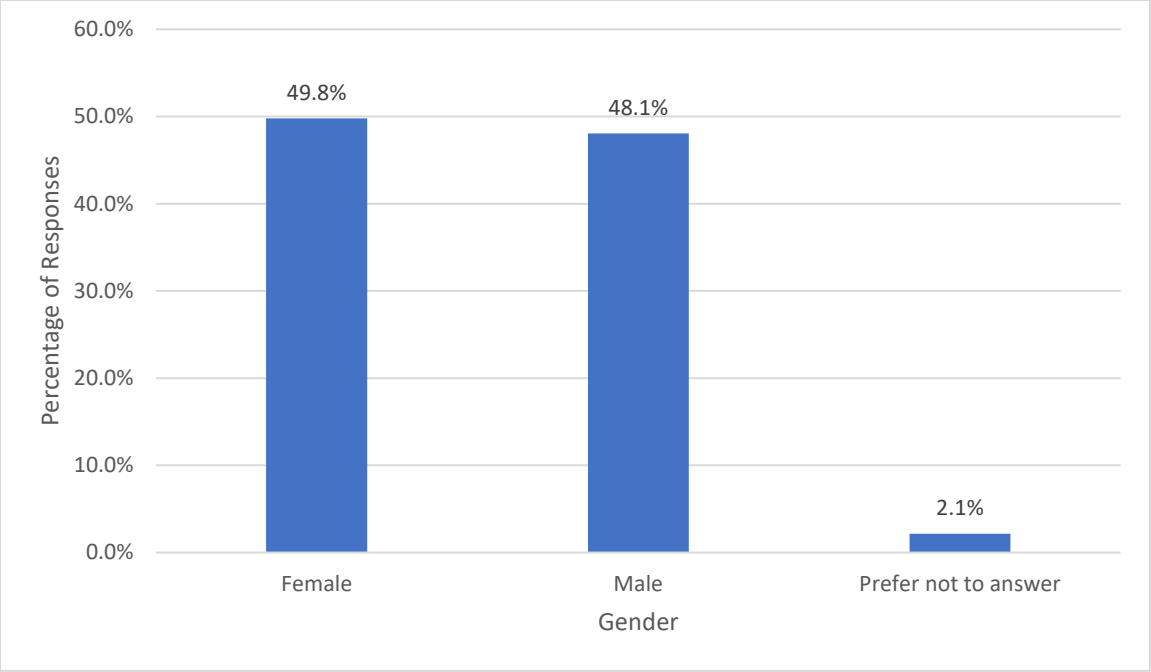


Figure 5.2. Percentage of Valid Responses by Gender

The gender distribution of survey respondents was nearly balanced, with a slightly higher proportion of females (17,839 or 49.8%) than males (17,204 or 48.1%).

Q5.2.3.3. What is your race?

Number of valid responses: 35,874. Figure 5.3 shows the percentage of valid responses by race.

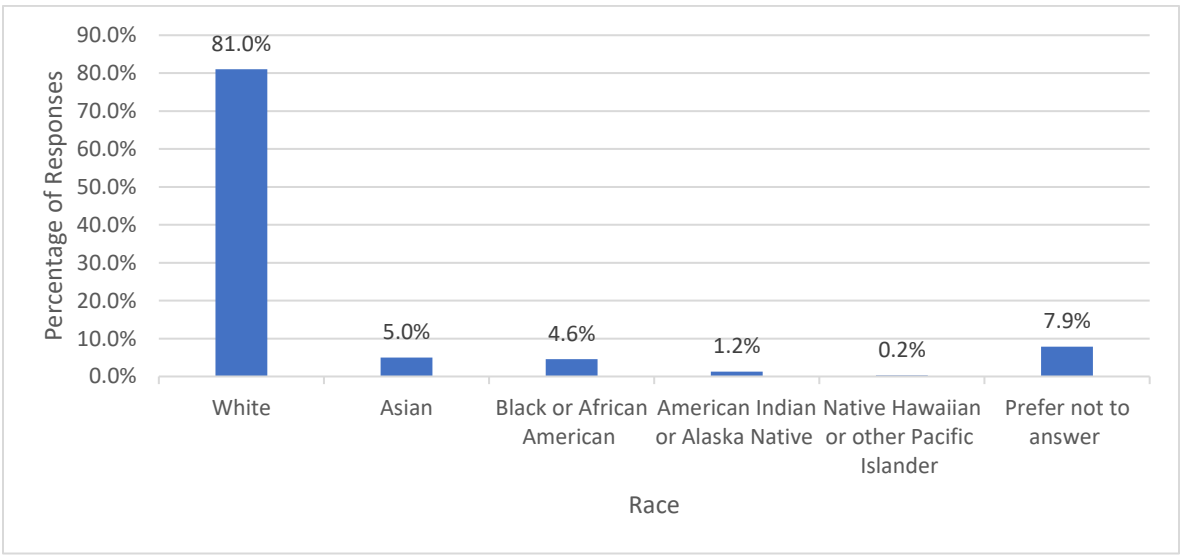


Figure 5.3. Percentage of Valid Responses by Race

The racial composition of the respondents was predominantly White (29,058 or 81.0%). Other racial groups were less represented, with Asian (1,807 or 5.0%) and Black or African

American (1,651 or 4.6%) being the largest minority groups. Approximately 7.9% of respondents preferred not to disclose their race.

Q5.2.3.4. Are you of Hispanic or Latino origin?

Number of valid responses: 35,761. The percentage is presented in Figure 5.4.

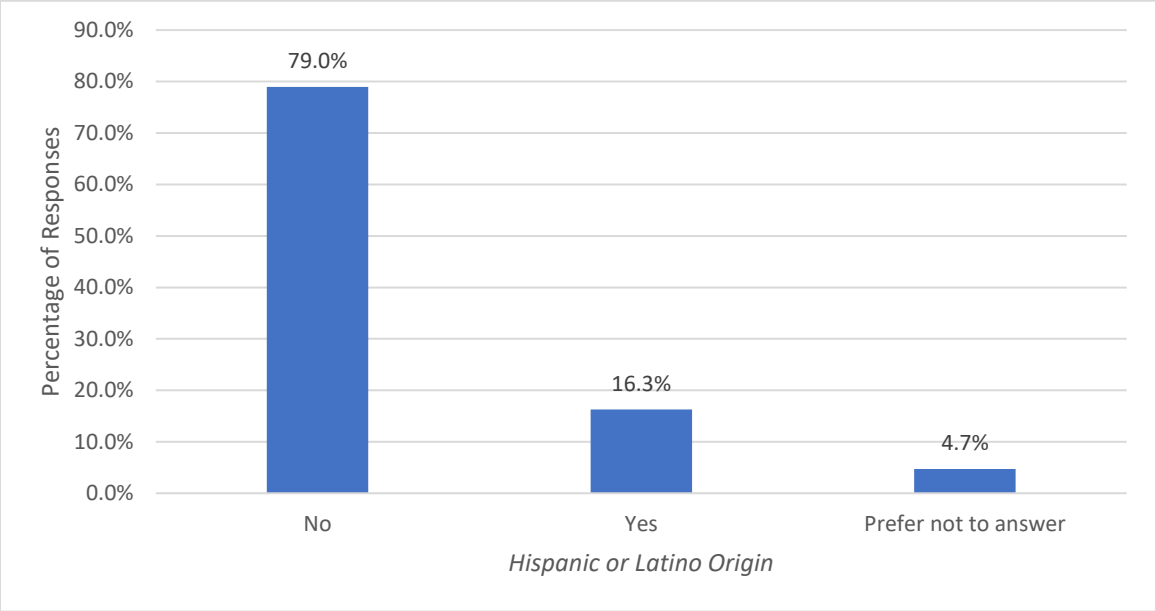


Figure 5.4. Whether a Respondent is Hispanic or Latino Origin

The majority of respondents are not Hispanic or Latino (approximately 79%), while about 16% reported being of Hispanic or Latino origin. A small share of respondents (less than 5%) preferred not to disclose their Hispanic or Latino origin.

Q5.2.3.5. What is the highest level of education you have completed?

Number of valid responses: 36,031. Educational attainment is often associated with factors such as income, occupation, access to information, and decision-making processes, all of which can influence attitudes, behaviors, and experiences towards DMWT. The valid response distribution is presented in Figure 5.5.

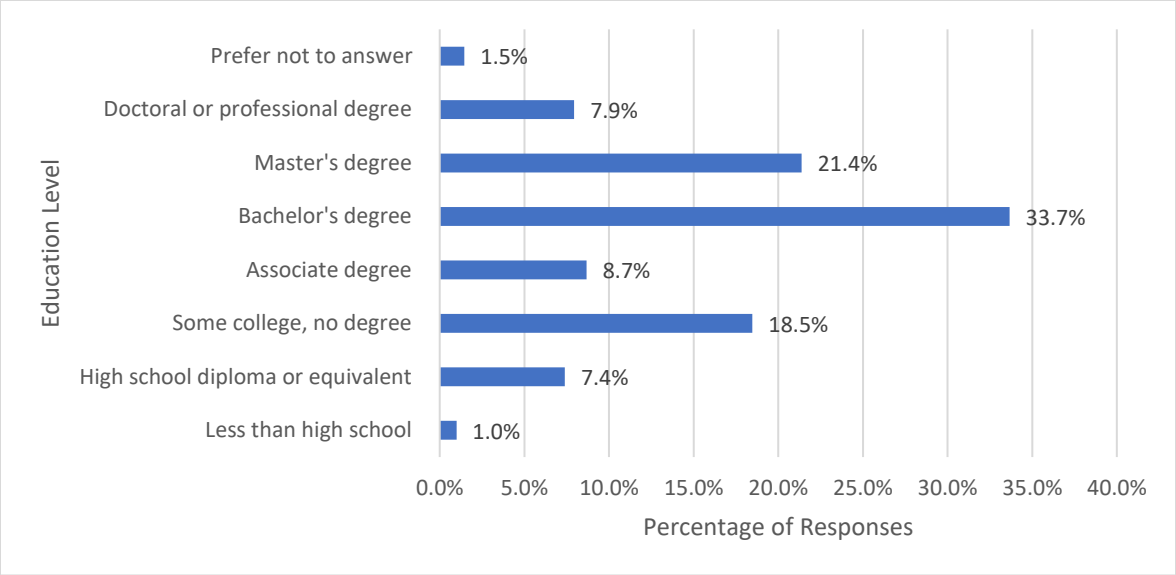


Figure 5.5. Number of Valid Responses by Education Level

The education level of respondents is relatively high, with the majority holding postsecondary credentials. Approximately 71.7% of respondents (25,825) reported having an associate degree or higher, and more than 63% (22,697) held at least a bachelor's degree, indicating a highly educated sample. Bachelor's degree holders constitute the largest group (12,131 or 33.7%), followed by those with a master's degree (7,703 or 21.4%). In contrast, respondents with a high school diploma or less represent a much smaller share (3,023 or 8.4%).

Q5.2.3.6. What is your approximate annual household income?

Number of valid responses: 35,989. The Study Team included this question to help capture respondents' socioeconomic status, which can affect behaviors, preferences, and experiences related to DMWT, making it a variable for interpreting survey responses. The valid response distribution is presented in Figure 5.6.

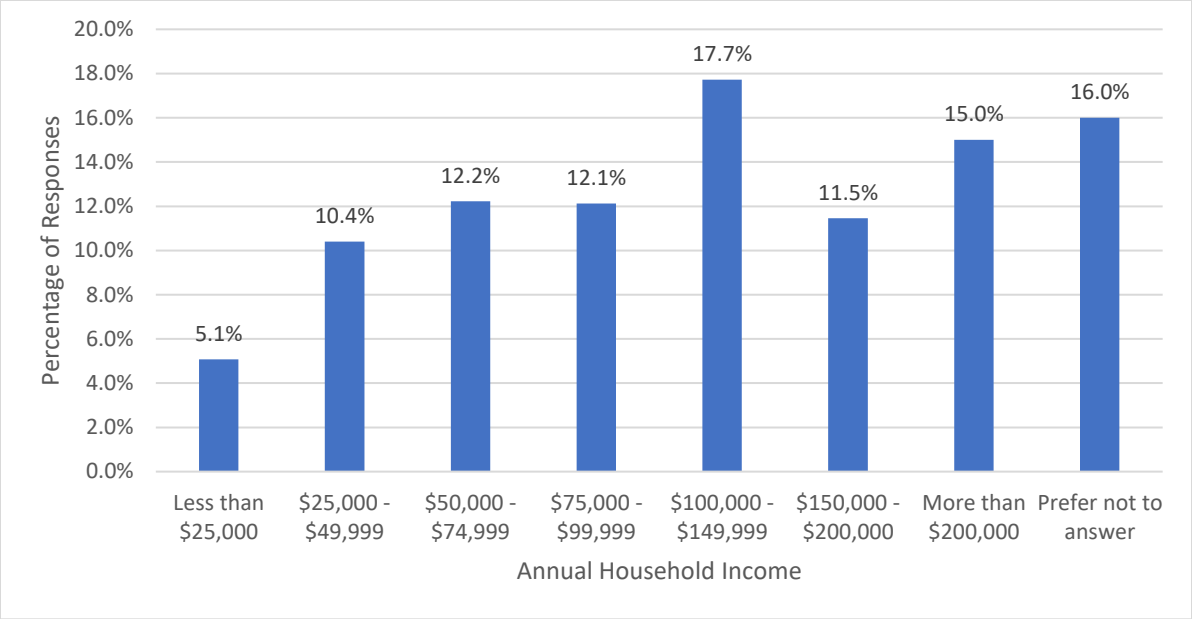


Figure 5.6. Number of Valid Responses by Annual Household Income

The annual household income distribution indicates that the sample is weighted toward middle- and higher-income households. The largest share of respondents reported incomes between $100,000 and $149,999 (6,318 or 17.7%), followed by those earning more than $200,000 (5,401 or 15.0%), suggesting strong representation from higher-income groups. Middle-income categories ranging from $50,000 to $99,999 also account for a substantial portion of the sample (8,759 or 24.3%), reflecting broad coverage of working- and upper-middle-class households. Lower-income respondents earning less than $50,000 represent a comparatively smaller share (5,569 or 15.5%). Notably, a relatively large proportion of respondents (5,758 or 16.0%) preferred not to disclose their household income, which is common in income-related survey questions.

Q5.2.3.7. Your current Texas residence location

This question collects information from respondents regarding their residence location in terms of city, county, and zip code, respectively. This provides geographic context that helps explain differences in responses across areas.

By City

Number of valid responses: 34,481. Figure 5.7 presents the heat map of the respondents' residency city.

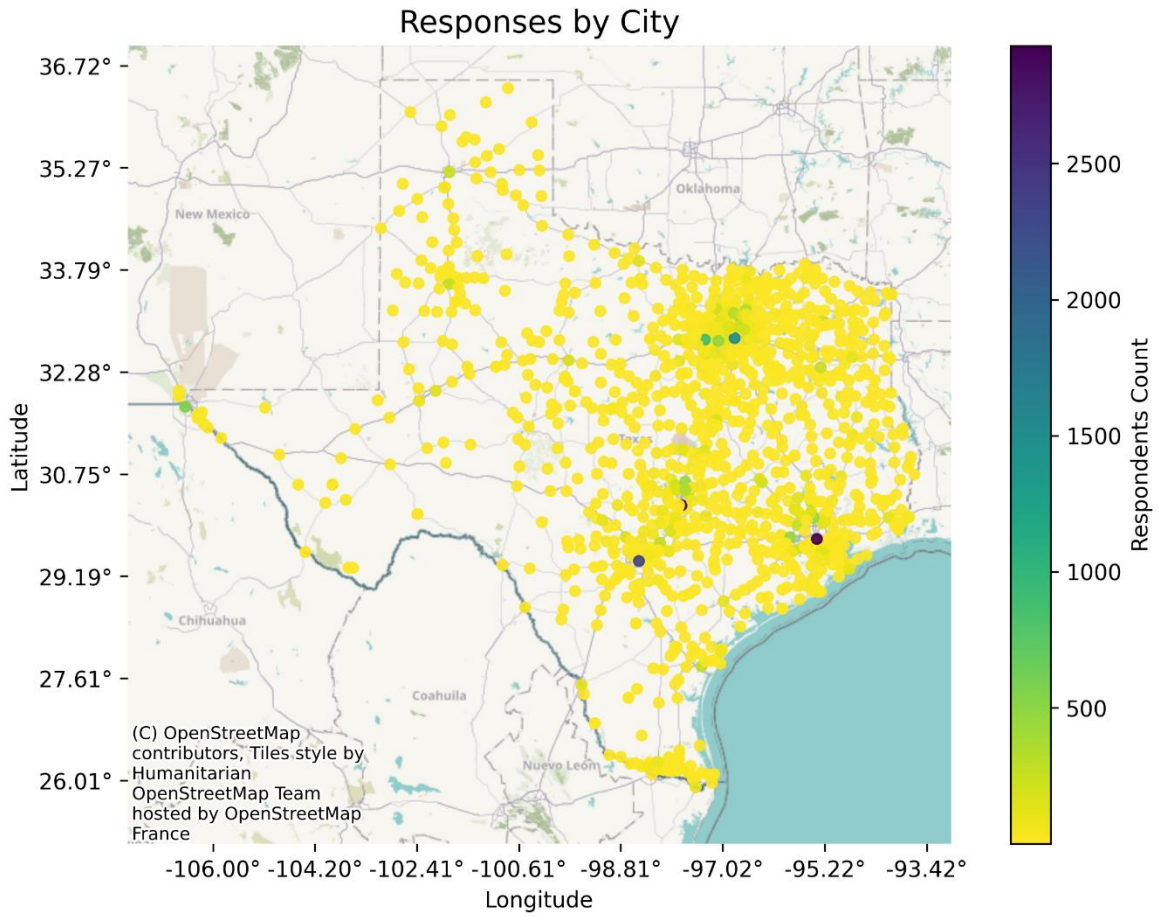


Figure 5.7. Heat Map of Responses by City

In Figure 5.7, darker color indicates the city where a higher number of respondents lives. Table 5.2 lists the top 10 cities where the survey respondents' home addresses are.

Table 5.2. Top 10 Cities where Survey Respondents Live

City	Number of Responses
Houston	2,933
Austin	2,926
San Antonio	2,337
Dallas	1,514
Fort Worth	899
El Paso	566
Plano	507
Arlington	475
Katy	460
Spring	445

Most of the top ten ranked cities are large metropolitan areas, accounting for 37.9% of the total responses (13,062 out of 34,481).

By County

Number of valid responses: 27,163. Figure 5.8 presents the heat map of the respondents' residency county.

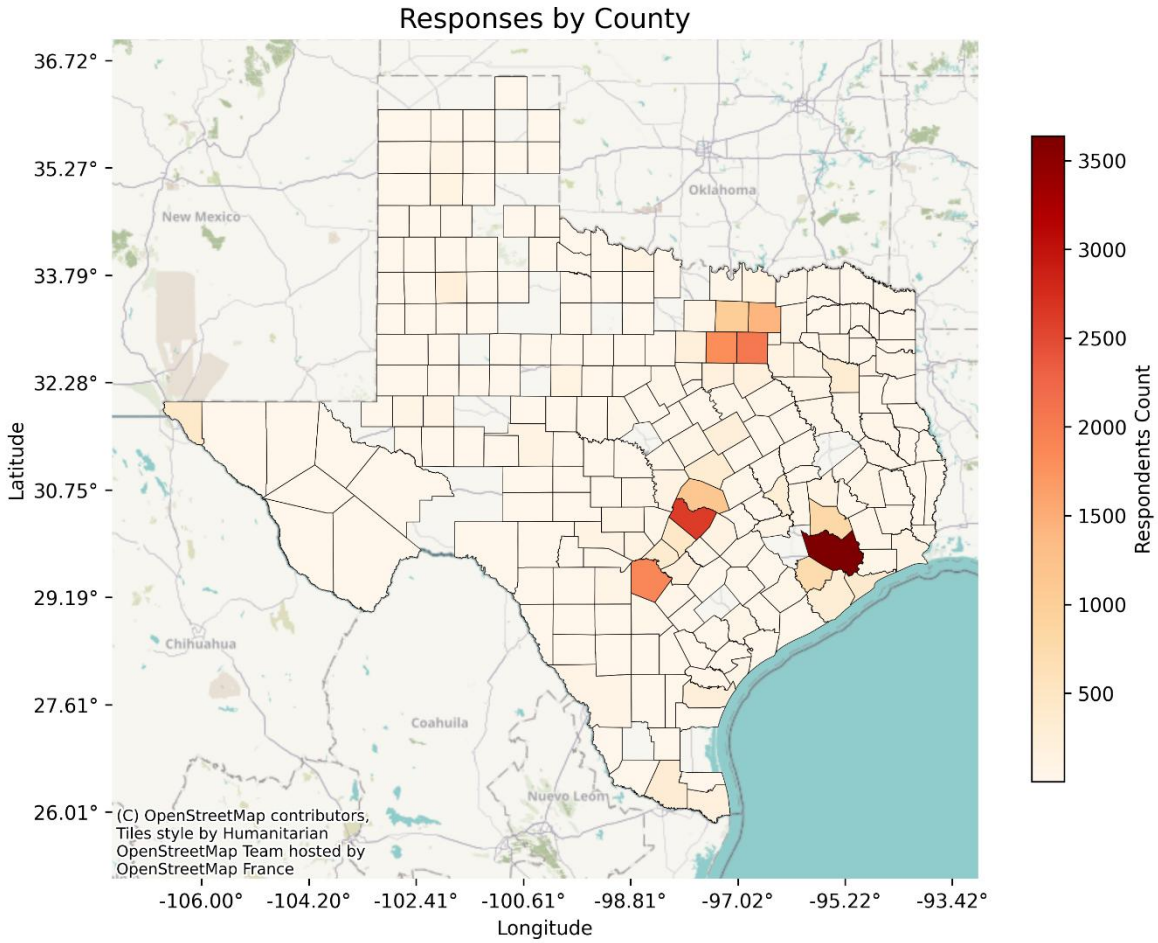


Figure 5.8. Heat Map of Responses by County

In Figure 5.8, darker color indicates the county where a higher number of respondents lives. Table 5.3 lists the top 10 counties where the survey respondents' home addresses are.

Table 5.3. Top 10 Counties where Survey Respondents Live

County	Number of Responses
Harris	3,637
Travis	2,617
Dallas	2,048
Bexar	1,886
Tarrant	1,816
Collin	1,410
Williamson	1,142

County	Number of Responses
Denton	1,021
Montgomery	795
Fort Bend	731

Similar to cities, most of the top ten ranked counties are also associated with large metropolitan areas, accounting for 63.0% of the total responses (17,103 out of 27,163).

By Zip Code

Number of valid responses: 34,624. Figure 5.9 presents the heat map of the respondents' residency zip code.

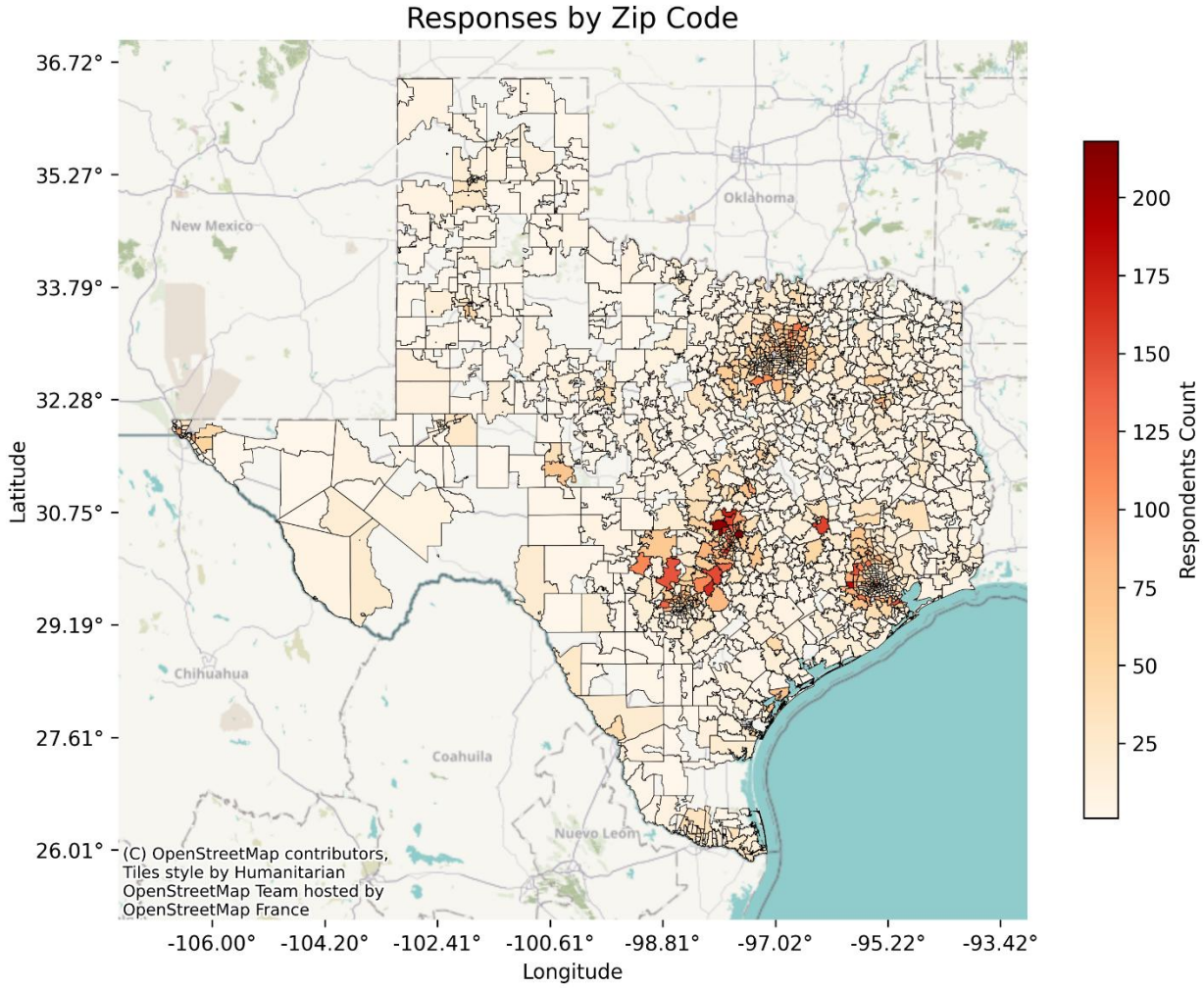


Figure 5.9. Heat Map of Responses by Zip Code

In Figure 5.9, darker color indicates the zip code where a higher number of respondents lives. Table 5.4 lists the top 10 zip codes where the survey respondents' home addresses are.

Table 5.4. Top 10 Zip Codes where Survey Respondents Live

Zip Code	Number of Responses
78660	218
78641	205
77494	185
78745	174
78633	173
78130	166
78613	157
77845	154
78628	153
78666	150

Consistent with city and county, most of the top ten ranked zip codes are large metropolitan areas, accounting for 5.0% of the total responses (1,735 out of 34,624). This is reasonable considering a city or county may have multiple zip codes.

Q5.2.3.8. Have you ever heard of the "Don't mess with Texas" slogan?

Number of valid responses: 35,920. This question is applicable to all respondents. Question 5.2.3.8 asks the respondents about their awareness of DMWT.

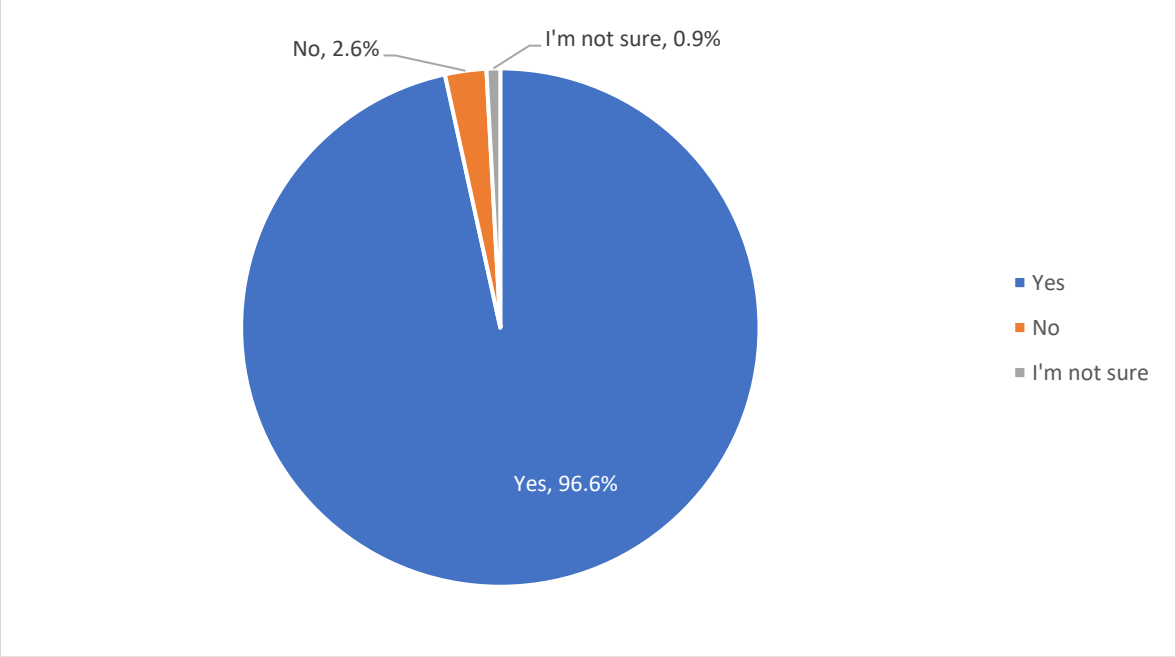


Figure 5.10. Awareness of DMWT Slogan

The survey results show a very high level of DMWT slogan awareness among respondents, with 34,687 individuals (96.6%) indicating that they had heard of the program. In contrast,

only 925 respondents (2.6%) reported that they were not aware, and 308 (0.9%) indicated they were unsure. Overall, the chart suggests that awareness of the program is widespread within the respondents, indicating that outreach or communication efforts have largely been effective over the past 40 years.

Q5.2.3.9. How frequently do you see or hear the "Don't mess with Texas" slogan?

Number of valid responses: 34,128. This question is only applicable to those who answered "Yes" to Question 5.2.3.8. Question 5.2.3.9 asks the respondents about the frequency they see or hear the slogan.

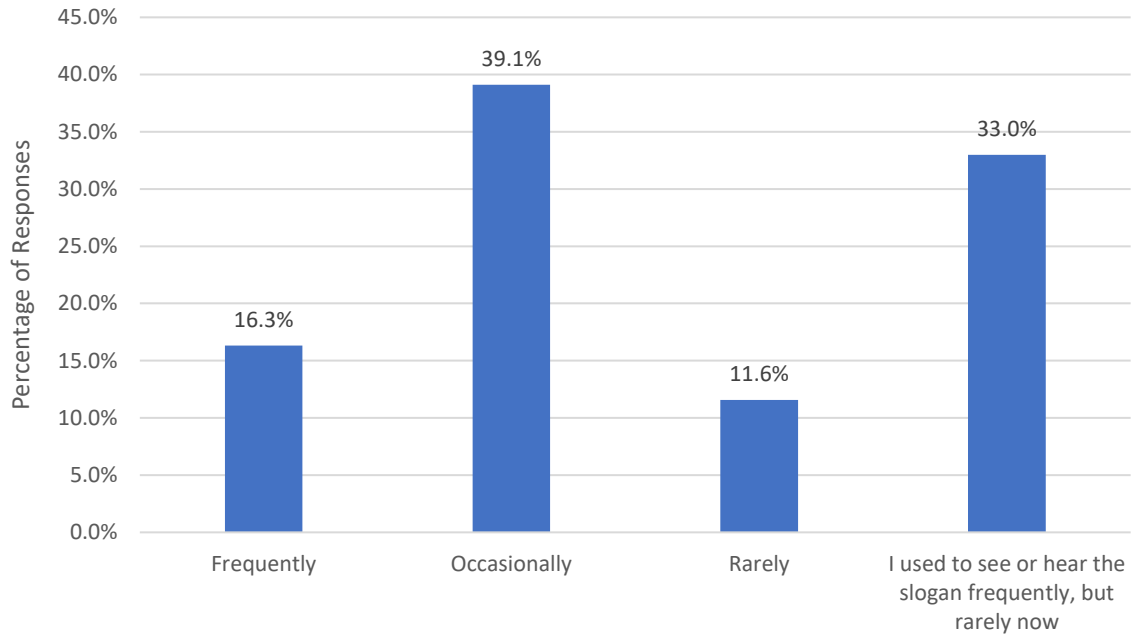


Figure 5.11. Frequency to see or hear DMWT Slogan

The frequency results indicate varying levels of exposure to the slogan among respondents. The largest group reported occasional exposure (13,348 respondents or 39.1%), followed closely by those who indicated that they used to see or hear the slogan frequently, but rarely do so now (11,258 respondents or 33.0%). A smaller proportion reported frequent exposure (5,570 respondents or 16.3%), while rare exposure was reported by 3,952 respondents (11.6%). Overall, the results suggest that while the slogan remains recognizable, its current visibility is more often occasional than frequent, with many respondents perceiving reduced exposure compared to the past, underscoring the value of continuing investment in refreshed media content and a multi-platform presence.

Q5.2.3.10. How did you hear/learn about the "Don't mess with Texas" slogan? Check all that apply.

Number of valid responses: 34,063. This question is only applicable to those who answered "Yes" to Question 5.2.3.8. Question 5.2.3.10 asks the respondents about the sources where they hear or learn about the DMWT slogan. Note that this is a multiple-choice question.

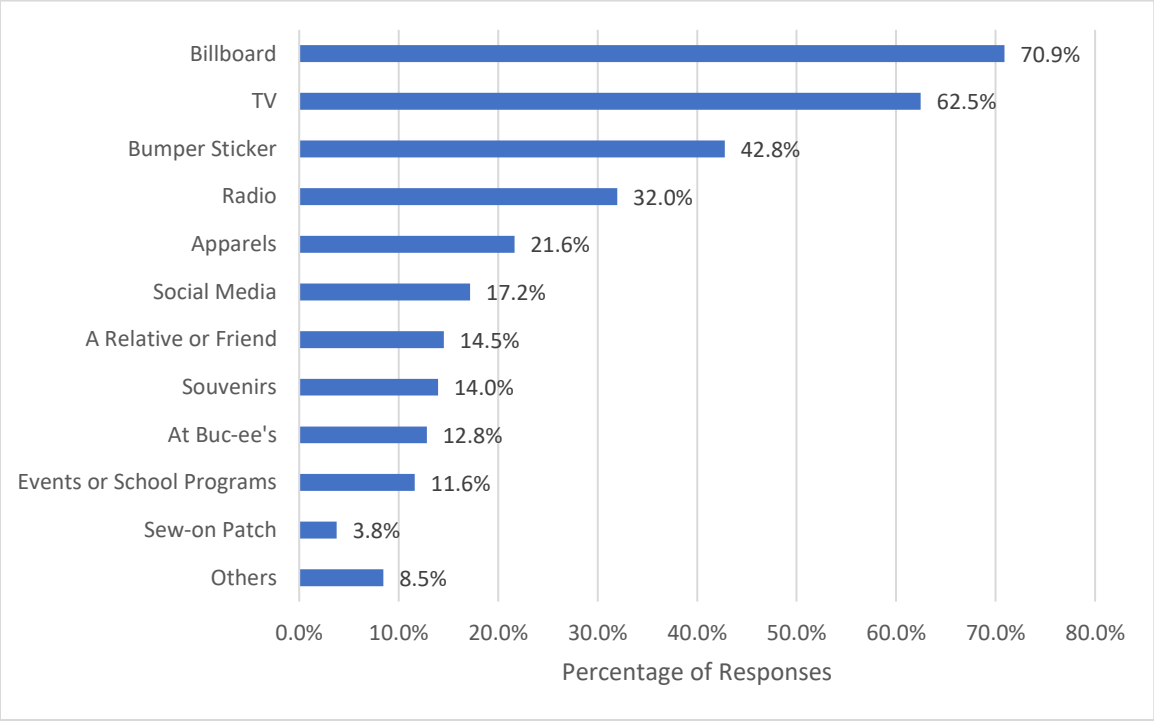


Figure 5.12. Sources to Hear or Learn about DMWT Slogan

The results indicate that traditional and highly visible media are the dominant sources through which respondents hear/learn about DMWT slogan. Billboards are the most frequently selected source (24,147 respondents or 70.9%), followed by television (21,283 or 62.5%) and bumper stickers (14,567 or 42.8%), highlighting the strong impact of visual and roadway-based messaging. Radio also remains an important channel (10,886 or 32.0%), while apparel, social media, and word of mouth from relatives or friends provide moderate levels of exposure. In contrast, sources such as events or school programs (11.6%) and sew-on patches (3.8%) have received little attention.

In addition, 2,884 respondents (8.5%) provided the information sources by selecting "others", including:

- Sport events, e.g., NASCAR Camping World Truck Series;
- Tribal knowledge;
- Roadside trash barrels;
- Road sign;
- At museums, e.g., Judge Roy Bean Museum, Bob Bullock Museum;

- Website of other authorities, e.g., NTTA Toll tag website, DPS website;
- Magazines;
- Bar trivia;
- At HEBs.

The findings suggest that mass media and high-visibility physical placements play a central role in information dissemination, with digital and interpersonal channels serving as complementary sources.

Q5.2.3.11. What do you think the "Don't mess with Texas" slogan means? Check all that apply

Number of valid responses: 35,350. This question is only applicable to those who answered "Yes" to Question 5.2.3.8. Question 5.2.3.11 intends to collect whether respondents understand the meaning of DMWT slogan. Note that this is a multiple-choice question.

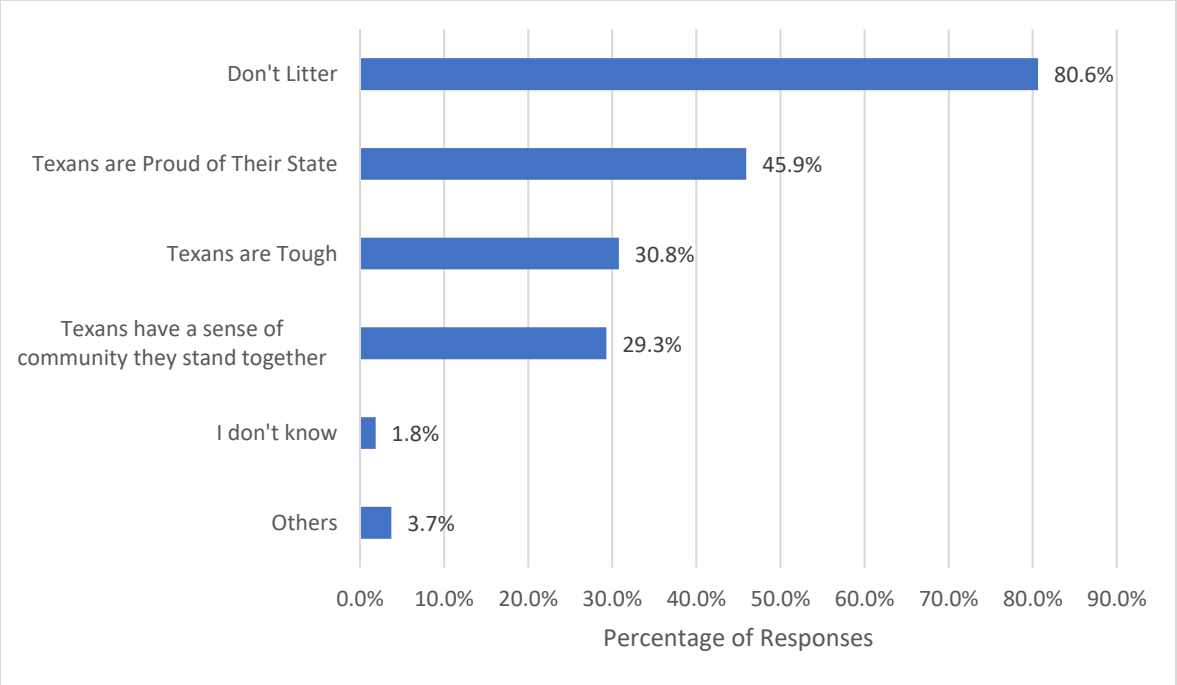


Figure 5.13. Understanding of the DMWT Slogan

The perceived meaning of the message is strongly centered on anti-littering and environmental responsibility, with "Don't Litter" cited most frequently (28,502 respondents or 80.6%), indicating that this interpretation is the dominant and most clearly understood message. In addition, many respondents associated the message with broader meanings, particularly state pride (16,241 or 45.9%) and toughness (10,876 or 30.8%), as well as a sense of community and unity (10,353 or 29.3%). Very few respondents (652 or 1.8%) selected "I don't know", suggesting that the message is generally well understood.

In addition, 1,313 respondents (3.7%) provided their understandings by selecting “Other meanings not listed”, including:

- Don’t break Texas laws;
- Take care of this land and mind your manners while you’re in it;
- Drive safely;
- Texans are better than others;
- Texans are kind and hospitable - but don’t tread on us. We’re no fools;
- Road is patrolled and monitored regularly.

Q5.2.3.12. How do you think the "Don't mess with Texas" slogan has affected your behavior about littering?

Number of valid responses: 35,350. This question is only applicable to those who answered “Yes” to Question 5.2.3.8. Question 5.2.3.12 asks the respondent whether the DMWT slogan has changed their behavior about littering.

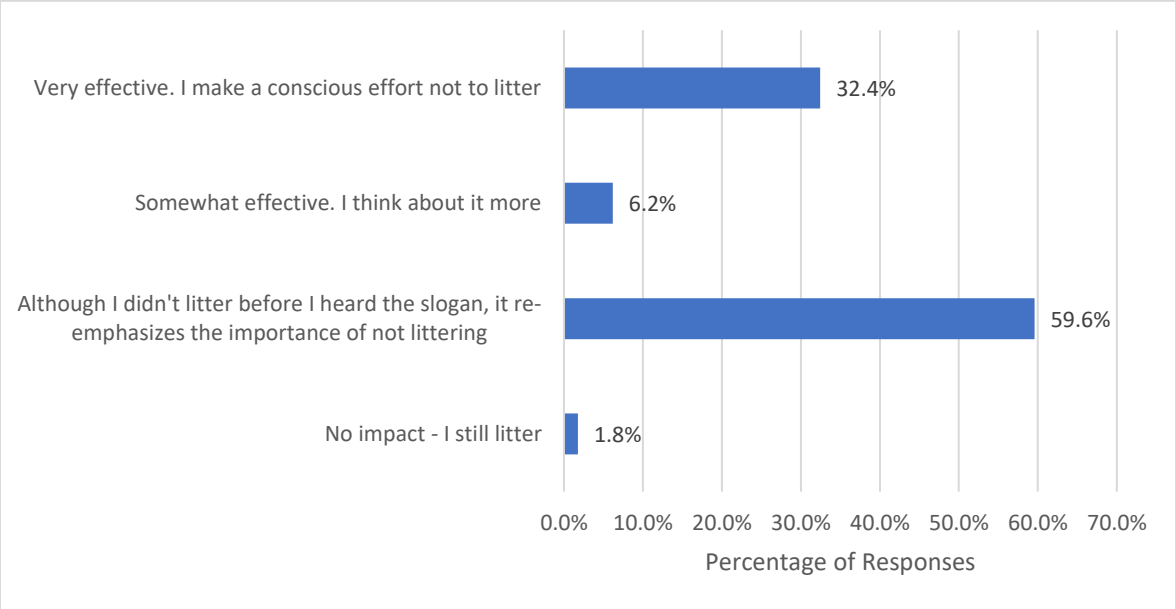


Figure 5.14. Whether DMWT Has Changed Behavior Regarding Littering

The results indicate that the DMWT slogan has a predominantly positive influence on behavior and attitudes toward littering. A large majority of respondents (92.0%) reported that the slogan either re-emphasized the importance of not littering (19,668 respondents or 59.6%) or was very effective in prompting a conscious effort not to litter (10,707 respondents or 32.4%), suggesting strong reinforcement and behavioral impact. A smaller group indicated that the slogan was somewhat effective, causing them to think about littering more often (2,042 respondents or 6.2%). In contrast, only a very small number of respondents reported no impact and continued littering (585 respondents or 1.8%). Overall,

the findings suggest that the slogan is effective in reinforcing anti-littering attitudes and behaviors among most respondents.

Q5.2.3.13. How do you think "Don't mess with Texas" slogan will affect your behavior about littering?

Number of valid responses: 1,070. This question is only applicable to those who answered "No" or "I'm not sure" to Question 5.2.3.8. Question 5.2.3.13 asks the respondent whether the DMWT slogan will change their behavior about littering after they learn about its meaning.

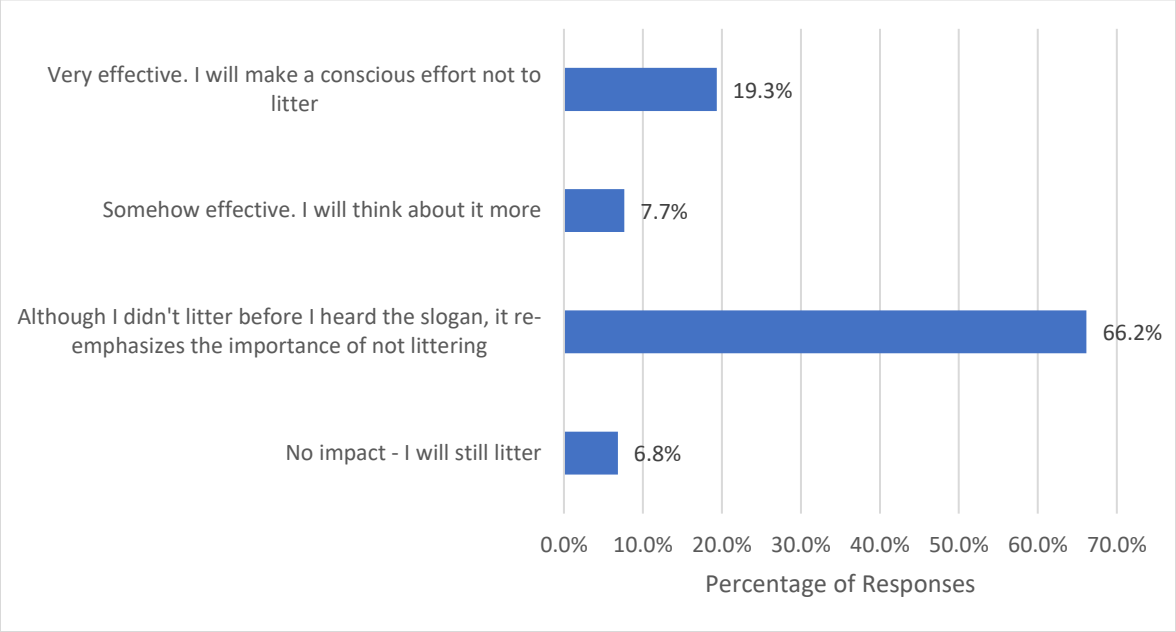


Figure 5.15. Whether DMWT Will Change Behavior Regarding Littering

The results are very similar to Figure 5.14: A large majority of respondents (85.5%) reported that the slogan will either re-emphasize the importance of not littering (708 or 66.2%) or will be very effective in prompting a conscious effort not to litter (207 or 19.3%), suggesting strong reinforcement and behavioral impact. A smaller group indicated that the slogan was somewhat effective – they will think about littering more often (82 or 7.7%). Only a very small number of respondents reported that there will be no impact and they will continue littering (73 or 6.8%).

Q5.2.3.14. Do you like and support the "Don't mess with Texas" slogan? Why?

Number of valid responses: 34,126. This question is applicable to all respondents. Question 5.2.3.14 asks respondents whether they like the slogan and to provide the reasons for their preference.

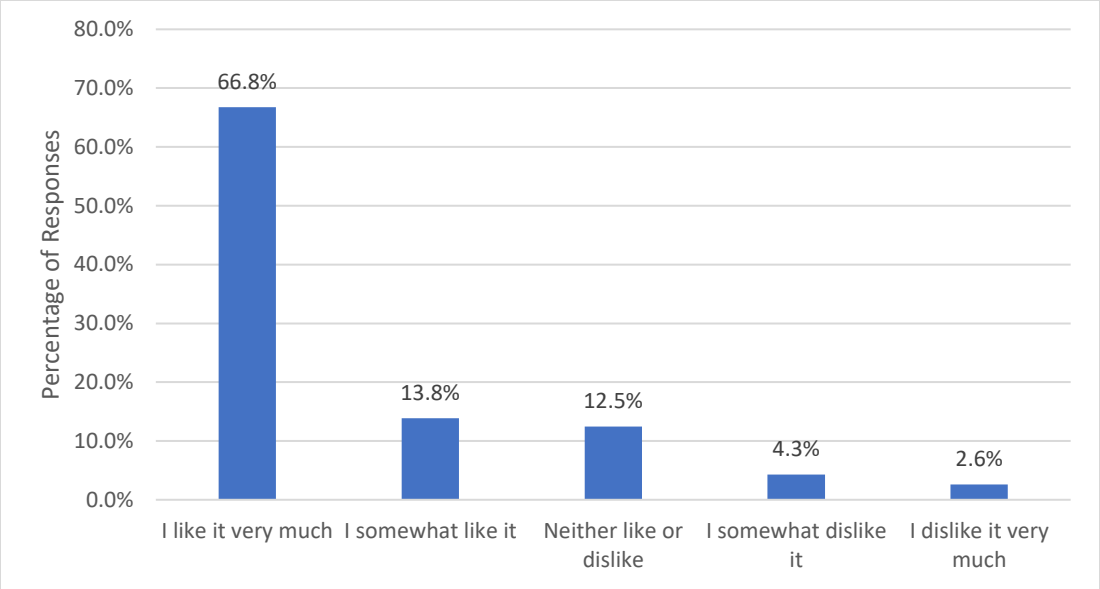


Figure 5.16. Whether the Respondents Like and Support the DMWT Slogan

The results show an overall strongly positive reception of the slogan among respondents. A clear majority reported that they like it very much (22,783 or 66.8%), with an additional group indicating they somewhat like it (4,723 or 13.8%), demonstrating broad approval. A moderate number of respondents expressed a neutral opinion (4,258 or 12.5%). Relatively few respondents reported negative views, with only 1,467 (4.3%) somewhat disliking it and 895 (2.6%) disliking it very much. The Study Team assigned a five-point Likert scale: 5 – like very much, 4 – somewhat like it, 3 – neither like nor dislike, 2 – somewhat dislike, and 1 – dislike very much. The average score is 4.4, indicating that the slogan is well received by most respondents, with favorable opinions far outweighing neutral or negative perceptions.

For each rating, the Study Team selected some frequently mentioned reasons provided by the respondents.

Reasons for “I like it very much”:

- The slogan has been used for many years and has become part of Texas culture and image. Many other states recognize Don't mess with Texas as an effective message.
- It is catchy and easy to remember
- It’s a fun way to show Texas pride and spread awareness of the importance to not make our state “messy” and to not litter
- It allows us as a community to keep our streets clean
- It has a sense of pride with saying the slogan. Part of state pride.

Reasons for “I somewhat like it”:

- It combines the Texas sense of pride with a bit of a forceful encouragement

- It’s confusing to some as to its actual meaning
- Good message years ago. Would like to see update which would incorporate "Drive Friendly"
- It's really just a pride thing now. You hear it when traveling outside Texas and it's kind of cool
- I like placing an emphasis on a state identity tied to anti-littering
- I do but I am not sure the real impact of others due to the amount of littering

Reasons for “Neither like or dislike”:

- It's clever but can be misinterpreted – some people won’t connect it with littering
- I do not litter, so no impact on me
- I think it was effective throughout the years. At the same time somehow aggressive
- No enforcement on it

Reasons for “I somehow dislike it”:

- It is not intuitive what it means - too easy to ignore the original message in favor of some other meaning that can be attributed to it
- It feels like a more political slogan than one on littering
- It’s been around too long and now fades into the background and needs to be refreshed
- I don't believe those from other states understand the slogan and just think Texans are arrogant.

Reasons for “I dislike it very much”:

- Don’t want to spend my tax money when people still litter
- I had no idea it had anything to do with anti-littering. Catchy phrase but not clearly identified to me
- People have both misconstrued and misappropriated its actual meaning

Q5.2.3.15. Have you lived in US state(s) other than Texas?

Number of valid responses: 34,058. This question is applicable to all respondents. The purpose of this question is to identify if there are any similar slogans in other states.

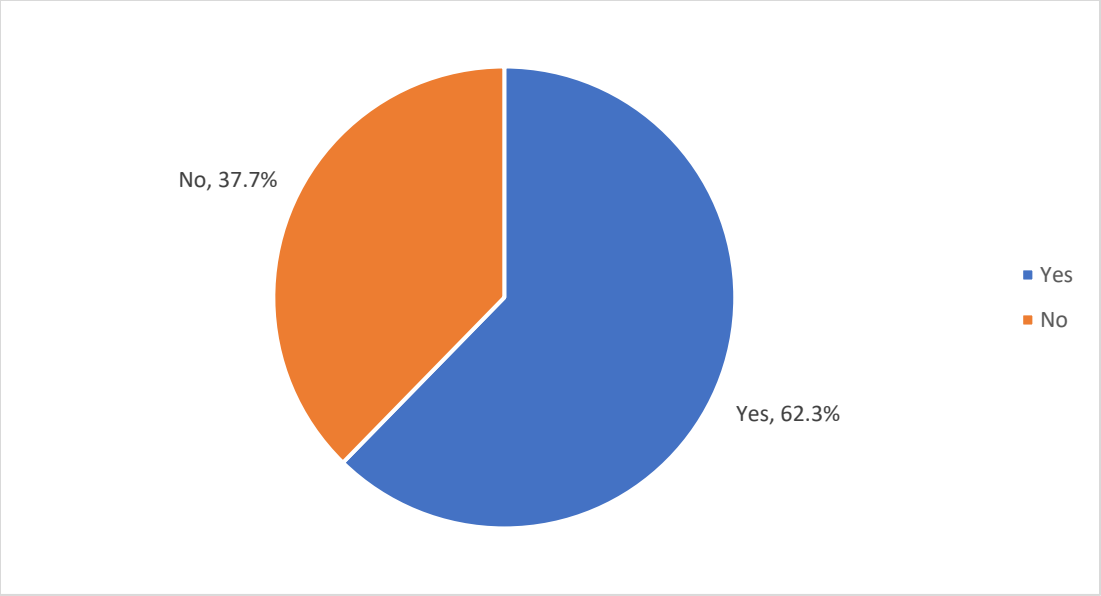


Figure 5.17. Whether a Respondent Lived in other US States

Most (21,223 or 62.3%) respondents have lived in at least one other US state and 12,835 (37.7%) only lived in Texas.

Q5.2.3.16. Are you aware of any anti-littering campaign slogans from your former state(s)? If yes, please specify slogans and corresponding state.

Number of valid responses: 21,003. This question is only applicable to respondents who answered "Yes" to Question 5.2.3.15. Following up on Question 5.2.3.15, Question 5.2.3.16 askes the respondent to name similar anti-littering campaign slogans in other states.

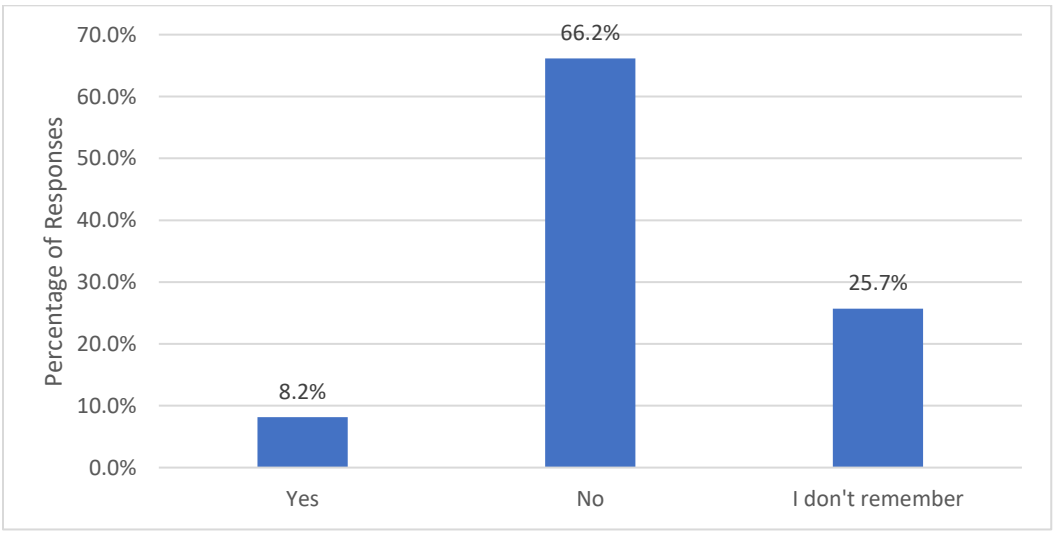


Figure 5.18. Awareness of Similar Anti-Littering Slogan in Other States

A total of 1,712 (8.2%) respondents reported that they are aware of similar anti-littering slogans in other states, some examples including:

- “Clean California” – California
- “Virginia is for Lovers” – Virginia
- $1,000 fine for littering in Wyoming
- “Keep Alabama Beautiful” – Alabama
- “Keep New Mexico Beautiful” – New Mexico
- “Malama ka aina” and “Lend a hand to clean our land” – Hawai’i
- “Keep Colorado Beautiful” – Colorado
- “Pack it in, pack it out” – Nebraska
- “Keep it Clean MN” – Minnesota
- "Drive it home... Keep our paradise litter-free" – Florida
- "Don't Trash Arizona" – Arizona
- “Keep Vermont Beautiful” – Vermont
- “Stash Your Trash” – Hawai’i
- "Don't Drop it on Alabama" – Alabama
- "Keep Virginia Beautiful - Don't Be a Litterbug" – Virginia

Q5.2.3.17. Compared with Texas highways, do you think your former state(s)' highways have less litter?

Number of valid responses: 21,041. This question is only applicable to respondents who answered “Yes” to Question 5.2.3.15. Question 5.2.3.17 asks the respondents to compare the amount of highway litter between their former state(s) and Texas.

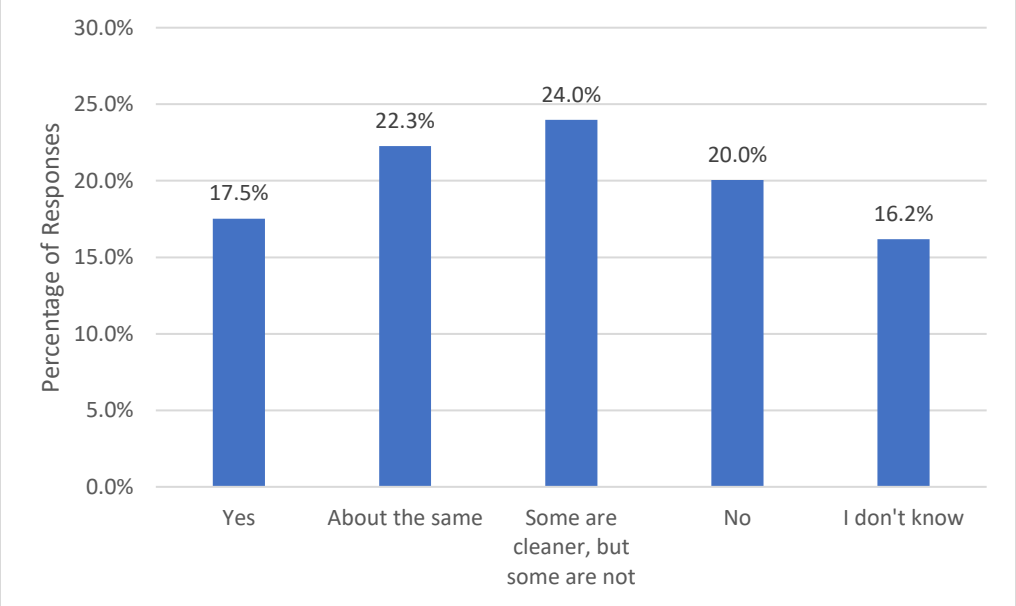


Figure 5.19. Whether Former State(s)’ Highway Have Less Litter than Texas

Responses suggest mixed perceptions when comparing litter levels on highways in former state(s) to those in Texas. The largest group of respondents indicated that some former states' highways are cleaner while others are not (5,045 or 24.0%), reflecting varied experiences across locations. A similar number felt conditions were about the same (4,686 or 22.3%) or believed that former states' highways have more litter than Texas (4,217 or 20.0%). Fewer respondents perceived former states' highways as having less litter than Texas (3,687 or 17.5%).

Q5.2.3.18. Have you lived in country(ies) other than the US?

Number of valid responses: 33,900. This question is applicable to all respondents. The purpose of this question is to identify if there are any similar slogans in other countries.

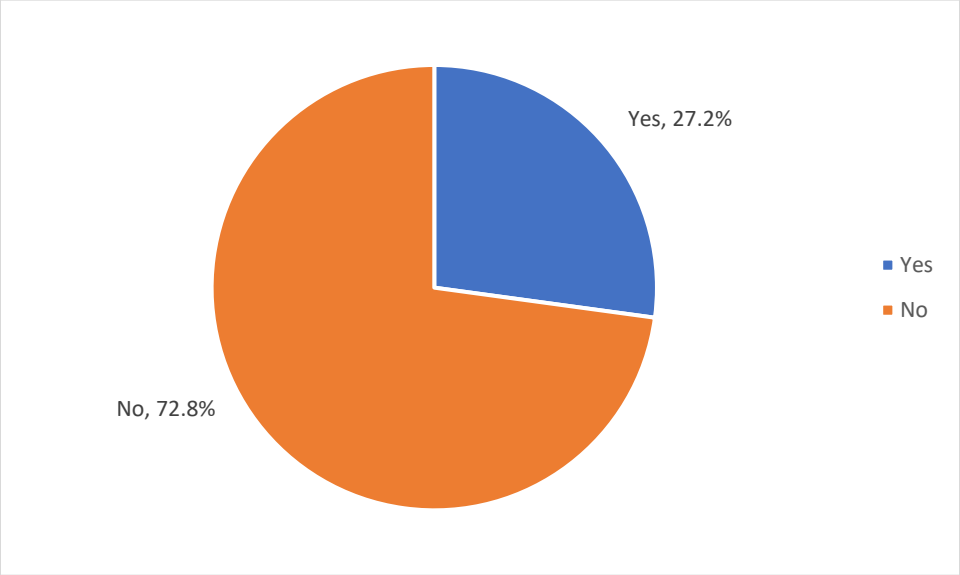


Figure 5.20. Whether a Respondent Lived in Other Country(ies)

Most (24,694 or 72.8%) respondents have only lived in the US and 9,206 (27.2%) lived in at least one other country.

Q5.2.3.19. Are you aware of any anti-littering campaign slogans from your former country(ies)? If yes, please specify slogans and corresponding country.

Number of valid responses: 9,051. This question is only applicable to respondents who answered "Yes" to Question 5.2.3.18. Question 5.2.3.19 askes the respondent to name similar anti-littering campaign slogans in other countries.

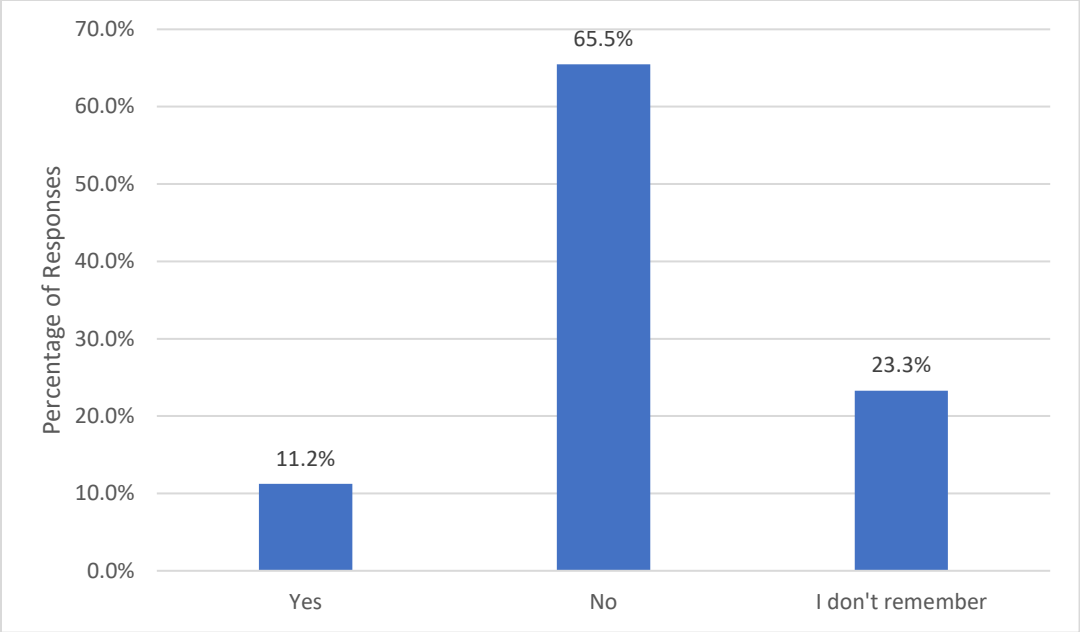


Figure 5.21. Awareness of Similar Anti-Littering Slogans in Other Countries

A total of 1,016 (11.2%) respondents reported that they are aware of similar anti-littering slogans in other countries, some examples including:

- “Keep Britain Clean” – UK
- “Let's not allow trash to become part of the landscape" and "Raise awareness for Bogotá! We all deserve a cleaner city” – Columbia
- “Let's Clean-Up Europe.” – Germany
- “Apúntale a la cesta (Throw it in the trash)” – Venezuela
- “Mantén limpia tu ciudad (Keep our city clean)” – Mexico
- “Pone la basura en su lugar (Put the trash in its place)” – Mexico
- “Swachh Bharat (Clean India mean healthy India)” – India
- “Reduce, Reuse, Recycle” – Philippines
- “Great environment relies on everyone” – China
- "Keep Australia Beautiful" – Australia
- “Ponga la basura en su lugar (Dispose of trash properly)” – Peru
- Trash cans are placed everywhere and it will actively shame you for littering – Japan
- “Don't be a litterbug” – Canada
- "Enough with the butts!" - Greece
- "Keep it, Bin it" - England
- “Cleanliness is next to Godliness” – Pakistan
- “Be a tidy kiwi” – New Zealand

Q5.2.3.20. Compared with Texas highways, do you think your former country or countries' highways have less litter?

Number of valid responses: 9,059. This question is only applicable to respondents who answered "Yes" to Question 5.2.3.18. Question 5.2.3.20 asks the respondents to compare the amount of highway litter between their former country(ies) and Texas.

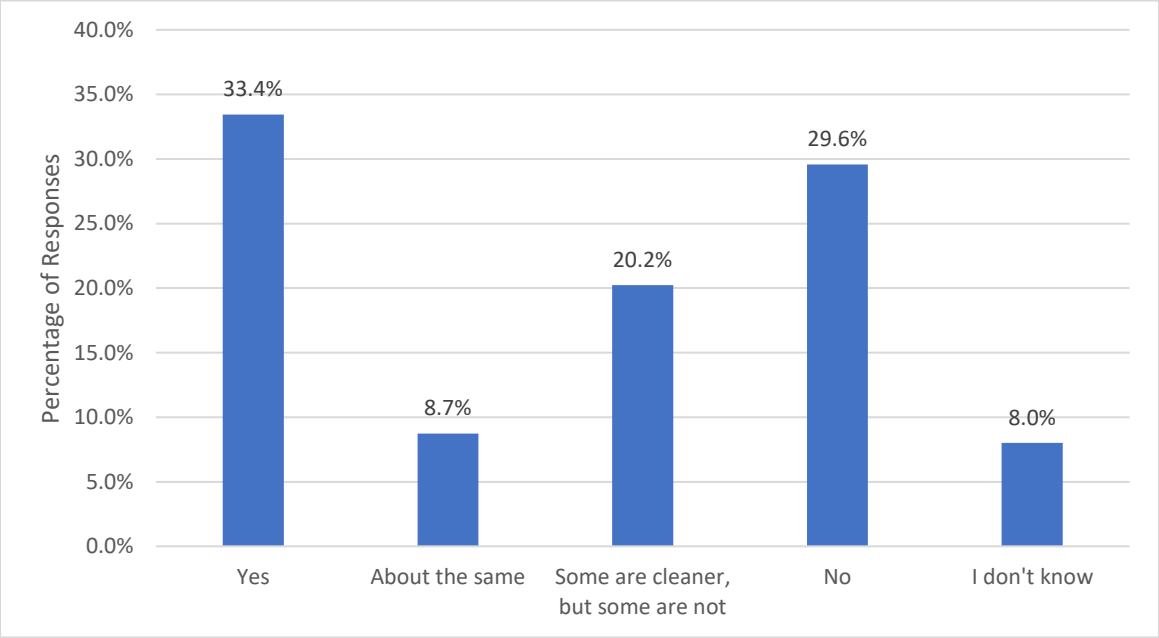


Figure 5.22. Whether Former Country(ies)' Highway Have Less Litter than Texas

The responses show varied perceptions when comparing litter levels on highways in former countries to those in Texas. The largest share of respondents (3,030 or 33.4%) indicated that highways in their former country or countries have less litter than Texas, suggesting that many perceive Texas highways as comparatively more littered. A substantial number reported mixed experiences, noting that some highways are cleaner while others are not (1,833 or 20.2%). Others felt conditions are about the same (791 or 8.7%) or believed that former countries' highways do not have less litter than Texas (2,680 or 29.6%). A smaller group selected "I don't know" (725 or 8.0%).

Q5.2.3.21. Are you aware that littering in Texas is against the law and can have fines of $500 to more than $4,000 and may also have jail time?

Number of valid responses: 33,786. This question is applicable to everyone. Question 5.2.3.21 asks the respondents whether they are aware that littering is against the law and may receive fines as well as jail time.

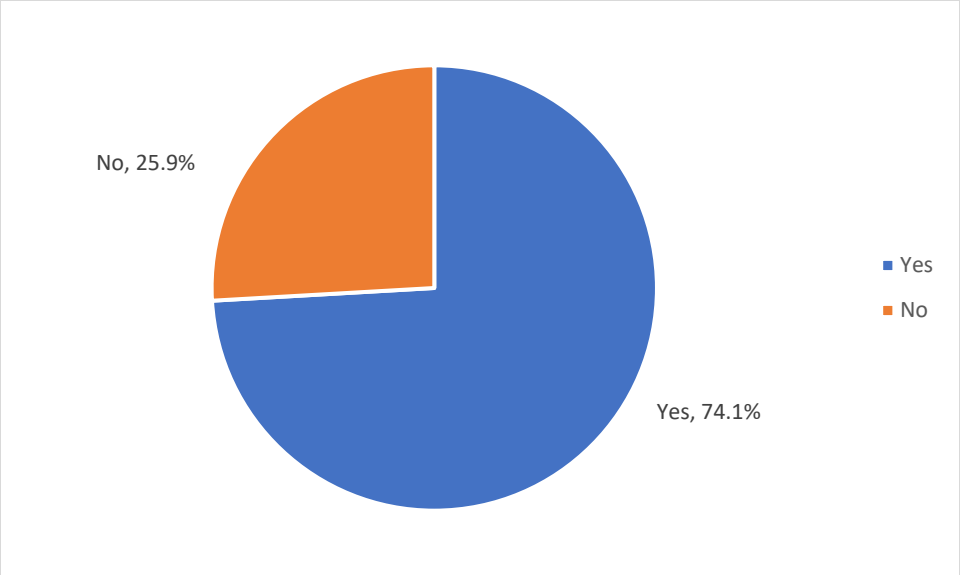


Figure 5.23. Awareness of Littering is Against Law in Texas

The majority (25,032 or 74.1%) of the respondents indicated that they are aware that littering in Texas is against the law and can have fines of $500 to more than $4,000 and may also have jail time.

Q5.2.3.22. What types of litter have you seen on Texas highways? Please select all that apply.

Number of valid responses: 33,736. This question is applicable to everyone. Question 5.2.3.22 intends to collect information on litter types along Texas highways. Note that this is a multiple-choice question.

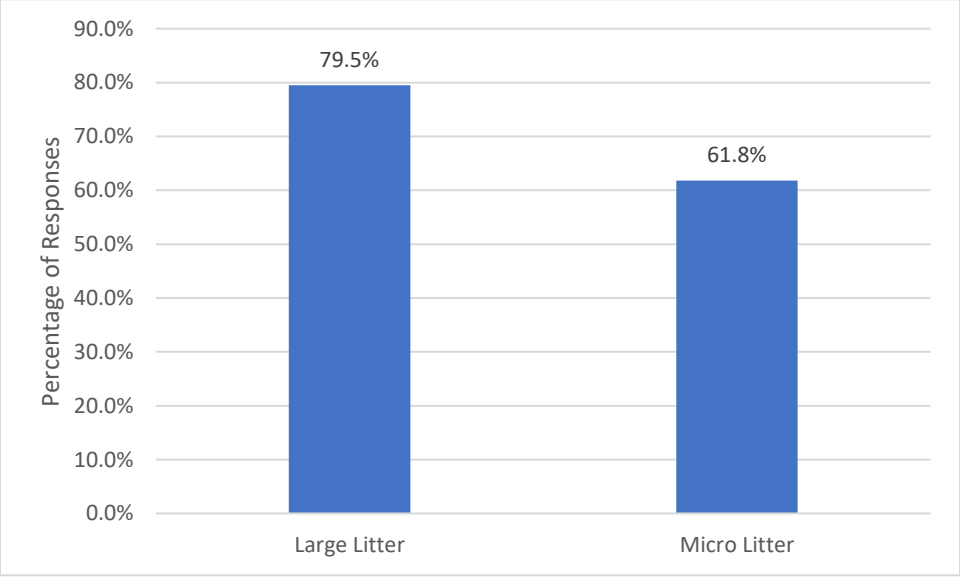


Figure 5.24. Litter Types along Texas Highways – Large vs. Micro

The results indicate that respondents most commonly observe large litter, which was identified by 26,821 respondents (79.5%), suggesting that visibly larger items are the most noticeable form of litter. Micro litter, while less frequently reported, was still identified by a substantial number of respondents (20,856 or 61.8%), highlighting that smaller debris such as cigarette butts and small packaging is also a widespread concern.

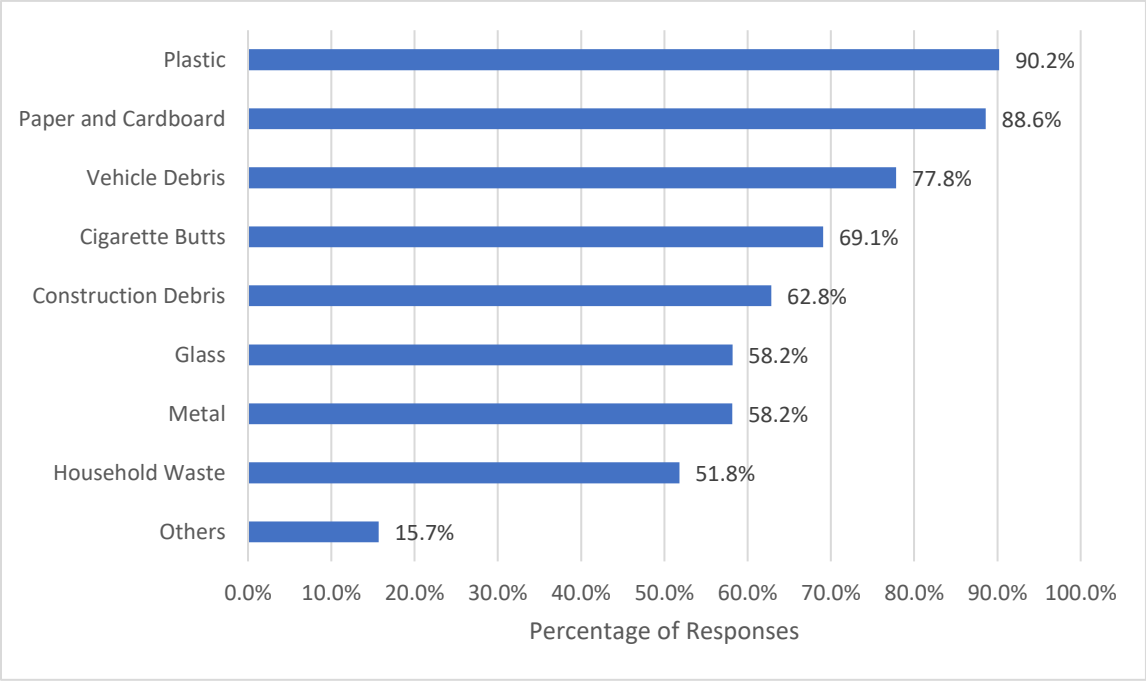


Figure 5.25. Litter Types along Texas Highways

The survey results show that plastic (30,437 or 90.2%) and paper and cardboard (29,891 or 88.6%) are the most commonly identified types of litter, highlighting the prevalence of everyday consumer waste along roadways. Vehicle-related debris (26,263 or 77.8%) and cigarette butts (23,298 or 69.1%) are also frequently reported, indicating significant contributions from transportation activities and individual behavior. In addition, construction debris (62.8%), glass (58.2%), and metal (58.2%) are widely observed, suggesting that litter originates from both personal and commercial sources. Household waste appears in notable amounts (51.8%), while other types of litter (15.7%) are less frequently cited.

Q5.2.3.23. Why do you think people litter along the highway? Please check all that apply.

Number of valid responses: 33,583. This question is applicable to everyone. Question 5.2.3.23 tries to identify the reason why people litter along the highway. Note that this is a multiple-choice question.

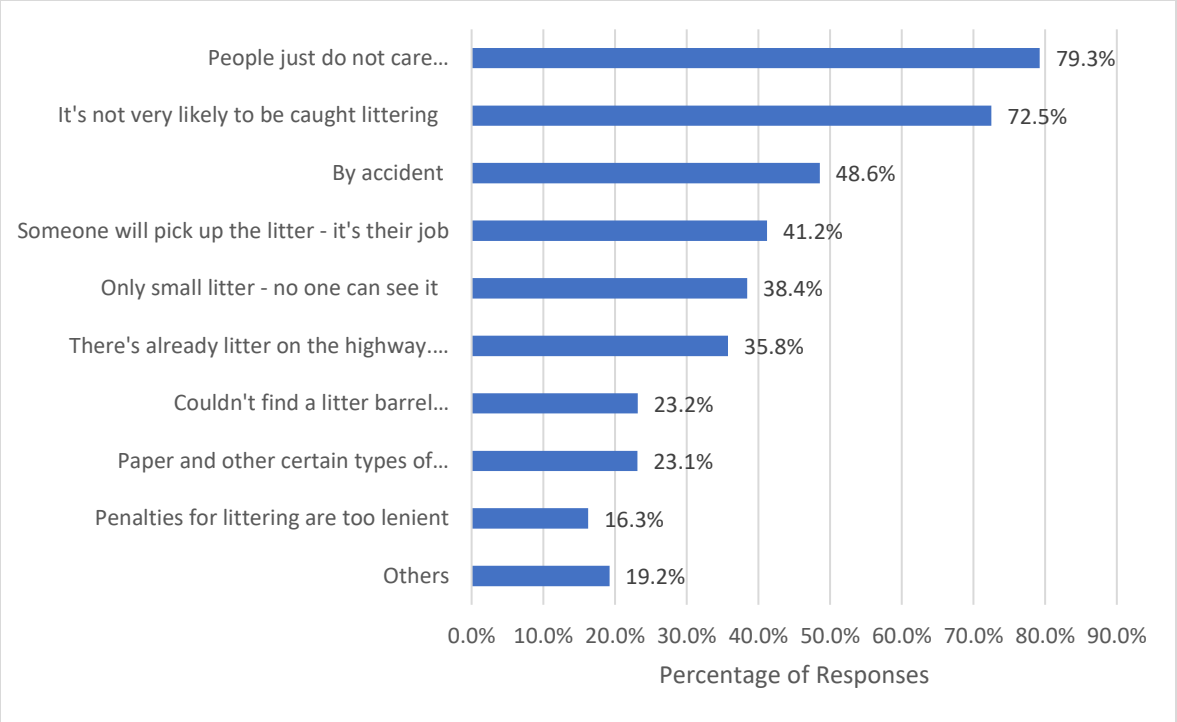


Figure 5.26. Reasons Why People Litter

The results suggest that littering behavior is driven primarily by attitudinal and enforcement-related factors rather than convenience alone. The most frequently cited reason is that people do not care about the environment (26,617 or 79.3%), followed closely by the belief that it is not very likely to be caught littering (24,347 or 72.5%), highlighting the perceived lack of social and legal consequences. Accidental littering is also common (16,312 or 48.6%), along with assumptions that someone else will clean it up (13,846 or 41.2%) or that small litter is not noticeable (12,906 38.4%). Social norms play a role as well, as many respondents noted that existing litter encourages more littering (12,017 or 35.8%). Practical barriers, such as the inability to find a trash can (23.2%), and misconceptions about decomposition (23.1%) or penalties being too lenient (16.3%) were selected less frequently.

In addition, 6,458 respondents (19.2%) provided potential reasons by selecting “Other reasons not listed”, example reasons including:

- Laziness and a lack of respect for others;
- The back of pickup trucks is a garbage can;
- Homeless people;
- Lack of education or lack of pride;
- Operators of both commercial and private trucks & trailers do NOT secure their loads properly;

- People aren't mindful of their actions anymore or care about the consequences to ourselves and the earth;
- Trash bags opened by animals spreading litter everywhere;
- Don't want to keep trash in their car;
- The accessibility to large item disposal (mattresses, appliances, tires, etc.) is limited or non-existent in rural areas and small towns.

Q5.2.3.24. After seeing and learning the "Don't mess with Texas" slogan, how likely are you to confront someone who litters?

Number of valid responses: 33,464. This question is applicable to everyone. Question 5.2.3.24 tries to identify respondents' behavioral change regarding confronting someone who litters after learning the DMWT slogan.

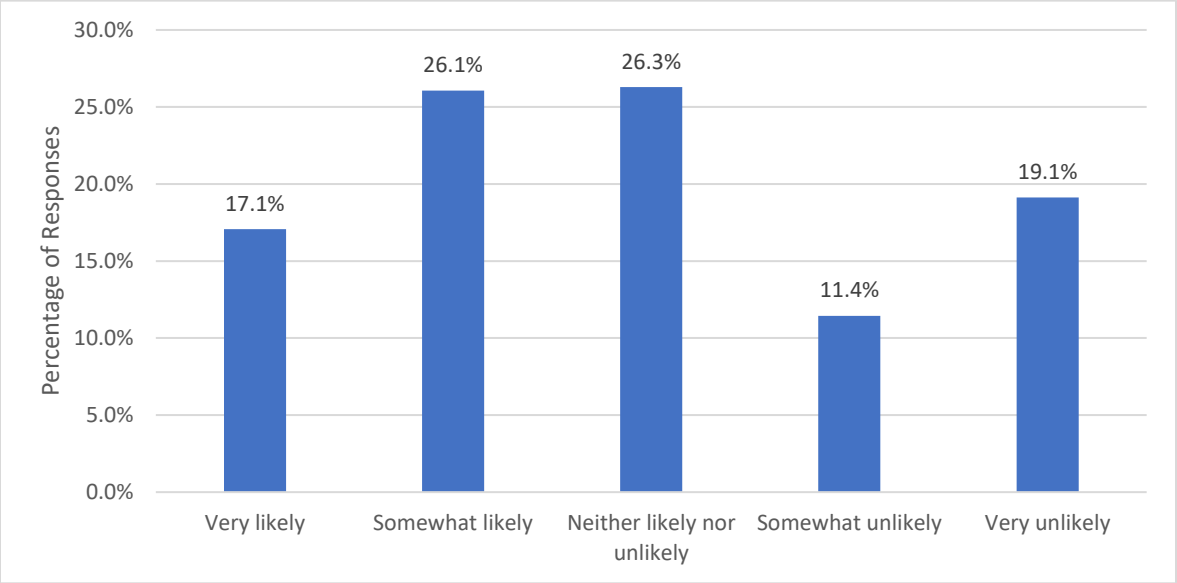


Figure 5.27. Likelihood to Confront Someone Who Litters

The responses indicate mixed willingness among respondents to confront someone who litters. A sizable portion (43.2%) reported being somewhat likely (8,721 or 26.1%) or very likely (5,714 or 17.1%) to intervene, suggesting that many individuals are inclined to address littering behavior directly. An equally large group expressed neutrality (8,800 or 26.3%), indicating uncertainty or dependence on the situation. In contrast, a substantial number (30.5%) reported being somewhat unlikely (3,831 or 11.4%) or very unlikely (6,398 or 19.1%) to confront a litterer, reflecting hesitation, discomfort, or safety concerns.

Q5.2.3.25. Do you think the "Don't mess with Texas" slogan has helped reduce litter in your community?

Number of valid responses: 33,483. This question is applicable to everyone. Question 5.2.3.25 askes the respondents whether they believe the slogan has helped reduce litter in community.

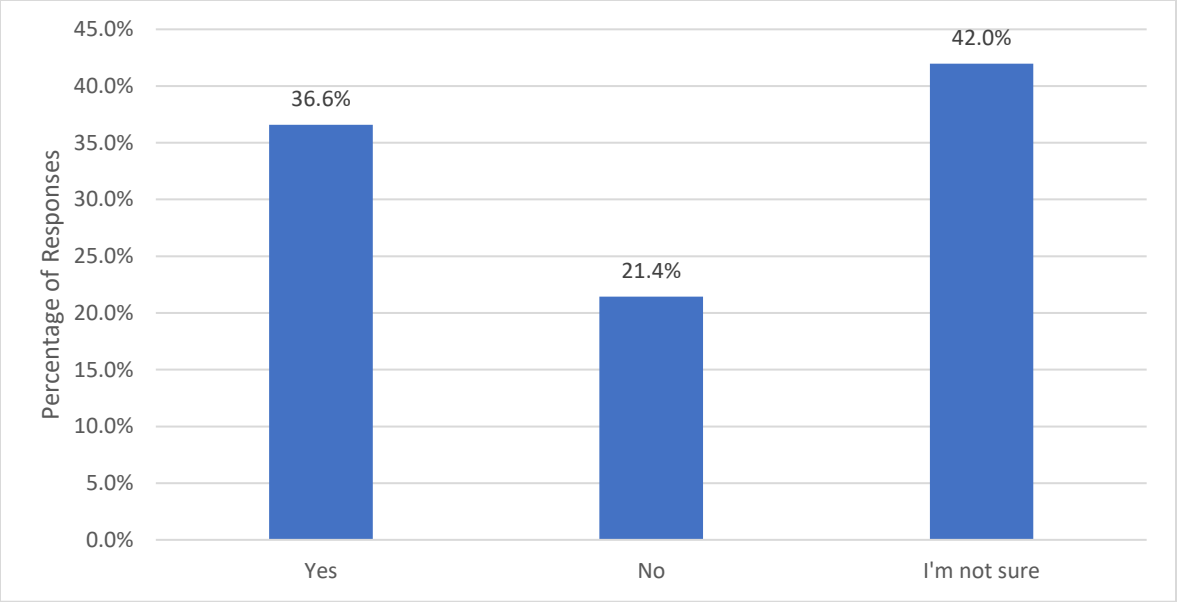


Figure 5.28. Whether DMWT Has Helped Reduce Litter in Community

The responses show mixed perceptions regarding whether the slogan has helped reduce litter in respondents' communities. A substantial number of respondents believe that the slogan has helped reduce litter (12,246 or 36.6%), indicating perceived positive community-level impact. However, a smaller but notable group felt that it has not helped (7,182 or 21.4%). The largest share of respondents selected "I'm not sure" (14,055 or 42.0%), indicating uncertainty or difficulty in directly attributing changes in litter levels to the slogan.

Q5.2.3.26. In your opinion, how effective is the "Don't mess with Texas" slogan?

Number of valid responses: 33,467. This question is applicable to everyone. Question 5.2.3.26 tries to identify the overall effectiveness of the DMWT slogan.

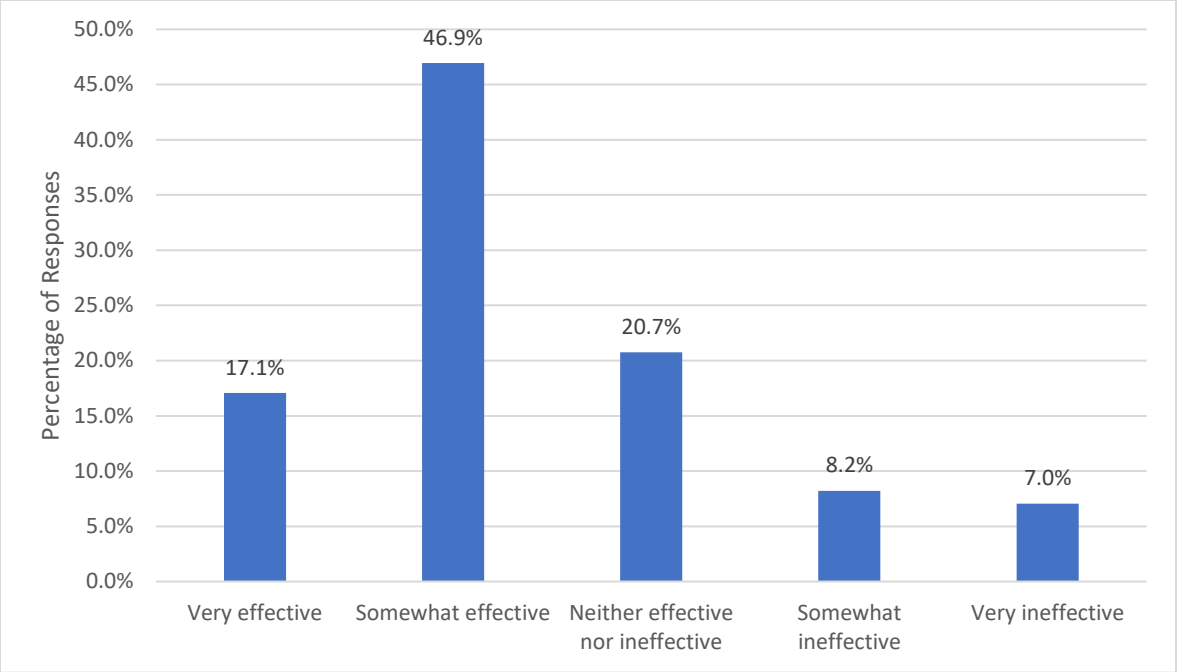


Figure 5.29. Overall Effectiveness of DMWT Slogan

Based on the survey results, the DMWT slogan appears to be largely effective in the eyes of respondents. A significant majority (21,422 or 64.0%) consider it either very effective (5,713 or 17.1%) or somewhat effective (15,709 or 46.9%), indicating strong positive recognition and impact. In contrast, a smaller portion of respondents view the slogan negatively, with only 2,748 (8.2%) finding it somewhat ineffective and 2,354 (7.0%) rating it very ineffective. Meanwhile, 6,943 respondents (20.7%) are neutral, neither perceiving it as effective nor ineffective. The Study Team assigned a five-point Likert scale: 5 – very effective, 4 – somewhat effective, 3 – neither effective nor ineffective, 2 – somewhat ineffective, and 1 – very ineffective. The average score is 3.6, indicating that the slogan resonates well with the public, achieving broad awareness and a generally favorable perception.

Q5.2.3.27. What do you think would be effective in preventing people from littering? Please select all that apply.

Number of valid responses: 33,198. This question is applicable to everyone. Question 5.2.3.27 tries to identify effective ways to prevent people from littering. Note that this is a multiple-choice question.

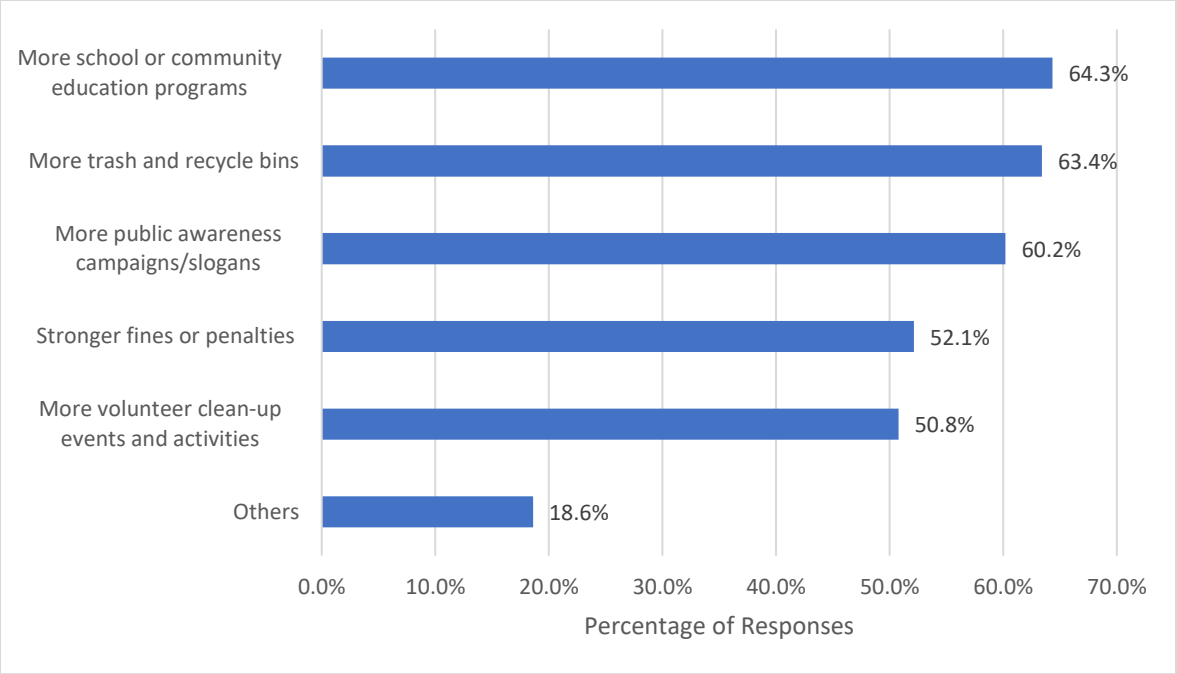


Figure 5.30. Ways to Prevent People from Littering

The survey results indicate that respondents favor a variety of strategies to prevent littering, with a clear emphasis on education and accessibility. The most popular measures include implementing more school or community education programs (21,362 or 64.3%) and increasing the number of trash and recycling bins (21,048 or 63.4%), suggesting that both knowledge and convenience play key roles in reducing litter. Public awareness campaigns or slogans also received strong support (19,987 or 60.2%), highlighting the ongoing importance of messaging. Additional measures such as stronger fines or penalties (17,312 or 52.1%) and more volunteer clean-up events and activities (16,861 or 50.8%) were valued as well.

In addition, 6,176 respondents (18.6%) provided the potential effective ways by selecting "Others", examples including:

- Much wider distribution of litter bags to the public. Free litter bags at 7-11, QT and other convenience stores;
- Easier and cheaper ways to dispose of larger items;
- Not higher fines but more enforcement of the law;
- Community service when paying for traffic violations such as speeding or not wearing a seatbelt;
- Reward videos of violators. Fine the violator and give the person who recorded it a percentage;
- More signs with fine amount;
- Add public humiliation to those caught and fined;

- Nothing. There will always be societal outliers;
- Litter patrols, maybe highway cameras like other states;
- Partner with large enterprise, e.g., HEB, Buc-ee's, and etc.;
- Mobile app to report litterers.

Q5.2.3.28. Would you like to see the "Don't mess with Texas" slogan continue?

Number of valid responses: 33,285. This question is applicable to everyone. Question 5.2.3.28 asks the respondents whether they would like to see the slogan continue.

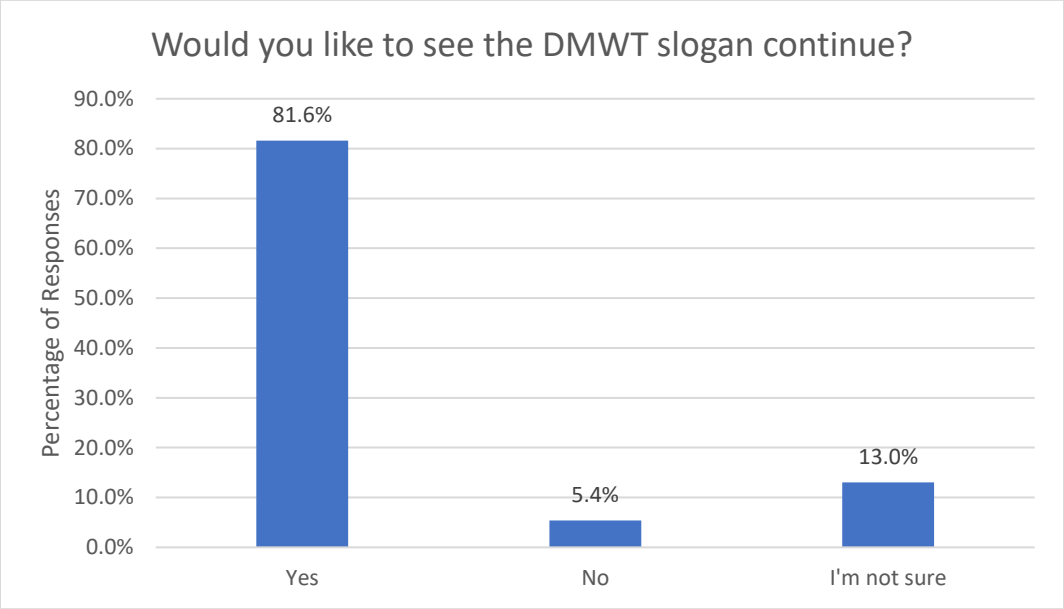


Figure 5.31. Whether Respondents Would Like to See DMWT Continue

The survey results show that an overwhelming majority of respondents want the DMWT slogan to continue. A total of 27,162 (81.6%) participants responded "Yes", indicating strong support for its continuation, while only 1,793 (5.4%) said "No" and 4,330 (13.0%) were unsure. This suggests that the slogan remains highly valued and widely endorsed by the public.

Q5.2.3.29. Would you like to see the "Don't mess with Texas" slogan expand?

Number of valid responses: 33,294. This question is applicable to everyone. Question 5.2.3.29 asks the respondents whether they would like to see the slogan expand (e.g., awareness expansion through more advertising and publicizing efforts).

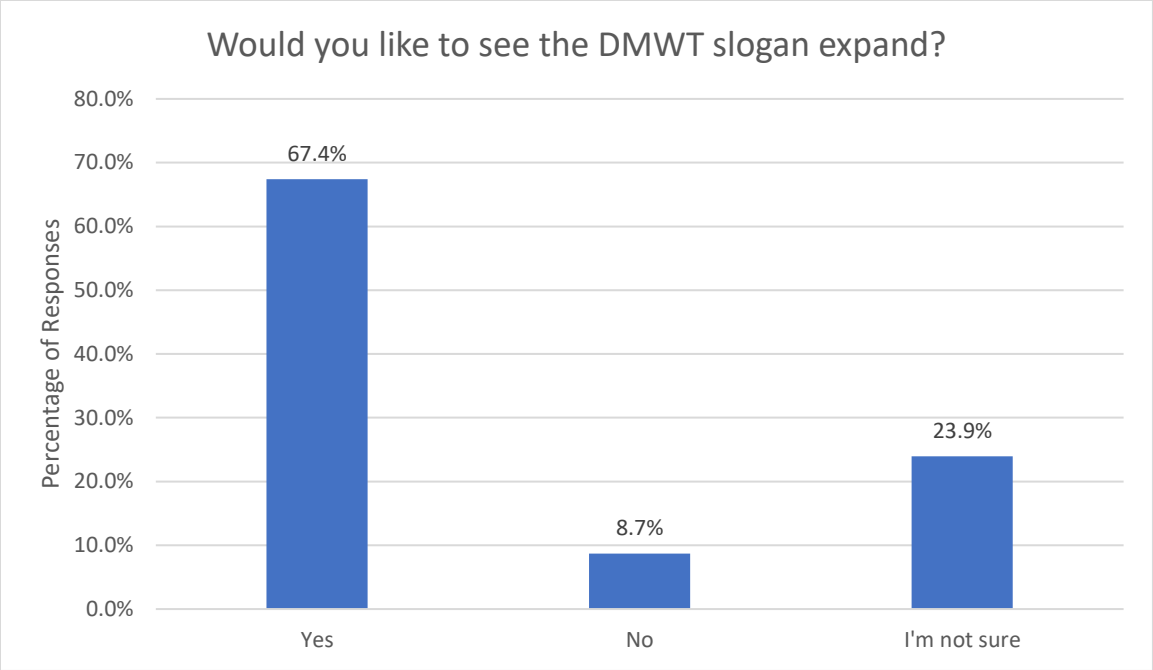


Figure 5.32. Whether Respondents Would Like to See DMWT Expand

The survey results indicate that a majority of respondents support expanding the DMWT slogan, though with less unanimity than for its continuation. A total of 22,422 (67.4%) participants said "Yes" while 2,899 (8.7%) opposed expansion and 7,973 (23.9%) were unsure. This suggests that while there is strong interest in broadening the slogan's reach, a notable portion of respondents remains uncertain or hesitant.

Q5.2.3.30. Please provide any additional comments or future improvements for "Don't mess with Texas" slogan.

Number of valid responses: 14,371. This question is applicable to everyone. Question 5.2.3.30 intends to collect additional comments (if any) on future operations of DMWT campaign.

Comments received from Q5.2.3.30 are valuable and provide additional insights, selected examples including:

"*Education about not littering should be presented at schools - not just because of the environment, wildlife and water pollution (which seems to get the most attention) but pride in community, wanting to live in a clean state, with little or no trash along the highways*"

"*I think initially it made a huge impact. I was in junior high when it started and I think it made a difference. I don't know how much kids today are being taught (in school) not to litter. Also not sure if people who didn't grow up in TX understand that it's a reminder not to litter.*"

"*Need to educate this in school age kids. From grade school through college*."

"*When wildflowers bloom, increase anti-liter campange in those areas. Increase effort on small, less-traveled areas. Main highways are much better than they were 30 years ago, but small roads can be pretty bad sometimes*."

"*Personally, I would like to initiate a campaign to pick up trash along Texas highways documented, and then create found sculpture art in an installation I call "messing with Texas" all proceeds can go to the Don't mess with Texas campaign. It would bring awareness to the community and encourage people to see littering in a new light from an artistic standpoint*."

"*More advertising along the highways*"

"*Keep doing the ads with celebrities*"

"*People need to see the harm that littering does and how bad it makes our highways look*"

"*It has grown to be more than an anti-littering slogan. Keep it for all its meanings*."

"*Educate the public about the consequences of littering- financially, to their community, and to the environment*."

"*Put it back on TV more and radio again!*"

"*Perhaps a more effective mascot / focal point for antilitter. I still remember the native American crying about litter from my childhood in the 70s played on Saturday morning cartoons and after school programming it made a lasting emotional connection about not littering for me. A few fun words...Don't mess with Texas does not come close in comparison*"

"*Additional penalties such as community service*"

"*I remember seeing a TV commercial back in the 80s with Mike Williams who was a heavyweight boxer back in the day. It was very effective. I think it has been substantial in reducing litter in our state much like Smoky the Bear educated people to not leave fires unattended in the forest*."

"*This iconic slogan! Let's put it out there in a big way and get behind it on the local and state levels. This has the potential to do so much Good!*"

Q5.2.3.31. The last five questions are about the TxDOT Adopt-a-Highway (AAH) program. Have you heard of the Adopt-a-Highway program in Texas?

Number of valid responses: 33,167. This question is applicable to all respondents. Question 5.2.3.31 asks the respondents about their awareness of AAH program.

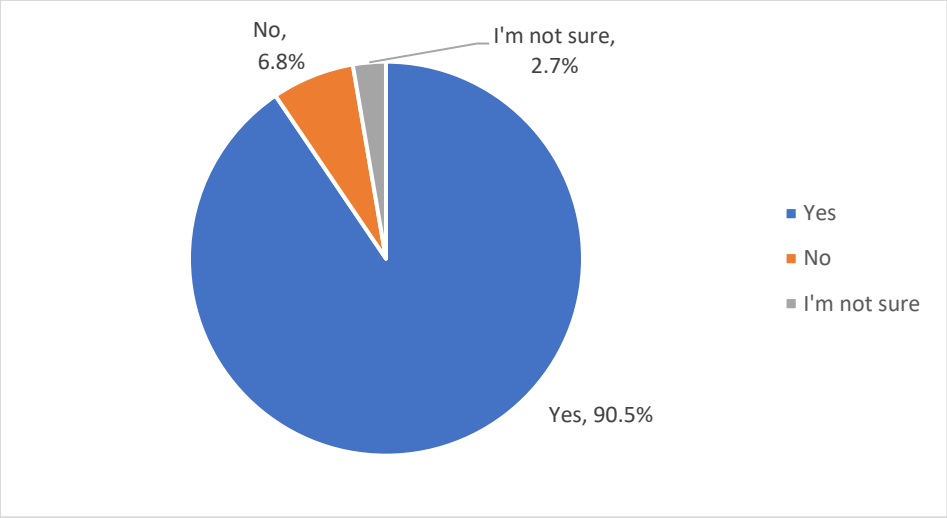


Figure 5.33. Awareness of AAH Program

The survey results show that awareness of the Adopt-a-Highway program is very high among respondents. A total of 30,022 (90.5%) participants reported being aware of the program, compared to only 2,250 (6.8%) who were not aware, while 895 (2.7%) were unsure.

Q5.2.3.32. How likely would you be to volunteer for the Adopt-a-Highway program or be part of an organization that sponsors a roadway and volunteers as a group?

Number of valid responses: 32,993. This question is applicable to all respondents. Question 5.2.3.32 asks the respondents about the likelihood they voluntarily participate in the AAH program.

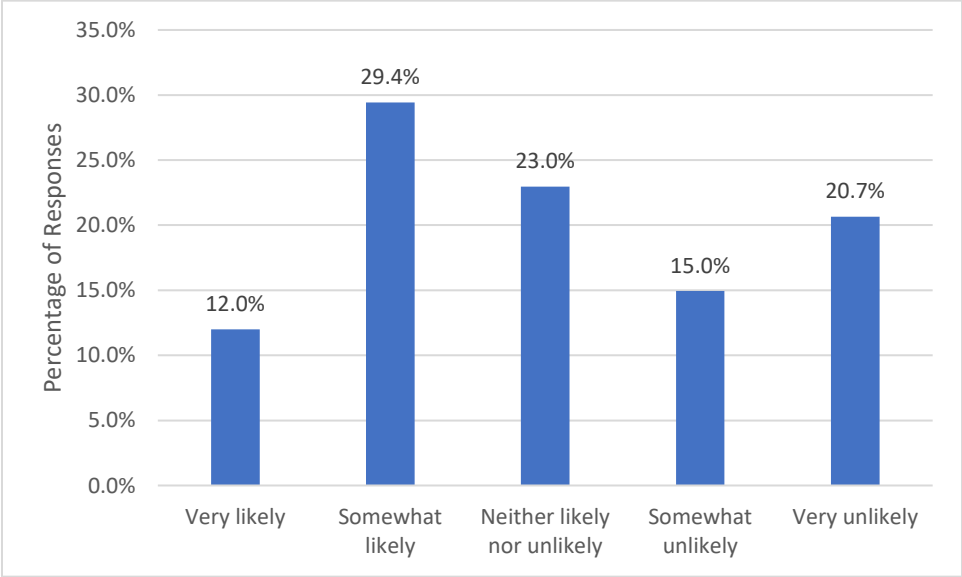


Figure 5.34. Likelihood to Participate in AAH Program

The survey results indicate a mixed but moderately positive interest in participating in the AAH program. A total of 13,667 (41.4%) respondents said they are very likely (3,961 or 12.0%) or somewhat likely (9,706 or 29.4%) to participate, showing a substantial potential for engagement. However, a notable portion of respondents are less inclined, with 4,934 (15.0%) somewhat unlikely and 6,817 (20.7%) very unlikely to participate, while 7,575 (23.0%) remain neutral. Overall, while many people are open to involvement, there is still a significant group that may require additional motivation or encouragement to join the program.

Q5.2.3.33. What barriers exist for you in taking part in the Adopt-a-Highway program? Please select all that apply.

Number of valid responses: 32,024. This question is applicable to all respondents. Question 5.2.3.33 tries to identify the barriers that prevent respondents from participating in the AAH program. Note that this is a multiple-choice question.

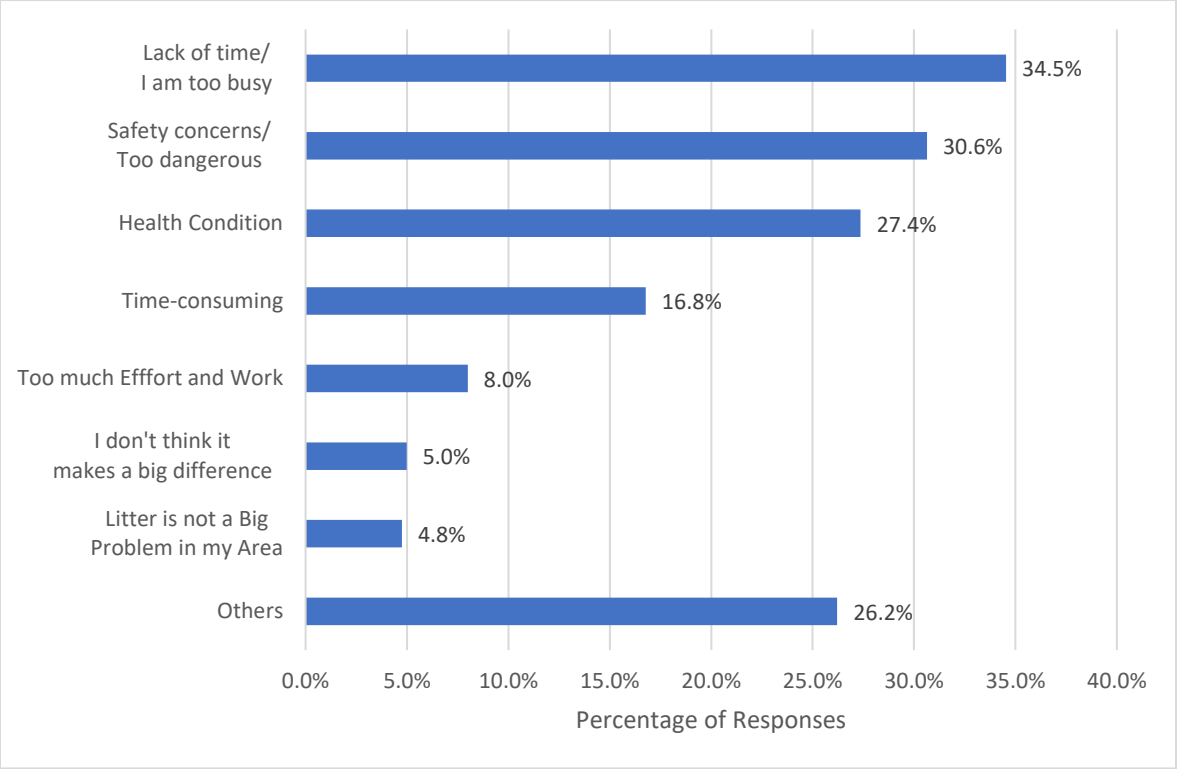


Figure 5.35. Barriers in Participating AAH Program

The survey results highlight several key barriers that prevent respondents from participating in the AAH program. The most commonly cited obstacles include lack of time or being too busy (11,061 or 34.5%), safety concerns or perceived danger (9,811 or 30.6%), health conditions (8,764 or 27.4%), indicating that personal risk, physical limitations, and scheduling conflicts are major factors. Other barriers include the activity

being time-consuming (5,373 or 16.8%), requiring too much effort or work (2,563 or 8.0%), no impact (1,596 or 5.0%), and litter is not a big problem locally (1,522 or 4.8%).

In addition, 8,395 respondents (26.2%) provided additional barriers by selecting “Others”, example including:

- Don’t know how to join;
- I don’t see this program actually cleaning it up. I just see a sign on the road that says who volunteers for it or pays for it, but I don’t see the work actually being done;
- I am too old;
- Too lazy to make the effort and people will just trash it up again;
- People just don't care;
- This task is associated with community service or criminal punishments. I don’t want people to think I'm a criminal;
- Too hot to safely work outside for long periods during summer;
- I often just pick up around me, in my path. I do not need to participate in a program
- Nothing I am very interested;
- The majority of my free time is taken up volunteering with another organization that provides support to Texans statewide;
- Hadn’t really thought about it, figured our tax $ takes care of it. I volunteer in other ways.

Overall, participation appears to be hindered primarily by practical and personal constraints.

Q5.2.3.34. Do you think the Adopt-a-Highway program helped reduce litter in your community?

Number of valid responses: 32,907. This question is applicable to all respondents. Question 5.2.3.34 askes the respondents whether they believe the AAH program has helped reduce litter in community.

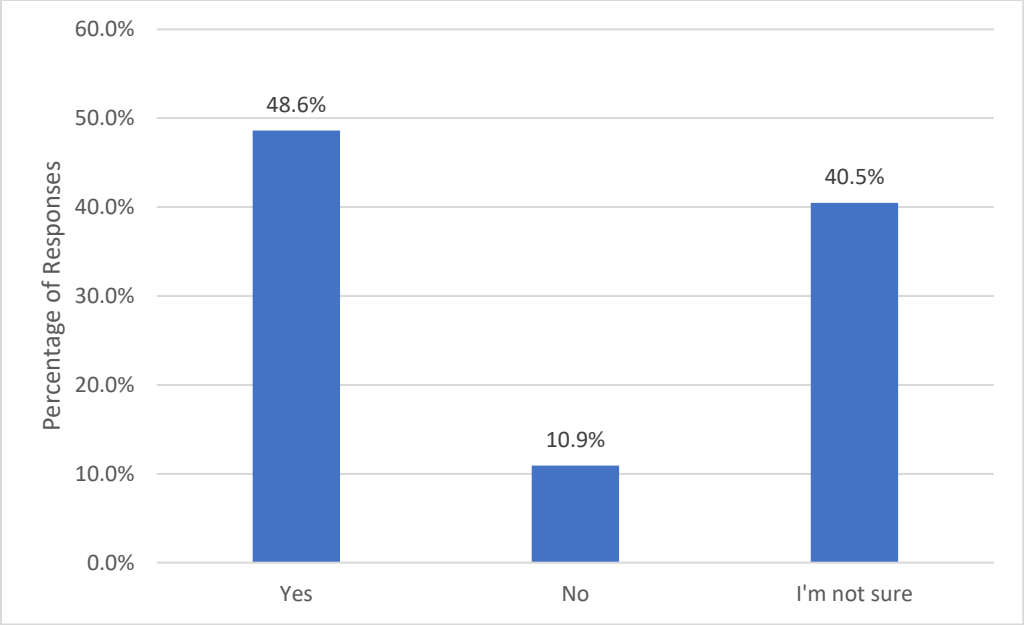


Figure 5.36. Whether the AAH Program Has Helped Reduce Litter in Community

The survey results show that a majority of respondents believe the AAH program has helped reduce litter in their community. A total of 15,993 (48.6%) participants answered "Yes", indicating perceived effectiveness, while 3,589 (10.9%) said "No", and 13,325 (40.5%) were unsure.

Q5.2.3.35. In your opinion, how effective is the Adopt-a-Highway program?

Number of valid responses: 32,671. This question is applicable to all respondents. Question 5.2.3.35 tries to identify the overall effectiveness of AAH program.

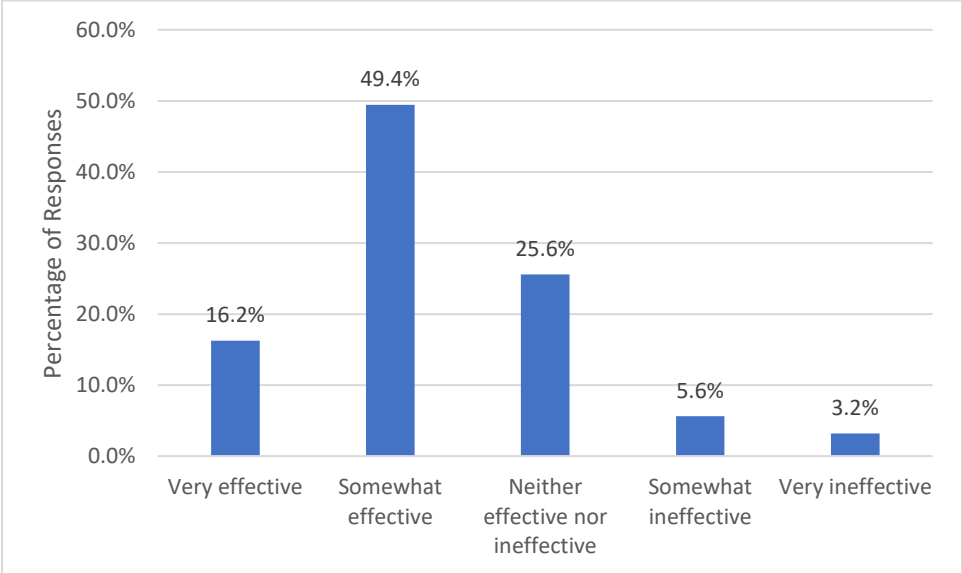


Figure 5.37. Overall Effectiveness of AAH Program

The survey results indicate that the AAH program is generally perceived as effective. A total of 21,455 (65.6%) respondents rated it as very effective (5,301 or 16.2%) or somewhat effective (16,154 or 49.4%), demonstrating strong overall approval. In contrast, only 1,831 (5.6%) found it somewhat ineffective and 1,037 (3.2%) very ineffective, while 8,348 (25.6%) remained neutral. The Study Team assigned a five-point Likert scale: 5 – very effective, 4 – somewhat effective, 3 – neither effective nor ineffective, 2 – somewhat ineffective, and 1 – very ineffective. The average effectiveness score is 3.7, indicating that the AAH program is viewed positively, with a majority of participants acknowledging its effectiveness in addressing litter.

Q5.2.3.36. Please provide any additional comments or future improvements for the Adopt-a-Highway program.

Number of valid responses: 9,268. This question is applicable to everyone. Question 5.2.3.36 intends to collect additional comments (if any) on future operations of the AAH program.

Comments received from Q5.2.3.36 are valuable and provide additional insights, selected examples including:

"*Some states allow volunteers to pick up litter along interstates. Texas does not allow volunteers to adopt-a-highway section along an interstate or other high traffic road. Perhaps this could be reconsidered since more businesses might become involved if their adopt-a-highway signs which the business name was along an interstate.*"

"*I like the idea. But I don't know how often the organizations actually do a clean up, and I don't know how often I'd volunteer to help. The traffic going 70+ mph does scare me and would be the main deterrent for me*."

"*If I was supported in creating an art installation from trash picked up on Texas highways, I could include sponsors who have adopted highways*"

"*Involving companies is good advertising for them*"

"*The Adopt-A-Highway program should provide some kind of high visibility rewards or even just safety equipment etc. for the groups doing the work. Someway to be sure people know they are volunteers*"

"*Our group had one and after the first few times, no one was interested in picking up the trash of others*"

"*Expand awareness of opportunities*"

"*More penalties are needed for those caught, and people should be encouraged to tie down truck loads better*."

"*I think students and families are always looking for a community service events. This is a great one. Of course, depending on the age of the children*."

"*I think the more middle school and high ages that can get involved, the better. If these age groups have to clean up somebody else's trash, they may think twice about littering*."

"*The program beautifies the area for a day or so then the litter starts to reappear and multiply*."

"*I am recently retired and will look more into this program and how to become more involved. It is something I have always wanted to look more into. Thank you for the reminder*."

"*Maybe after a group conducts a cleanup on a section, a portable billboard sign could be parked there for a few days that flashed 'So-n-So organization donated X manhours to perform litter cleanup on this section of your highway. Please Don't mess with Texas!'*"

"*Get a QR out to the public to let them know how they can participate as individuals, organizations or corporate sponsors/volunteers. Very little advertising about how to onboard in this capacity*."

"*Ultimately, the success or failure of this program is down to the commitment and resource allocation of the participating organizations. This can be encouraged and supported by clear benefits to the participants - swag - peer engagement - flexibility in scheduling - etc. Prizes such as dinners out at local restaurants with public recognition and yard signs that advertise the participant's efforts - these should be funded by donations and directly by the organizations.*"

"*In this dangerous world with the 6-8 lane highways in Fort Worth, and people driving too fast, litter can't compare to losing a life on the highways!*"

"*It would be helpful if there were a cleanup volunteering website that can get people involved who may not be a part of one of the orgs. Maybe something like this exists and I don't know about it, I haven't really sought it out before*."

"*It depends on the sponsor; some are fantastic and a true example of the spirit behind it; while others are there just to have their name up*."

"*I feel as though some organizations or companies adopt the highway for the recognition but don't actually have cleanup efforts and there's nobody to hold them accountable*."

"*I love seeing what organizations participate in the AAH initiatives. They make a difference and garner a lot of respect from the community when you see their names on the signage*."

"*Perhaps a little bit more recognition for the folks that do volunteer to clean up the highways. I see the signs that acknowledged the group, but I've never seen any real public spotlight or appreciation for those groups*."

Q5.2.3.37. Do you have children under the age of 18 living in your household who are willing to take a tailored survey on "Don't mess with Texas" slogan under your supervision?

Number of valid responses: 32,682. This question is applicable to everyone. Question 5.2.3.37 tries to identify appropriate candidates to take the youth survey under adult's supervision.

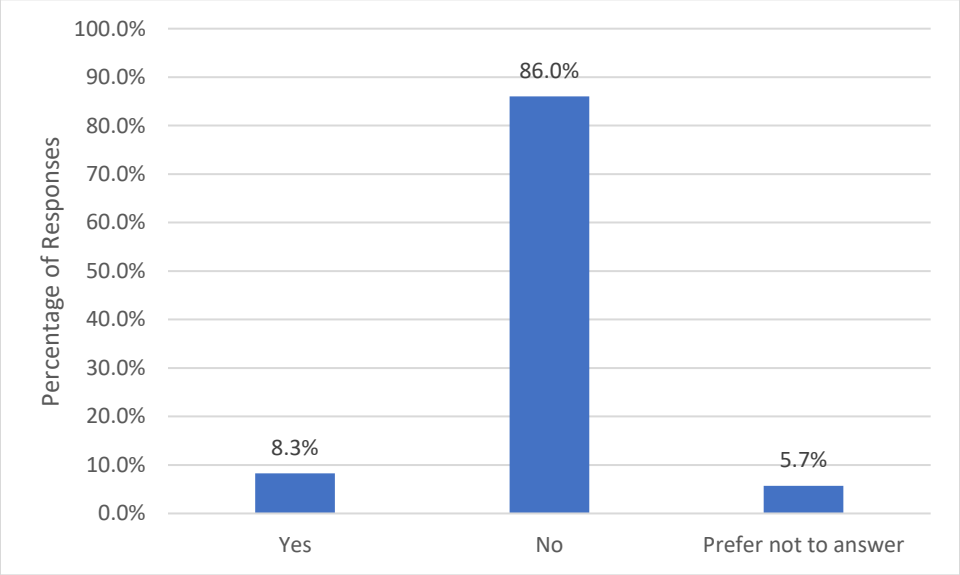


Figure 5.38. Availability of Youth under 18 and Willingness to Take Youth Survey

The majority (28,110 or 86.0%) reported that they do not have children under 18 in their household. Only 2,705 (8.3%) indicated that there are youth in their household and they are willing to take the youth survey.

5.2.4. Survey Analysis for the Age Group 16-34

The Age Group 16–34 is important because it includes many new and frequent road users, representing a key stage when long-term littering and civic habits are formed, and is highly influenced by digital and peer-driven communication channels where public campaigns compete for attention. This group can also amplify messages through their social networks and households, making their attitudes especially influential for broader community impact. Measuring awareness and perceived effectiveness in this group helps assess the DMWT slogan's future relevance, identify recognition, behavioral change, and better target outreach as well as education for sustained anti-litter outcomes.

This Section focuses on the analysis of the 5,712 valid responses from the 16-34 Age Group. For comparison purposes, the figures include statistics of both All Age Groups (Section 5.2.3 analysis) and Age Group 16-34. Again, since the survey contains no mandatory questions and each question can be answered at the respondent's discretion, the number of valid responses may vary for each question.

Q5.2.4.1. Please indicate your age group

Number of valid responses: 5,712. The valid response percentage distribution is presented in Figure 5.39.

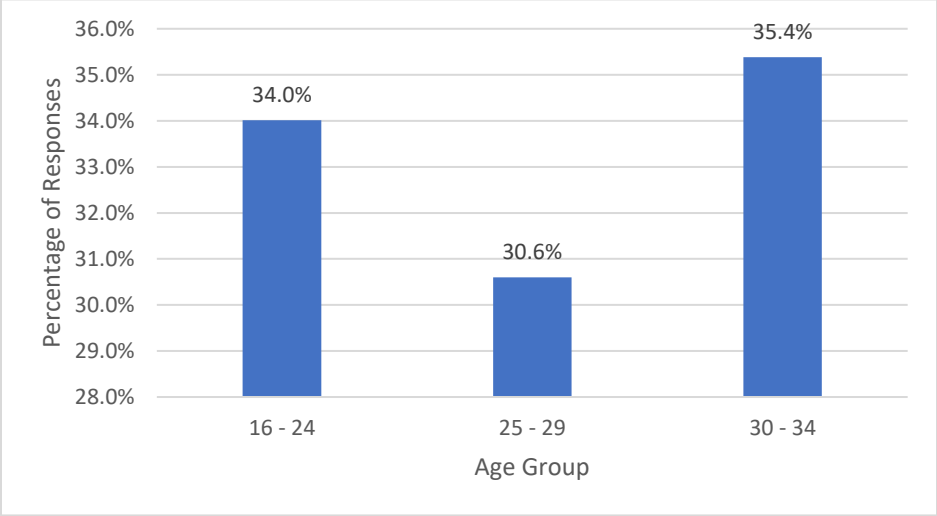


Figure 5.39. Percentages of Valid Responses for Age Group 16-34

Out of the 5,712 total responses, the Age Group 30–34 contributes the largest share at 2,021 responses (35.4%), followed closely by the Age Group 16–24 at 1,943 (34.0%), while the Age Group 25–29 had 1,748 (30.6%). The distribution is fairly balanced, with a 4.8% (273 responses) difference between the highest and lowest groups, which suggests the data are reasonably representative rather than being dominated by a single age segment.

Q5.2.4.2. What is your gender?

Number of valid responses: 5,650. The valid response percentage distribution is presented in Figure 5.40.

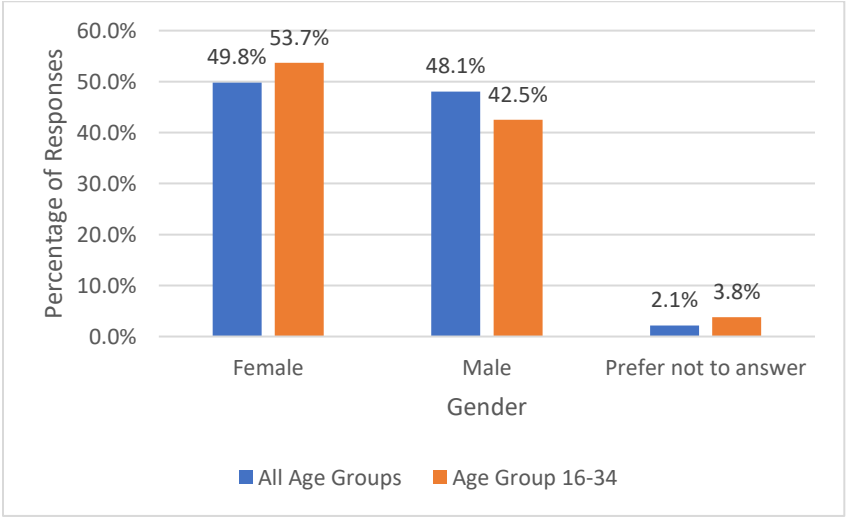


Figure 5.40. Percentage of Age Group 16-34 Valid Responses by Gender

Out of the 5,650 valid responses, females account for 3,033 responses (53.7%), males for 2,401 responses (42.5%), and 216 respondents (3.8%) select “prefer not to answer”. Compared with All Age Groups, the distribution indicates a slight female majority (53.7% vs. 49.8%) and a lower proportion of male respondents (42.5% vs. 48.1%). Additionally, the percentage choosing not to disclose their gender is higher among the Age Group 16–34 (3.8% vs. 2.1%). Overall, the Age Group 16-34 gender breakdown appears relatively balanced, though slightly skewed toward female participation.

Q5.2.4.3. What is your race?

Number of valid responses: 5,672. Figure 5.41 shows the percentage of valid responses by race.

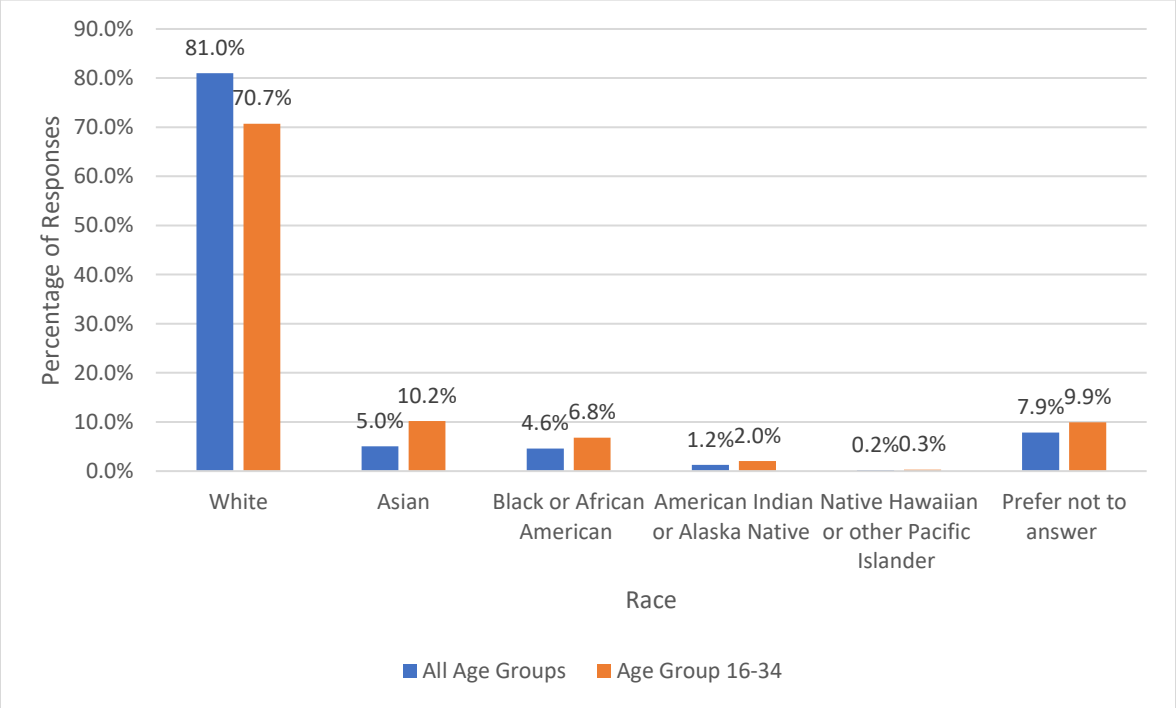


Figure 5.41. Percentage of Age Group 16-34 Valid Responses by Race

Compared with all Age Groups, the Age Groups 16–34 shows a more diverse racial composition. While White respondents make up the majority in both analyses, their representation is lower in Age Group 16–34 (70.7%) compared to All Age Groups (81.0%). In contrast, several minority groups have a higher proportion within the Age Group 16–34, including Asian respondents (10.2% vs. 5.0%), Black or African American respondents (6.8% vs. 4.6%), and American Indian or Alaska Native respondents (2.0% vs. 1.2%). The share of respondents identifying as Native Hawaiian or other Pacific Islander remains relatively small in both groups but is slightly higher among Age Group 16-34 (0.3% vs. 0.2%). Additionally, the percentage of respondents who selected “prefer not to answer” is greater in the Age Group 16–34 (9.9%) than in All Age Groups (7.9%), suggesting a slightly higher tendency toward non-disclosure among younger individuals.

Q5.2.4.4. Are you of Hispanic or Latino origin?

Number of valid responses: 5,680. The percentage is presented in Figure 5.42.

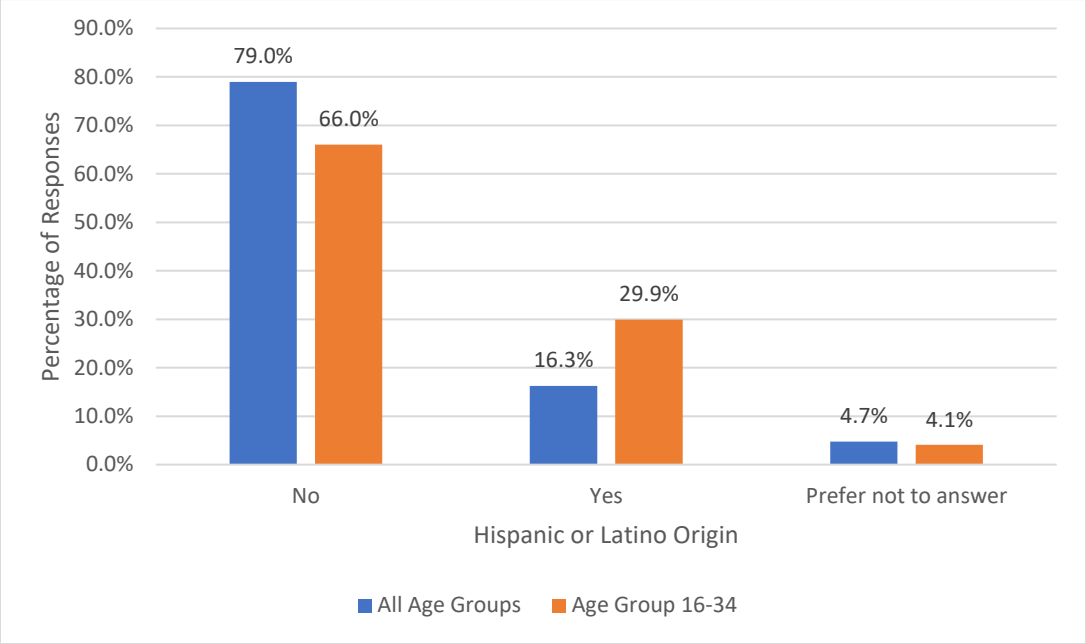


Figure 5.42. Whether a Respondent is Hispanic or Latino Origin, Age Group 16-34

Out of the 5,680 valid responses, 3,750 respondents (66.0%) indicated they are not Hispanic or Latino, while 1,699 respondents (29.9%) identified as Hispanic or Latino, and 231 respondents (4.1%) selected preferred not to disclose their Hispanic or Latino origin. Compared with All Age Groups, the Age Group 16-34 presents a larger proportion of Hispanic or Latino respondents (29.9% vs. 16.3%). Consequently, the percentage of not Hispanic or Latino origin is smaller (66.0% vs. 79.0%) in the Age Group 16-34.

Q5.2.4.5. What is the highest level of education you have completed?

Number of valid responses: 5,696. Surveying education level for Age Group 16-34 is important because education often influences awareness, attitudes, information processing, and civic behavior, all of which are directly relevant to evaluating the effectiveness of the DMWT slogan. The valid response distribution is presented in Figure 5.43.

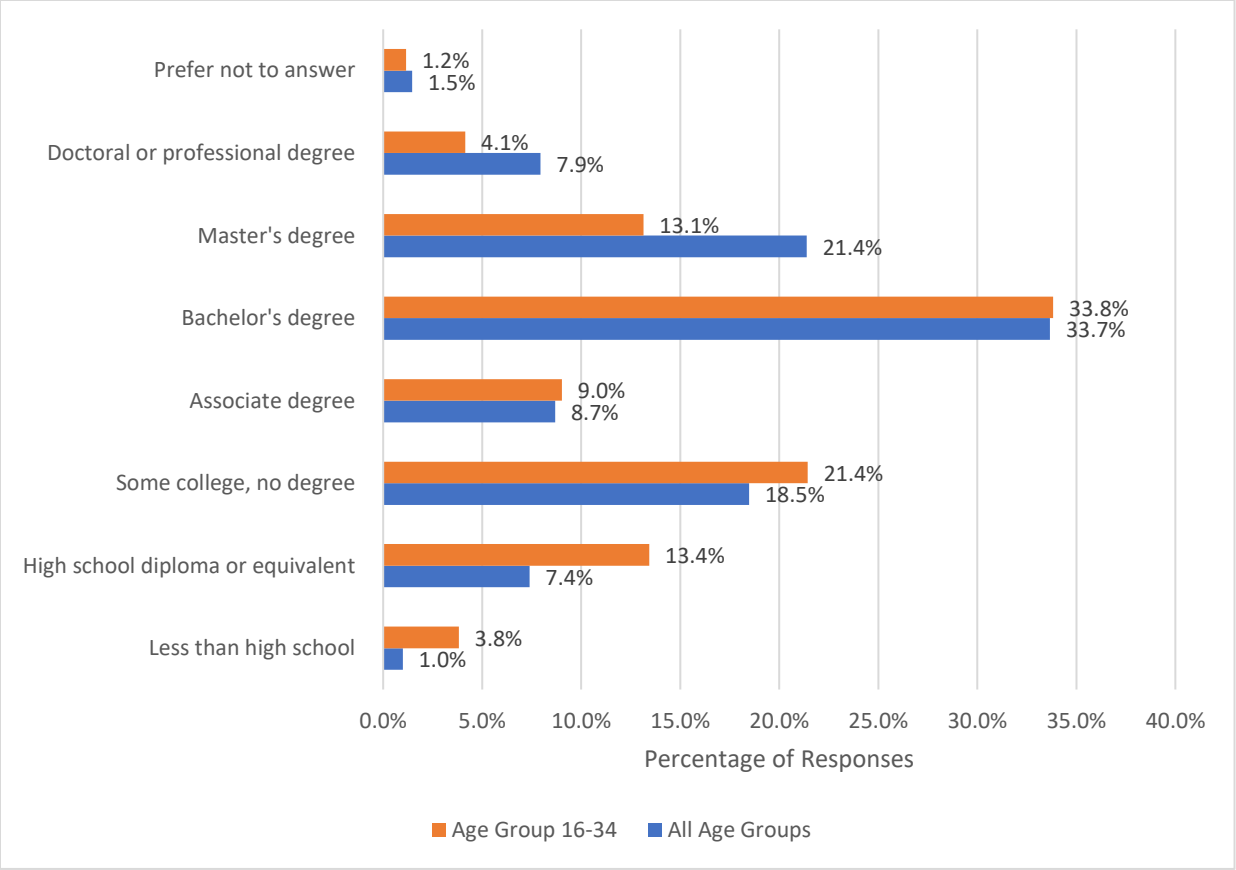


Figure 5.43. Number of Age Group 16-34 Valid Responses by Education Level

In All Age Groups, respondents are more concentrated in higher graduate-level attainment, with Master's degrees (21.4%) and Doctoral/professional degrees (7.9%) comprising nearly 29% combined. In contrast, the Age Group 16-34 shows lower representation at these advanced levels (13.1% Master's and 4.1% Doctoral/professional. The Age Group 16-34 has higher proportions in mid-level educational categories, including some college, no degree (21.4% vs. 18.5%) and high school diploma (13.4% vs. 7.4%), as well as a notably higher share reporting less than high school (3.8% vs. 1.0%). This is reasonable given that Age Group 16-34 respondents are more likely to be in earlier stages of their education and career development. The percentage holding a Bachelor's degree is nearly identical across groups (33.8% vs. 33.7%), suggesting strong undergraduate representation in both samples. Overall, the Age Group 16-34 reflects an educational profile consistent with a younger population, which is more concentrated in secondary and undergraduate stages and less represented at advanced graduate levels compared with All Age Groups.

Q5.2.4.6. What is your approximate annual household income?

Number of valid responses: 5,678. The valid response distribution is presented in Figure 5.44.

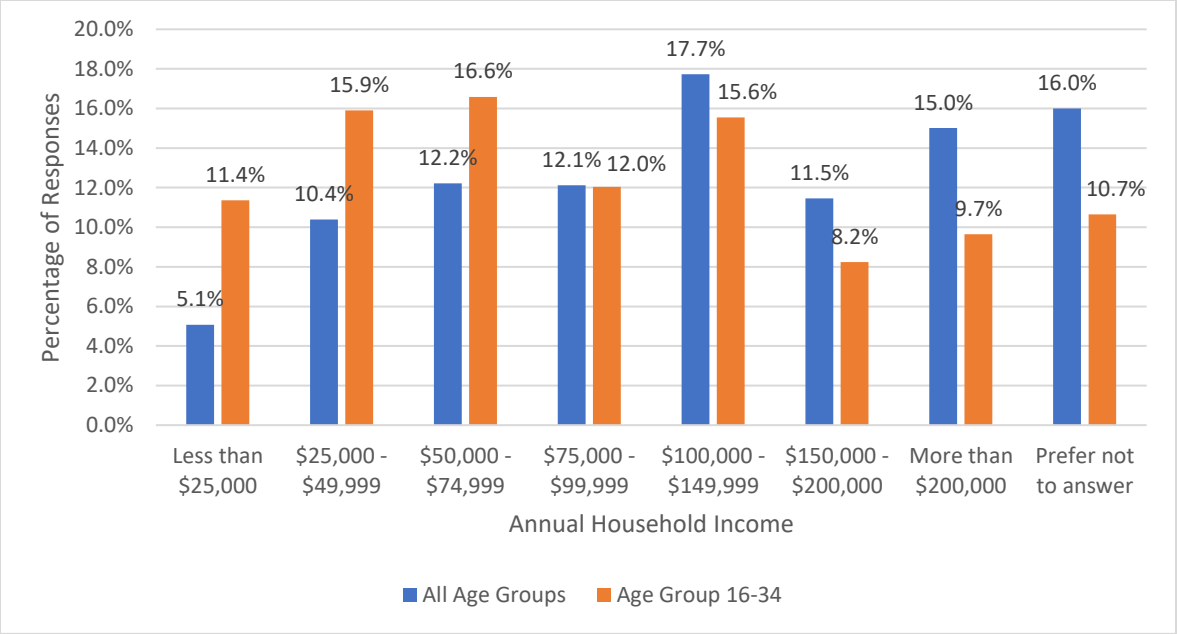


Figure 5.44. Number of Age Group 16-34 Valid Responses by Annual Household Income

The comparison of annual household income between All Age Groups and the Age Group 16-34 indicates that younger respondents tend to be more concentrated in lower-to-middle income categories. In the 16-34 cohort, a higher proportion reported household incomes below $75,000, including less than $25,000 (11.4% vs. 5.1%), $25,000-$49,999 (15.9% vs. 10.4%), and $50,000-$74,999 (16.6% vs. 12.2%). In contrast, All Age Groups show greater representation in higher income brackets, particularly in the $150,000-$200,000 (11.5% vs. 8.2%) and more than $200,000 (15.0% vs. 9.7%) categories. The share of respondents earning $100,000-$149,999 is slightly lower in the Age Group 16-34 (15.6%) compared to All Age Groups (17.7%), while the $75,000-$99,999 category remains nearly consistent across both groups (12.0% vs. 12.1%). This is reasonable because a younger population that is more likely to be in earlier career stages with comparatively lower household earnings.

Q5.2.4.7. Your current Texas residence location

This question collects information from respondents regarding their residence location in terms of city, county, and zip code, respectively. This provides geographic context that helps explain differences in responses across areas.

By City

Number of valid responses: 5,184. Figure 5.45 presents the heat map of the Age Group 16-34 respondents' residency city.

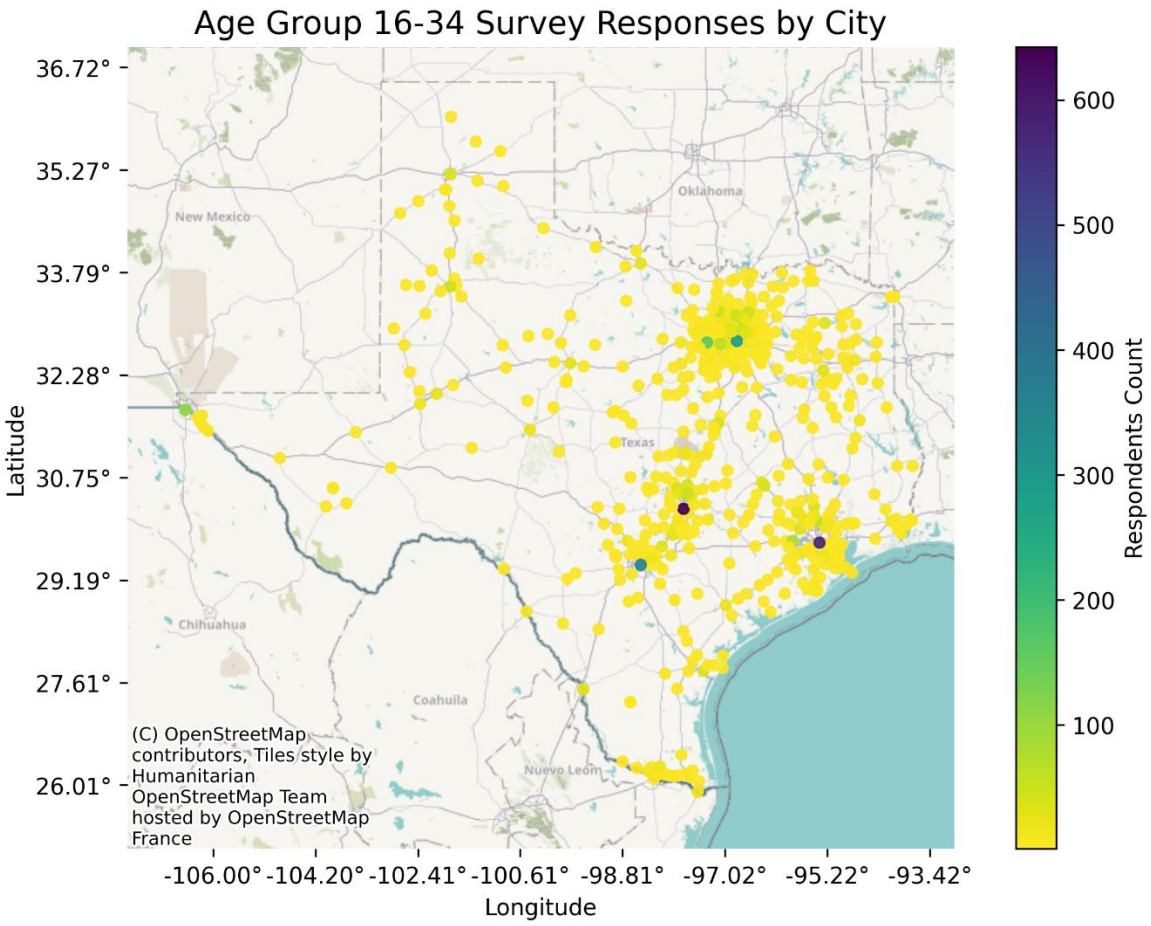


Figure 5.45. Heat Map of the Age Group 16-34 Responses by City

In Figure 5.45, darker color indicates the city where a higher number of respondents lives. Table 5.5 lists the top 10 cities where the Age Group 16-34 survey respondents' home addresses are.

Table 5.5. Top 10 Cities where the Age Group 16-34 Survey Respondents Live

City	Number of Responses
Austin	642
Houston	572
San Antonio	340
Dallas	279
Fort Worth	160
El Paso	104
Katy	76
Plano	68
Spring	65
Arlington	63

Consistent with All Age Groups (top 10 cities are the same with slight differences in order), most of the top ten ranked cities are large metropolitan areas for the Age Group 16-34, accounting for 45.7% of the total responses (2,369 out of 5,184).

By County

Number of valid responses: 4,221. Figure 5.46 presents the heat map of the Age Group 16-34 respondents' residency county.

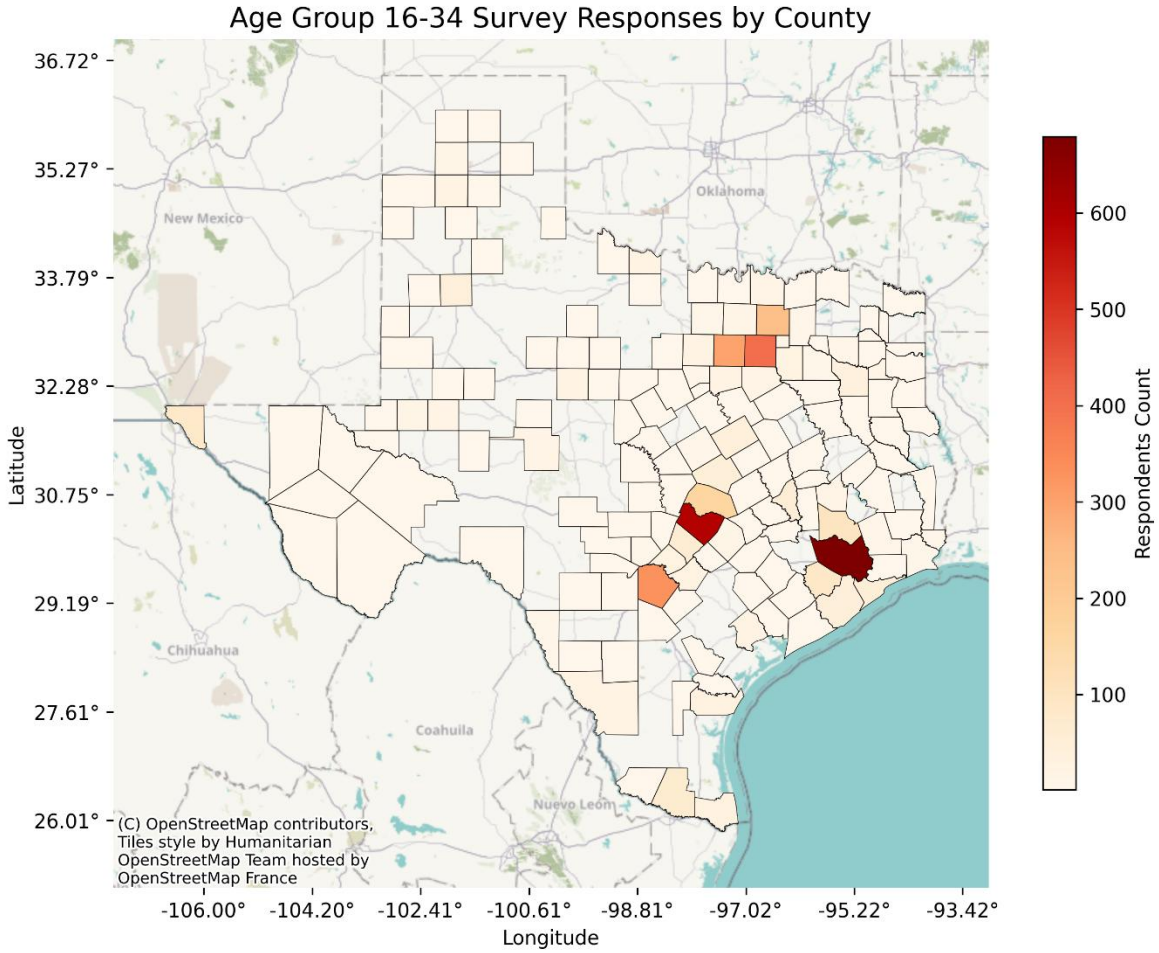


Figure 5.46. Heat Map of the Age Group 16-34 Responses by County

In Figure 5.46, darker color indicates the county where a higher number of respondents lives. Table 5.6 lists the top 10 counties where the Age Group 16-34 survey respondents' home addresses are.

Table 5.6. Top 10 Counties where the Age Group 16-34 Survey Respondents Live

County	Number of Responses
Harris	679
Travis	591

County	Number of Responses
Dallas	404
Bexar	330
Tarrant	299
Collin	238
Williamson	164
Montgomery	101
Fort Bend	86
El Paso	82

Most of the Age Group 16-34 top ten ranked counties are also associated with large metropolitan areas, accounting for 70.5% of the total responses (2,974 out of 4,221), which aligns with All Age Groups.

By Zip Code

Number of valid responses: 5,120. Figure 5.47 presents the heat map of the Age Group 16-34 respondents' residency zip code.

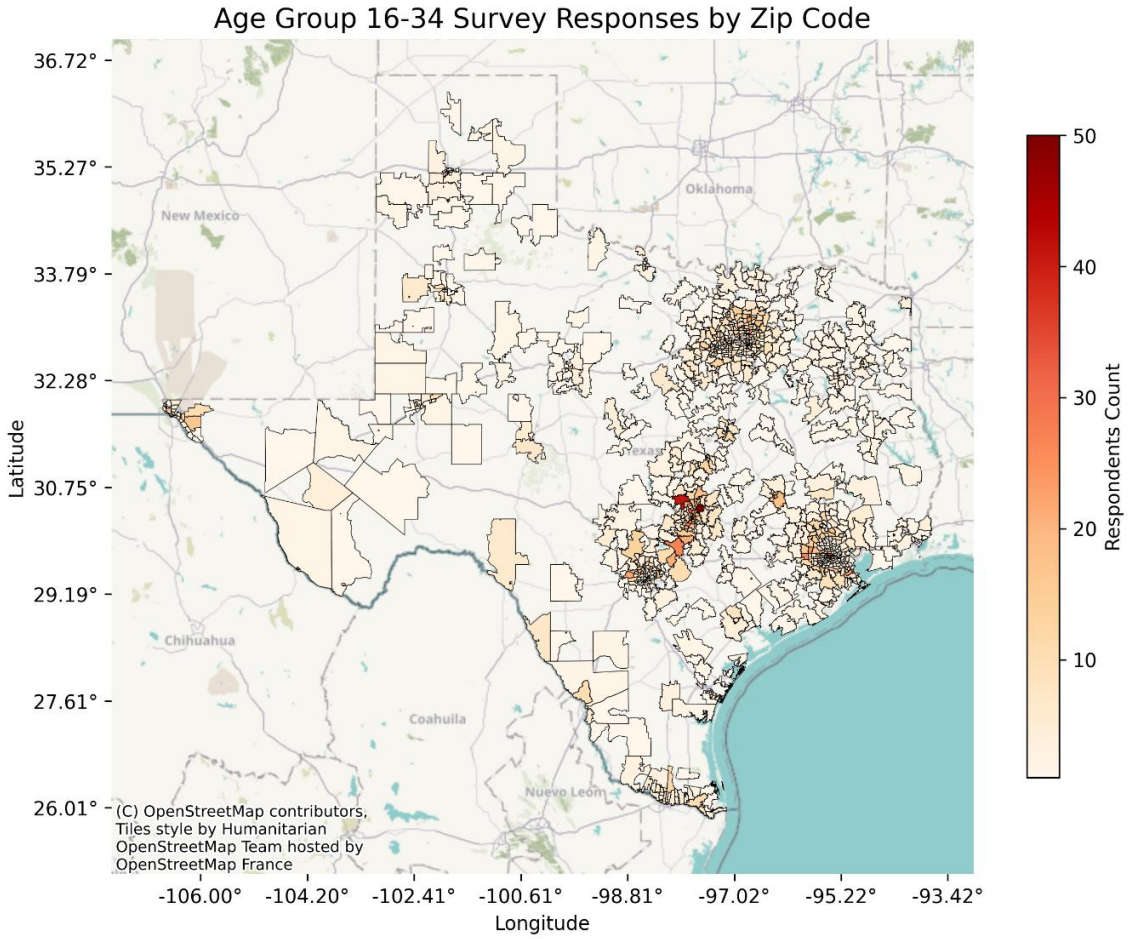


Figure 5.47. Heat Map of the Age Group 16-34 Responses by Zip Code

In Figure 5.47, darker color indicates the zip code where a higher number of respondents lives. Table 5.7 lists the top 10 zip codes where the Age Group 16-34 survey respondents' home addresses are.

Table 5.7. Top 10 Zip Codes where the Age Group 16-34 Survey Respondents Live

Zip Code	Number of Responses
78660	50
78641	41
78751	39
78705	35
77007	33
78759	31
78723	30
75080	28
78745	28
78666	27

Similar to All Age Groups, most of the Age Group 16-34 top ten ranked zip codes are large metropolitan areas, accounting for 6.7% of the total responses (342 out of 5,120). This is reasonable considering a city or county may have multiple zip codes.

Q5.2.4.8. Have you ever heard of the "Don't mess with Texas" slogan?

Number of valid responses: 5,660. This question is applicable to all respondents. Question 5.2.4.8 asks the respondents about their awareness of DMWT.

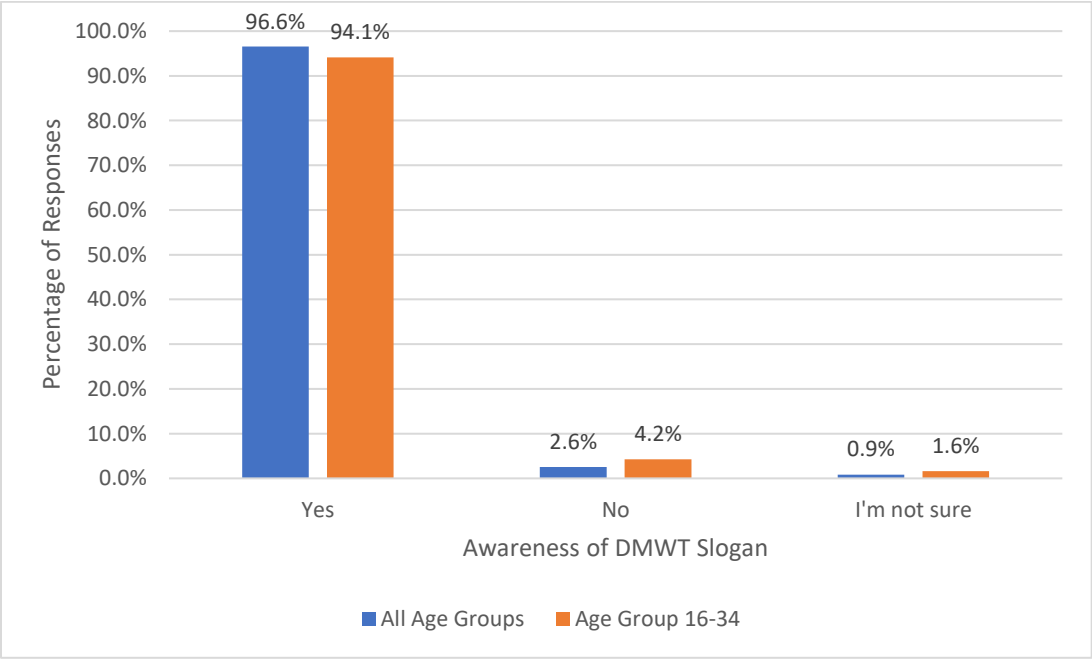


Figure 5.48. Age Group 16-34 Awareness of DMWT Slogan

Within the Age Group 16-34, the awareness of the DMWT slogan remains high, with 5,328 respondents (94.1%) indicating that they have heard of the slogan. 240 (4.2%) reported not being aware of it, and an additional 92 (1.6%) indicated they were unsure. While the awareness is strong among respondents aged 16-34, it is modestly less prevalent compared to respondents across All Age Groups (94.1% vs. 96.6%).

Q5.2.4.9. How frequently do you see or hear the "Don't mess with Texas" slogan?

Number of valid responses: 5,172. This question is only applicable to those who answered "Yes" to Question 5.2.4.8. Question 5.2.4.9 asks the respondents about the frequency they see or hear the slogan.

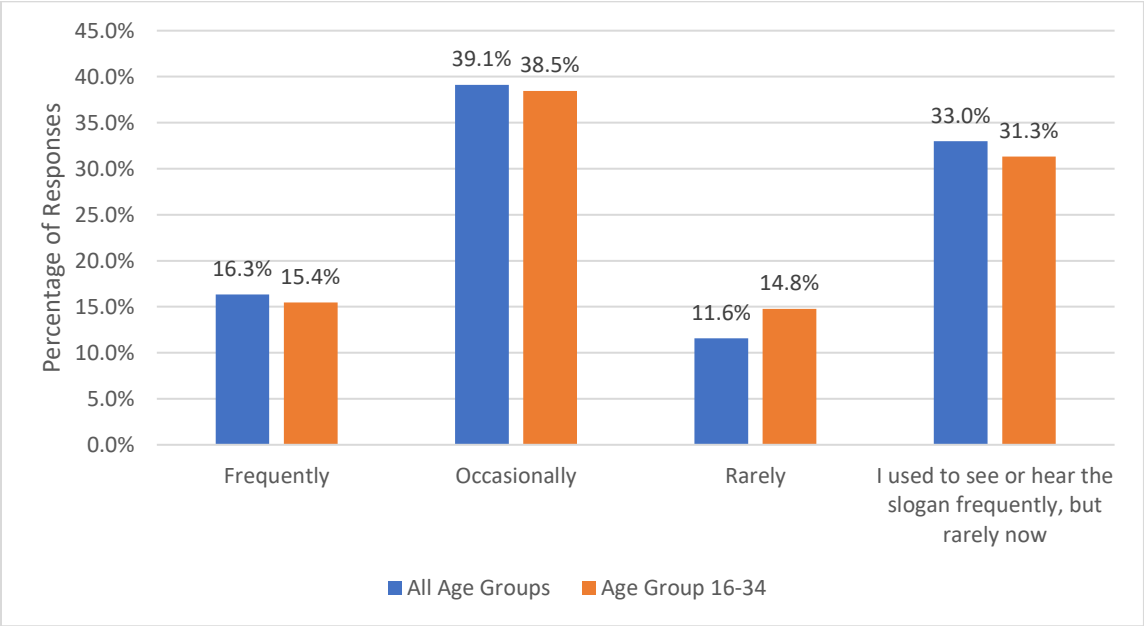


Figure 5.49. Frequency to see or hear DMWT Slogan – Age Group 16-34

Within the Age Group 16-34, respondents most commonly reported seeing or hearing the DMWT slogan occasionally (1,989 respondents or 38.5%), followed by those who used to see or hear the slogan frequently but rarely do now (1,620 respondents or 31.3%), frequently (799 respondents or 15.4%), and rarely (764 respondents or 14.8%). Compared with All Age Groups, the Age Group 16-34 reports slightly lower exposure in the frequently (15.4% vs. 16.3%) and occasionally (38.5% vs. 39.1%) categories. In contrast, younger respondents are somewhat more likely to report seeing or hearing the slogan rarely (14.8% vs. 11.6%). Additionally, a slightly smaller proportion of the Age Group 16-34 indicated that they used to encounter the slogan frequently but rarely do now (31.3% vs. 33.0%). Overall, these findings suggest that while the DMWT slogan remains visible to respondents aged 16-34, their reported frequency of exposure is marginally lower compared to respondents across All Age Groups.

Q5.2.4.10. How did you hear/learn about the "Don't mess with Texas" slogan? Check all that apply.

Number of valid responses: 5,151. This question is only applicable to those who answered "Yes" to Question 5.2.4.8. Question 5.2.4.10 asks the respondents about the sources where they hear or learn about the DMWT slogan. Note that this is a multiple-choice question and respondents could select more than one answer.

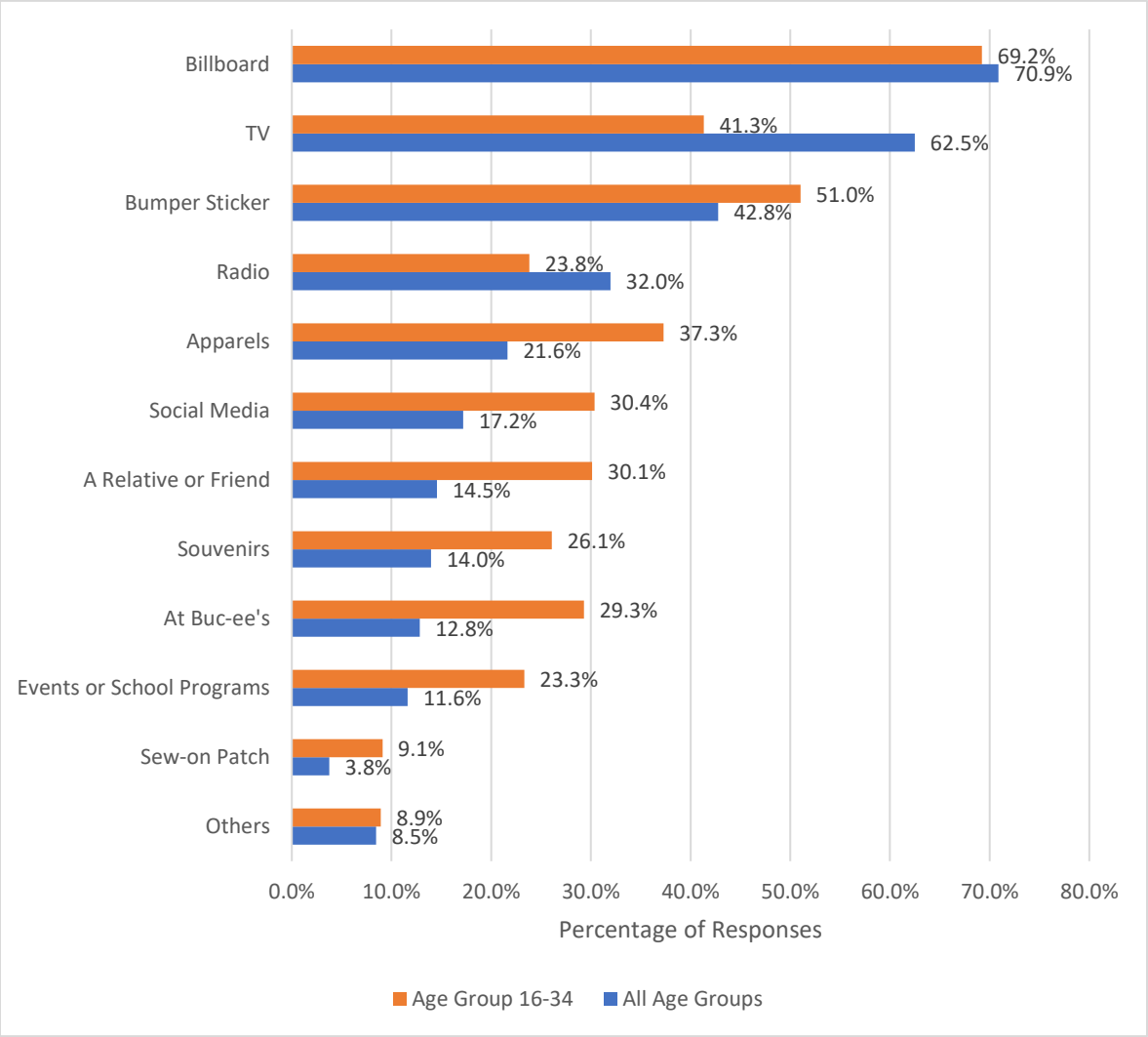


Figure 5.50. Sources to Hear or Learn about DMWT Slogan – Age Group 16-34

Among the Age Group 16-34, respondents most commonly reported hearing or learning about the DMWT slogan from billboards (3,566 respondents or 69.2%), followed by bumper stickers (2,629 respondents or 51.0%), TV commercials (2,129 respondents or 41.3%), and apparels (1,921 respondents or 37.3%). Other frequently sources for the Age Group 16-34 include social media (1,564 respondents or 30.4%), relatives or friends (1,552 respondents or 30.1%), and At Buc-ee's (1,509 respondents or 29.3%), while souvenirs (1,343 respondents or 26.1%), radio commercials (1,228 respondents or 23.8%), and events

or school programs (1,201 respondents or 23.3%) were reported less often. Only 469 (9.1%) respondents mentioned sew-on patches.

In addition, 460 respondents (8.9%) provided the information sources by selecting "others", including:

- I searched it myself;
- Website of other authorities, e.g., NTTA Toll tag website, DPS website;
- Trash barrels at rest stops and highways;
- Advertising class in college;
- Music (e.g., songs);
- Spotify commercials;
- At HEBs; and
- Movies.

When compared with All Age Groups, the Age Group 16-34 is notably more likely to report exposure through social media (30.4% vs. 17.2%), apparels (37.3% vs. 21.6%), relatives or friends (30.1% vs. 14.5%), souvenirs (26.1% vs. 14.0%), events or school Programs (23.3% vs. 11.6%), and at Buc-ee's (29.3% vs. 12.8%). Younger respondents are less likely to cite traditional media sources such as TV commercials (41.3% vs. 62.5%) and radio commercials (23.8% vs. 32.0%). Exposure through billboards remains consistently high across both groups (69.2% vs. 70.9%).

These findings suggest that while traditional channels remain important, younger respondents are more likely to encounter the DMWT slogan through social, interpersonal, and merchandise-related sources.

Q5.2.4.11. What do you think the "Don't mess with Texas" slogan means? Check all that apply

Number of valid responses: 5,495. This question is only applicable to those who answered "Yes" to Question 5.2.4.8. Question 5.2.4.11 intends to collect whether respondents understand the meaning of DMWT slogan. Note that this is a multiple-choice question.

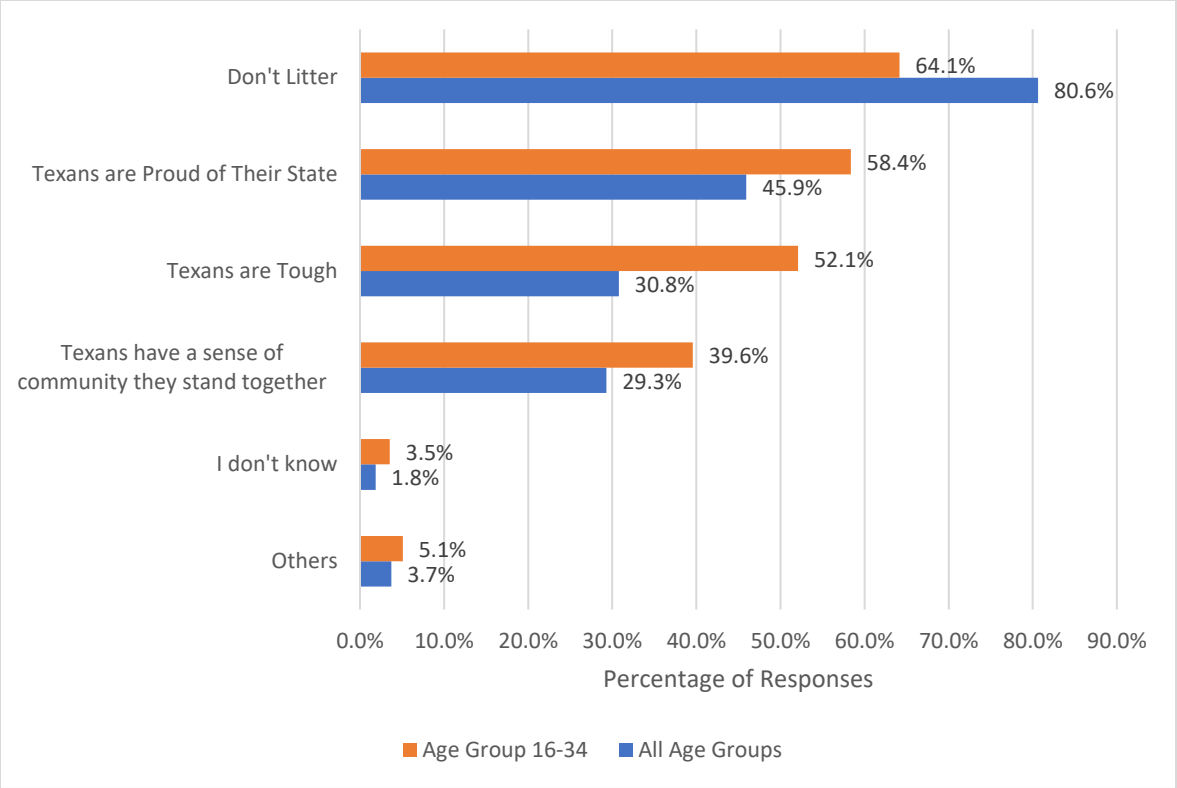


Figure 5.51. Understanding of the DMWT Slogan – Age Group 16-34

Within the Age Group 16-34, the most commonly recognized meaning of the DMWT slogan is “Don’t Litter” (3,525 respondents or 64.1%), followed by “Texans are Proud of Their State” (3,207 respondents or 58.4%), “Texans are Tough” (2,862 respondents or 52.1%), and “Texans have a sense of community and stand together” (2,175 respondents or 39.6%). A small proportion of respondents indicated “I don’t know” (195 respondents or 3.5%).

In addition, 279 respondents (5.1%) provided their understandings by selecting “Other meanings not listed”, including:

- Some international friends thought it was related to our right to carry guns;
- Keep things as they are;
- While I'm aware the slogan is for anti-littering, I didn't know that until I was 16, I spent most of my childhood thinking it was similar to 'don't mess with us';
- I thought it was the celebration and protection of gun rights in the state;
- Don’t break Texas laws; and
- Everything’s big in TX.

When compared with All Age Groups, respondents aged 16-34 are less likely to associate the slogan specifically with “Don’t Litter” (64.1% vs. 80.6%), suggesting that younger individuals may interpret the slogan more broadly beyond its original anti-littering

message. In contrast, the 16-34 cohort shows higher agreement with alternative interpretations, including state pride (58.4% vs. 45.9%), toughness (52.1% vs. 30.8%), and community unity (39.6% vs. 29.3%). Additionally, a slightly higher proportion of younger respondents reported being unsure of the slogan's meaning (3.5% vs. 1.8%). Overall, these findings suggest that while the anti-littering message remains widely recognized, the Age Group 16-34 is more likely to associate the DMWT slogan with broader meanings.

Q5.2.4.12. How do you think the "Don't mess with Texas" slogan has affected your behavior about littering?

Number of valid responses: 4,863. This question is only applicable to those who answered "Yes" to Question 5.2.4.8. Question 5.2.4.12 asks the respondent whether the DMWT slogan has changed their behavior about littering.

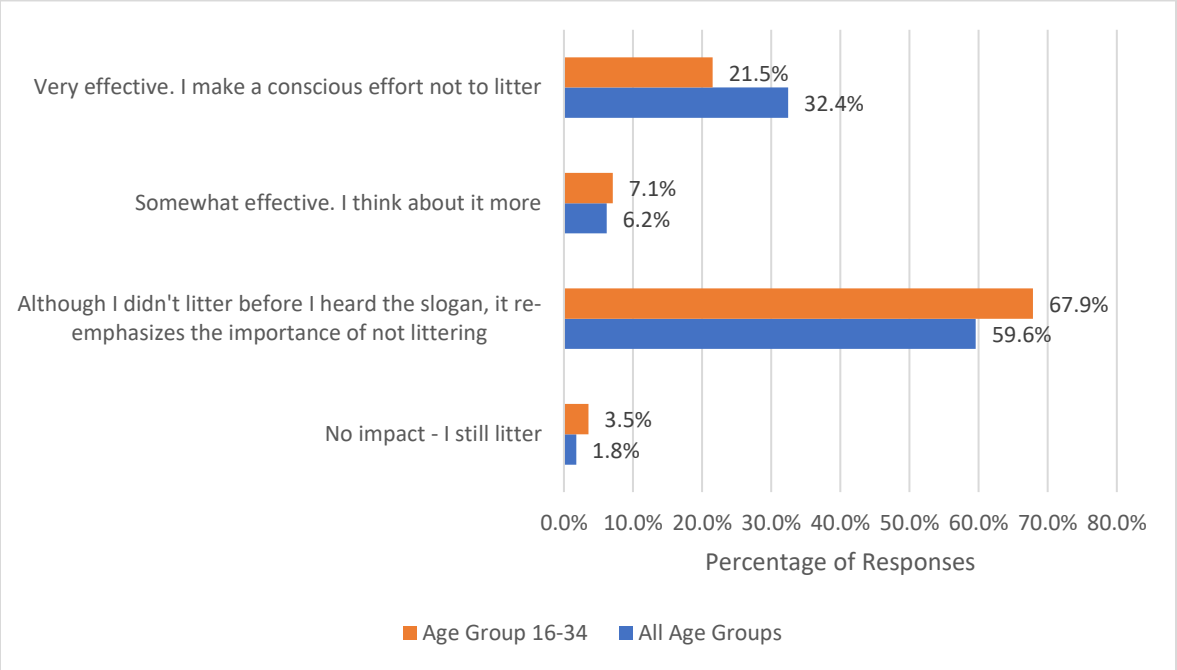


Figure 5.52. Whether DMWT Has Changed Behavior Regarding Littering in the Age Group 16-34 Respondents

The majority of the Age Group 16-34 respondents indicated that the DMWT slogan has had a positive influence on their attitudes or behavior regarding littering. Specifically, 67.9% (3,300 respondents) reported that although they did not litter before hearing the slogan, it re-emphasized the importance of not littering, while 21.5% (1,047 respondents) stated that the slogan has been very effective, prompting them to make a conscious effort not to litter. An additional 7.1% (344 respondents) found the slogan somewhat effective, noting that it makes them think about littering more often, whereas 3.5% (172 respondents) reported no impact on their behavior.

Compared with All Age Groups, the Age Group 16-34 respondents are more likely to report that the slogan reinforces existing anti-littering attitudes (67.9% vs. 59.6%) and somewhat increases awareness (7.1% vs. 6.2%). However, they are less likely to indicate that the slogan is very effective in actively changing their behavior (21.5% vs. 32.4%), and slightly more likely to report no impact (3.5% vs. 1.8%). The findings suggest that while the DMWT slogan plays an important role in reinforcing anti-littering norms among the Age Group 16-34, its perceived impact in prompting active behavioral change may be somewhat lower compared to respondents across All Age Groups.

Q5.2.4.13. How do you think "Don't mess with Texas" slogan will affect your behavior about littering?

Number of valid responses: 1,070. This question is only applicable to those who answered "No" or "I'm not sure" to Question 5.2.4.8. Question 5.2.4.13 asks the respondent whether the DMWT slogan will change their behavior about littering after they learn about its meaning.

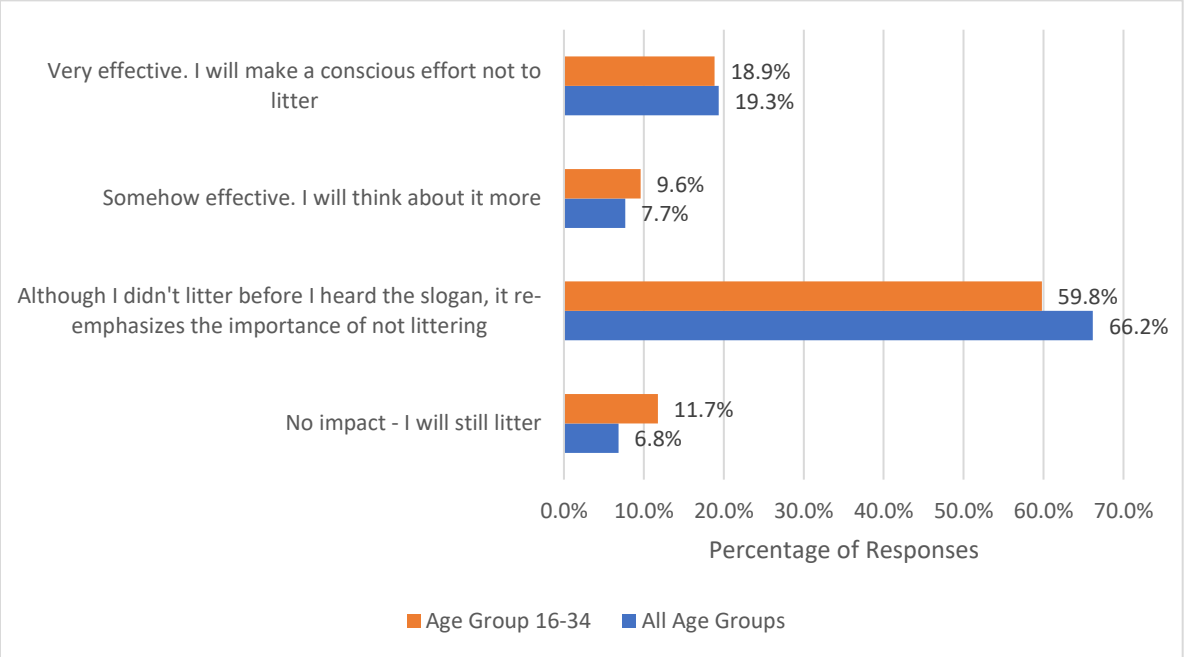


Figure 5.53. Whether DMWT Will Change Behavior Regarding Littering in the Age Group 16-34 Respondents

Similar to Question 5.2.4.12, most respondents indicated that the slogan will positively influence their attitudes toward littering after being introduced to it. Specifically, 59.8% (168 respondents) reported that although they did not litter before hearing the slogan, it re-emphasizes the importance of not littering, while 18.9% (53 respondents) stated that it would be very effective, prompting them to make a conscious effort not to litter. An additional 9.6% (27 respondents) found the slogan somewhat effective, noting that they

would think about littering more often, whereas 11.7% (33 respondents) reported no impact, indicating they would continue to litter.

Compared with All Age Groups, respondents aged 16-34 are slightly less likely to report that the slogan re-emphasizes the importance of not littering (59.8% vs. 66.2%), but more likely to indicate that it would be somewhat effective (9.6% vs. 7.7%) or have no impact (11.7% vs. 6.8%). The proportion reporting that the slogan would be very effective is similar across both groups (18.9% vs. 19.3%). The results suggest that among respondents who were previously unfamiliar with the DMWT slogan, the Age Group 16-34 may be slightly less influenced by its introduction compared with All Age Groups.

Q5.2.4.14. Do you like and support the "Don't mess with Texas" slogan? Why?

Number of valid responses: 5,113. This question is applicable to all respondents. Question 5.2.4.14 asks whether the respondents like the slogan or not, as well as the reasons.

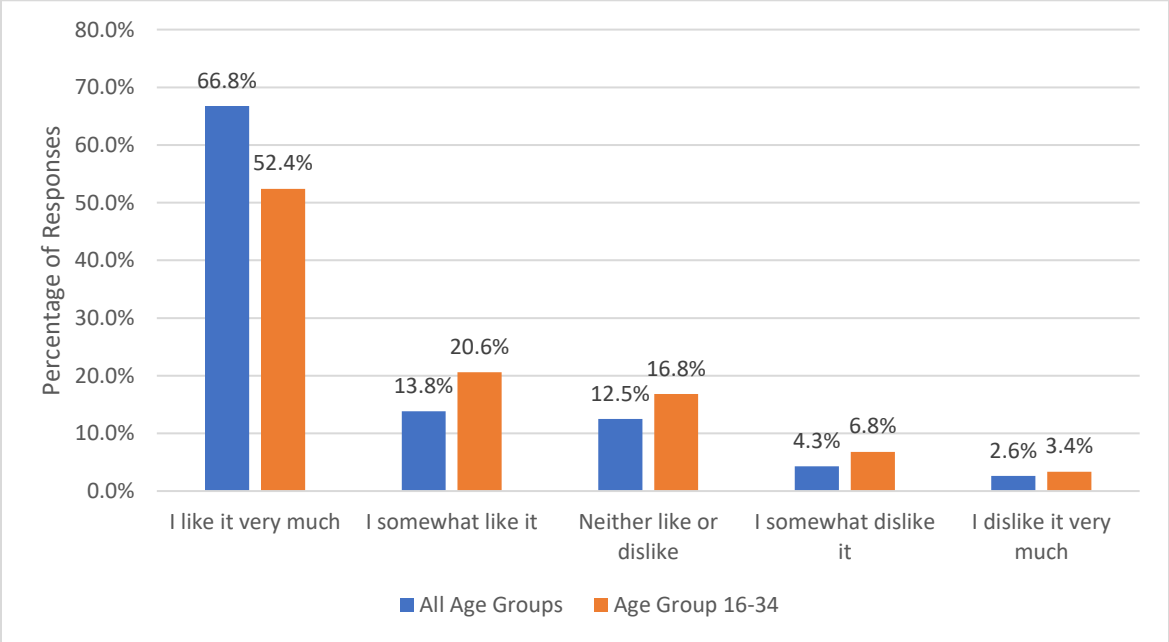


Figure 5.54. Whether the Age Group 16-34 Respondents Like and Support the DMWT Slogan

The Age Group 16-34 respondents generally expressed positive attitudes toward the DMWT slogan, with 52.4% (2,680 respondents) indicating that they like it very much and an additional 20.6% (1,054 respondents) reporting that they somewhat like it. Meanwhile, 16.8% (859 respondents) were neutral, 6.8% (348 respondents) somewhat disliked the slogan, and 3.4% (172 respondents) disliked it very much.

Compared with All Age Groups, the Age Group 16-34 shows a lower level of strong support, as a smaller proportion of respondents indicated that they like it very much (52.4% vs. 66.8%). Conversely, younger respondents are more likely to report moderate or neutral attitudes, including somewhat like it (20.6% vs. 13.8%) and neither like nor dislike (16.8%

vs. 12.5%). Additionally, the proportions indicating certain level of dislike are slightly higher among the Age Group 16-34, including somewhat dislike (6.8% vs. 4.3%) and dislike it very much (3.4% vs. 2.6%). The Study Team assigned a five-point Likert scale: 5 – like very much, 4 – somewhat like it, 3 – neither like nor dislike, 2 – somewhat dislike, and 1 – dislike very much. The average score is 4.1, indicating that the slogan is well received by most respondents. The DMWT slogan remains generally well-received among Age Group 16-34 respondents, and their level of strong support appears to be somewhat lower compared to respondents across All Age Groups (average score 4.1 vs. 4.4).

For each rating, the Study Team selected some frequently mentioned reasons provided by the respondents.

Reasons for "I like it very much":

- It's a memorable and impactful slogan. I've heard it my entire life and has been a symbol I've seen a lot
- It's simple and to the point
- It is a staple of the anti-littering program. It makes sense, it' has long history, and there will be more uproar if it will be changed
- I am very conscious of our impact on the environment and think this is a good way to promote environmental consciousness
- I support the slogan, as it's a very good reminder to not litter and no other state has a slogan like ours

Reasons for "I somewhat like it":

- It reminds me to keep our state clean, but it can be misleading
- I feel like people forget it's about not littering or they know but still use it to say we're tough
- I think the meaning of it has kind of devolved into more of a Texas pride slogan, but I think now knowing the meaning it's pretty creative
- I like it, I am just not 100% sure it's a good slogan for preventing littering. A litterer would read it and probably not associate it with anti-littering efforts
- I think it's a short but effective slogan. However, I'm unsure if most people know that the original intent of the slogan is to reduce littering

Reasons for "Neither like or dislike":

- I don't litter so it doesn't really affect me
- I feel like this slogan has been taken to represent "toughness" or "pride" rather than having meaning associated with littering
- It has little to no impact on most residents unless they are taught specifically by the government or educational authorities

- When the origin behind the slogan is explained to me, I like it. However, it is a bit misleading
- Too many people have moved here from out of state that simply don't know

Reasons for “I somehow dislike it”:

- Always thought of it as a political slogan about Texans refusing any reasonable regulation
- If you heard it without fully knowing the background you wouldn't know it has to do with littering
- The amount of litter has been consistent and unwavering
- Although I grew up with the slogan, I didn't know what it meant until I was older. It gives zero signs that it's an anti-litter campaign
- I've definitely misinterpreted it up until this point

Reasons for “I dislike it very much”:

- The slogan has been turned into a different meaning losing its original values all together
- The slogan is too broad to be connected directly to littering and beautification of the state highways
- Aggressive slogan, doesn’t feel welcoming and friendly state
- Offensive and doesn’t work for littering as I see people throwing stuff out their car windows, and leaving their trash where they park

Q5.2.4.15. Have you lived in US state(s) other than Texas?

Number of valid responses: 5,132. This question is applicable to all respondents. The purpose of this question is to identify if there are any similar slogans in other states.

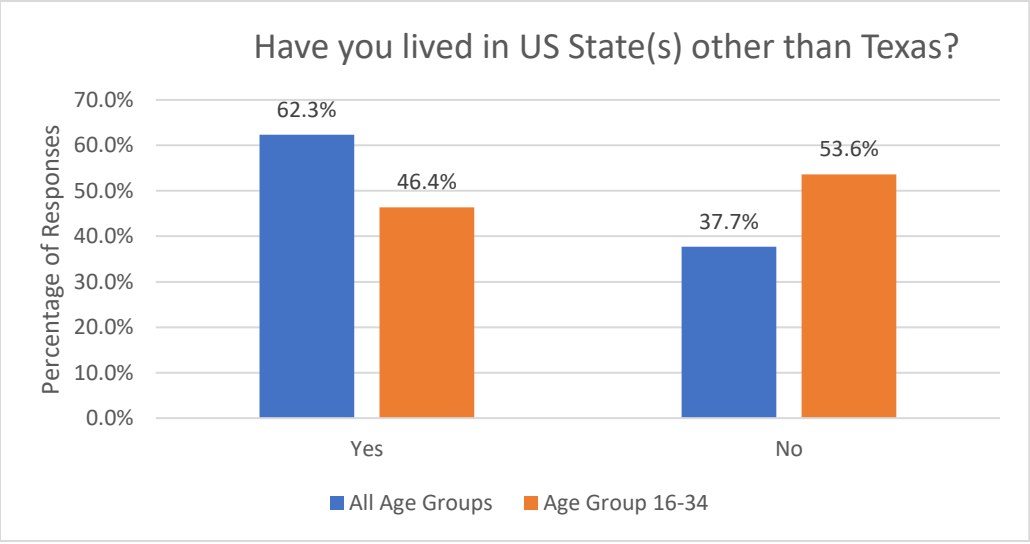


Figure 5.55. Whether the Age Group 16-34 Respondents Lived in other US States

The Age Group 16-34 respondents are more likely to have remained in Texas compared to respondents across All Age Groups. 46.4% (2,379 respondents) reported that they have lived in other state(s), while a slightly higher proportion, 53.6% (2,753 respondents), indicated that they have not.

Q5.2.4.16. Are you aware of any anti-littering campaign slogans from your former state(s)? If yes, please specify slogans and corresponding state.

Number of valid responses: 2,348. This question is only applicable to respondents who answered "Yes" to Question 5.2.4.15. Following up on Question 5.2.4.15, Question 5.2.4.16 askes the respondent to name similar anti-littering campaign slogans in other states.

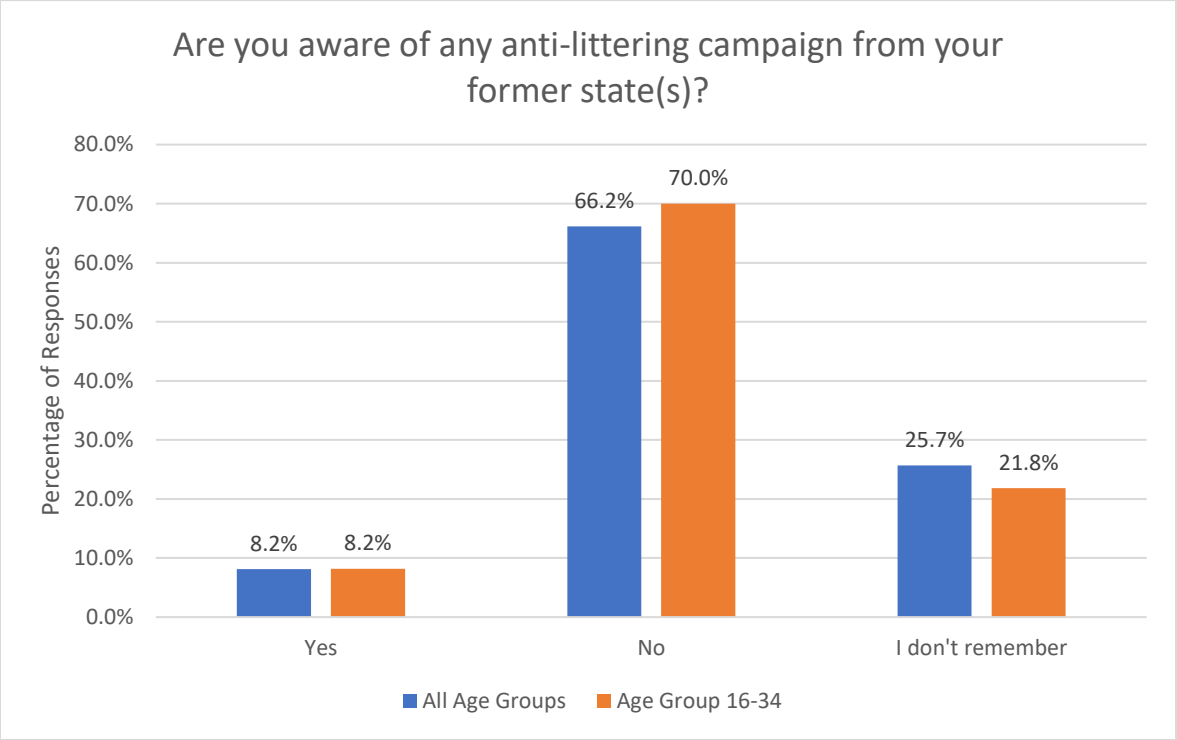


Figure 5.56. Awareness of Similar Anti-Littering Slogan in Other States – Age Group 16-34

A total of 192 (8.2%) respondents reported that they are aware of similar anti-littering slogans in other states, some examples including:

- "Malama ka aina" and "Lend a hand to clean our land" – Hawai'i
- "Pack it in, pack it out" – Nebraska
- "Keep it Clean MN" – Minnesota
- "Stash Your Trash" – Hawai'i
- "Don't Drop it on Alabama" – Alabama
- "Smile, you're on camera" – West Virginia

- “Don’t trash Alaska” – Alaska
- “Keep Oregon Green” – Oregon
- “Keep our land grand” – Oklahoma
- “Put a lid on litter”, “Think before you throw” – Illinois
- “No more trash” – Missouri
- “Virginia is for nature lovers” – Virginia
- “Too great to litter” – Idaho
- “Nobody trashes Tennessee” – Tennessee

Q5.2.4.17. Compared with Texas highways, do you think your former state(s)' highways have less litter?

Number of valid responses: 2,347. This question is only applicable to respondents who answered “Yes” to Question 5.2.4.15. Question 5.2.4.17 asks the respondents to compare the amount of highway litter between their former state(s) and Texas.

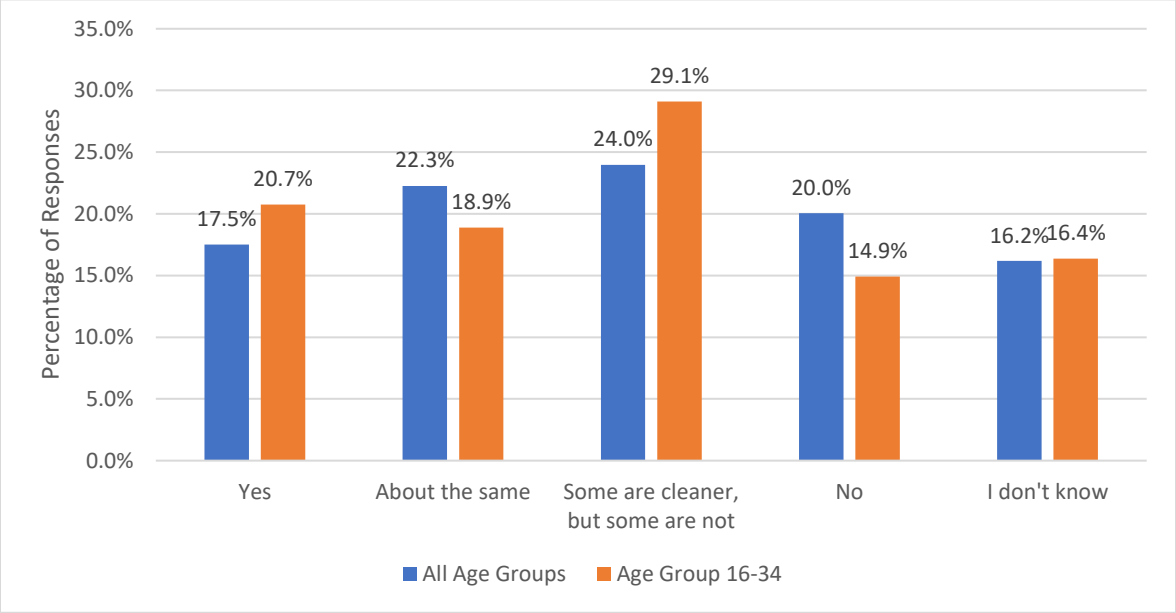


Figure 5.57. Whether Former State(s)’ Highway Have Less Litter than Texas – Age Group 16-34

Within the Age Group 16-34, the largest share of respondents (683 or 29.1%) indicated that “some are cleaner, but some are not”, followed by 20.7% (487 respondents) reporting that other states’ highways have less litter than Texas, 18.9% (443 respondents) feeling they are about the same, 16.4% (384 respondents) who selected “I don’t know,” and 14.9% (350 respondents) saying that other states’ highways are not cleaner than Texas.

Compared with All Age Groups, respondents aged 16-34 are more likely to report that other states’ highways are either cleaner (20.7% vs. 17.5%) or vary in cleanliness (29.1% vs. 24.0%). A smaller proportion of younger respondents indicated that other states’

highways are not cleaner than Texas (14.9% vs. 20.0%) or are about the same (18.9% vs. 22.3%). The proportion selecting "I don't know" remains nearly identical across both groups (16.4% vs. 16.2%). Overall, Age Group 16-34 respondents appear slightly more likely to perceive highways in other states as cleaner than those in Texas.

Q5.2.4.18. Have you lived in country(ies) other than the US?

Number of valid responses: 5,088. This question is applicable to all respondents. The purpose of this question is to identify if there are any similar slogans in other countries.

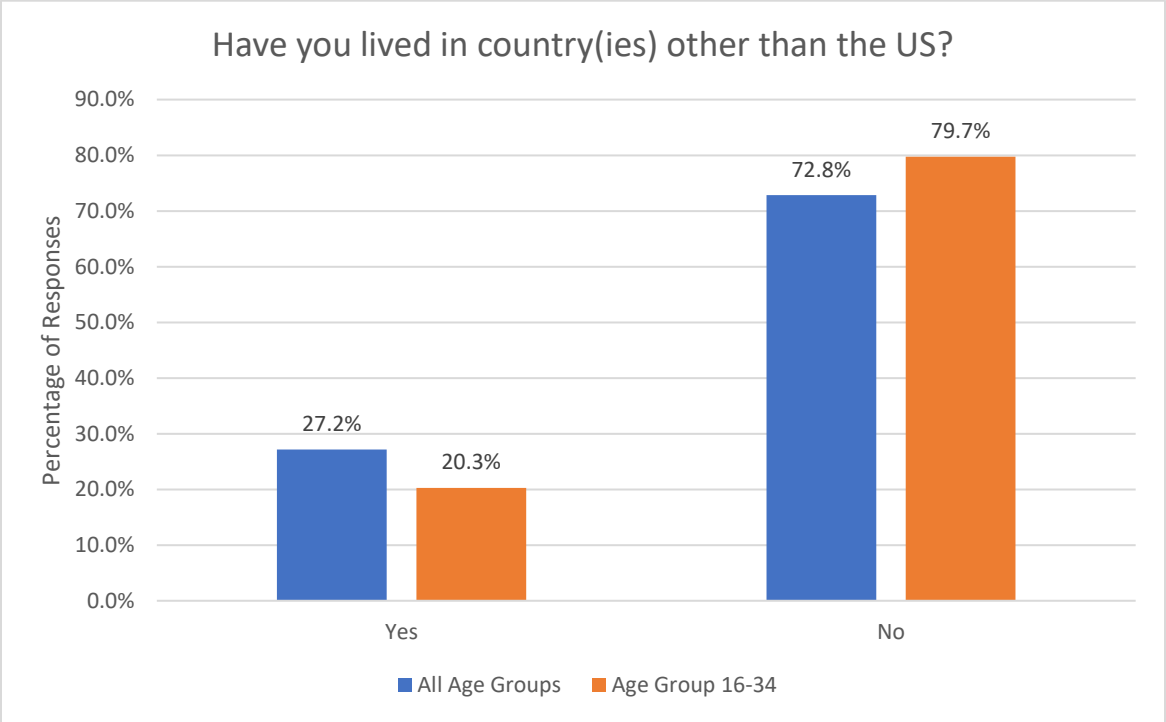


Figure 5.58. Whether the Age Group 16-34 Respondents Lived in Other Country(ies)

Within the Age Group 16-34, 20.3% (1,032 respondents) reported that they have lived in other countries, while 79.7% (4,056 respondents) indicated that they have not. The Age Group 16-34 respondents are less likely to have international living experience (20.3% vs. 27.2%).

Q5.2.4.19. Are you aware of any anti-littering campaign slogans from your former country(ies)? If yes, please specify slogans and corresponding country.

Number of valid responses: 1,008. This question is only applicable to respondents who answered "Yes" to Question 5.2.4.18. Question 5.2.4.19 askes the respondent to name similar anti-littering campaign slogans in other countries.

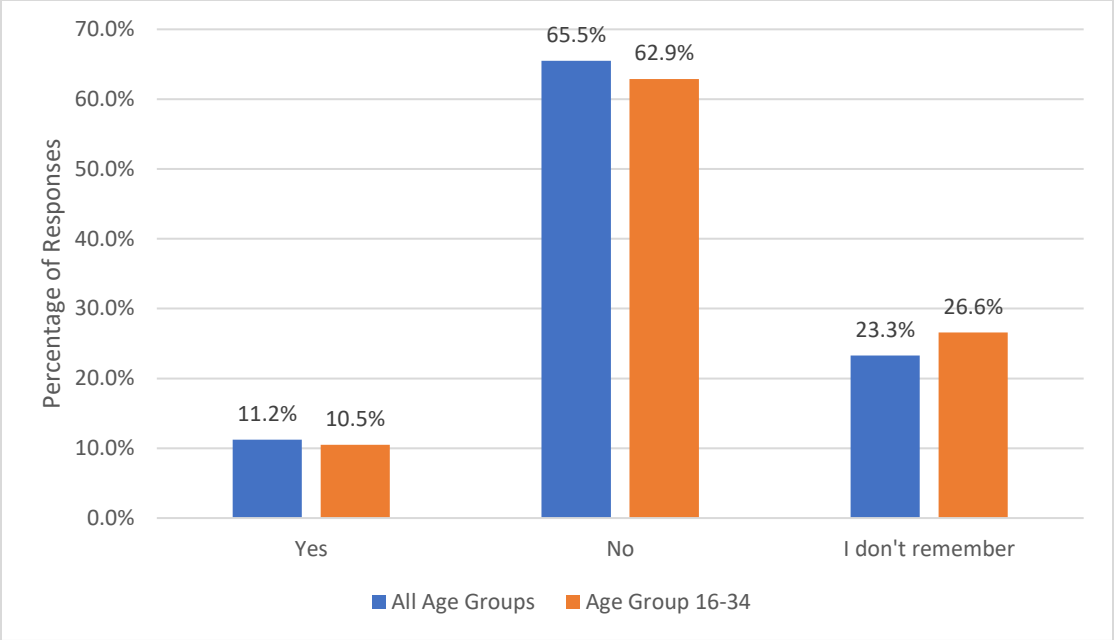


Figure 5.59. Awareness of Similar Anti-Littering Slogans in Other Countries – Age Group 16-34

A total of 105 (10.5%) respondents reported that they are aware of similar anti-littering slogans in other countries, some examples including:

- "Don't be a litterbug", "Littering says a lot about you" – Canada
- "Swachh Bharat (Clean India mean healthy India)" – India
- "Be a tidy kiwi" – New Zealand
- "Protecting the environment is everyone's responsibility." – China
- "Keep place beautiful" – Turkey
- "We are cleaning together" – Germany
- "Littering says a lot about you" – Canada
- "Don't be a tosser" – England
- "Bin it your way" – Ireland
- "Keep the community clean", "Let's keep the city clean" – Vietnam
- "Proyecto libera" – Spain
- "Keep the Bahamas clean, green, and pristine" – Bahamas
- "Keep Australia Beautiful" – Australia

Q5.2.4.20. Compared with Texas highways, do you think your former country or countries' highways have less litter?

Number of valid responses: 1,011. This question is only applicable to respondents who answered "Yes" to Question 5.2.4.18. Question 5.2.4.20 asks the respondents to compare the amount of highway litter between their former country(ies) and Texas.

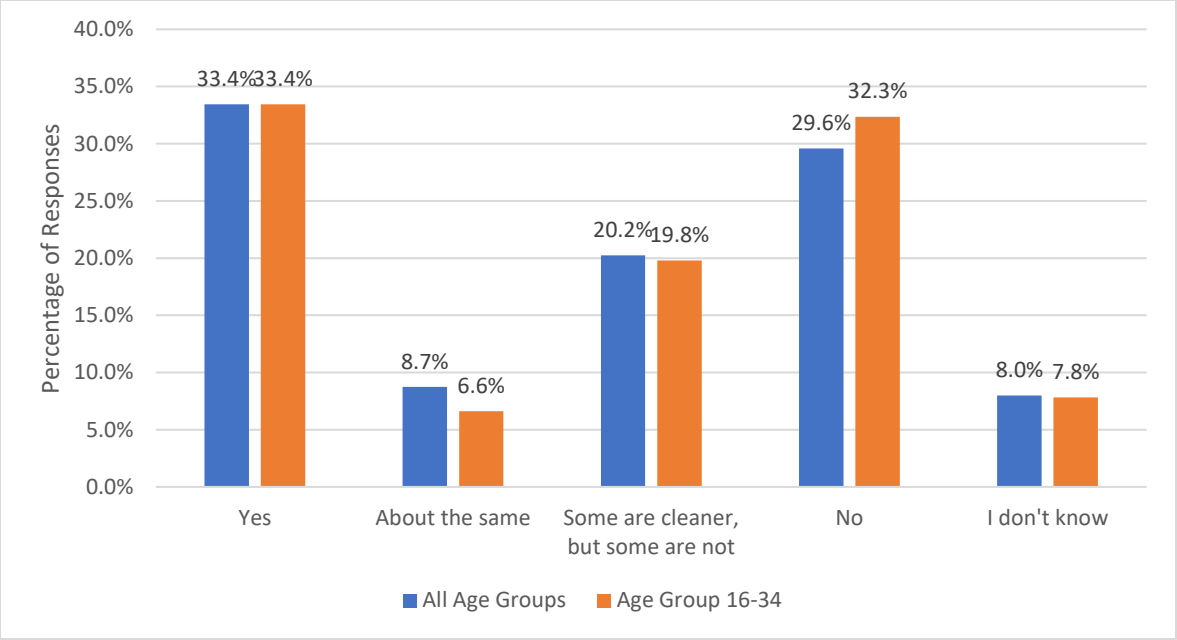


Figure 5.60. Whether Former Country(ies)' Highway Have Less Litter than Texas – Age Group 16-34

Within the Age Group 16-34, 33.4% (338 respondents) reported that highways in former country(ies) have less litter than Texas, while 32.3% (327 respondents) indicated that Texas is cleaner. Additionally, 19.8% (200 respondents) stated that some are cleaner, but some are not, 6.6% (67 respondents) felt they are about the same, and 7.8% (79 respondents) selected "I don't know."

Compared with All Age Groups, the proportion of respondents indicating that highways in former country(ies) have less litter than Texas is identical (33.4% in both groups). However, respondents aged 16-34 are slightly more likely to report that former country(ies)' highways are not cleaner than Texas (32.3% vs. 29.6%), and less likely to indicate that they are about the same (6.6% vs. 8.7%) or that some are cleaner while others are not (19.8% vs. 20.2%). The differences are minor.

Q5.2.4.21. Are you aware that littering in Texas is against the law and can have fines of $500 to more than $4,000 and may also have jail time?

Number of valid responses: 5,058. This question is applicable to everyone. Question 5.2.4.21 asks the respondents whether they are aware that littering is against the law and may receive fines as well as jail time.

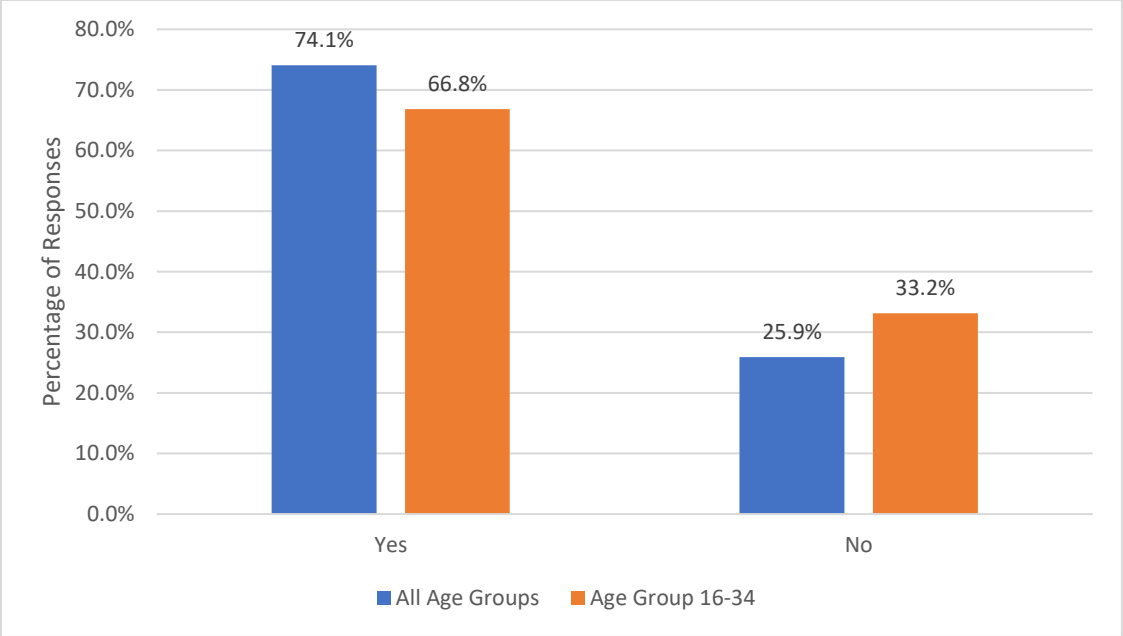


Figure 5.61. Awareness of Littering is Against Law in Texas – Age Group 16-34

Within the Age Group 16-34, 66.8% (3,381 respondents) indicated that they are aware of this, while 33.2% (1,677 respondents) reported that they are not aware. Compared with All Age Groups, the 16-34 cohort demonstrates a lower level of legal awareness regarding littering (66.8% vs. 74.1%), suggesting that awareness of littering laws in Texas is less prevalent among the Age Group 16-34.

Q5.2.4.22. What types of litter have you seen on Texas highways? Please select all that apply.

Number of valid responses: 5,040. This question is applicable to everyone. Question 5.2.4.22 intends to collect information on litter types along Texas highways. Note that this is a multiple-choice question, and more than one answer can be selected.

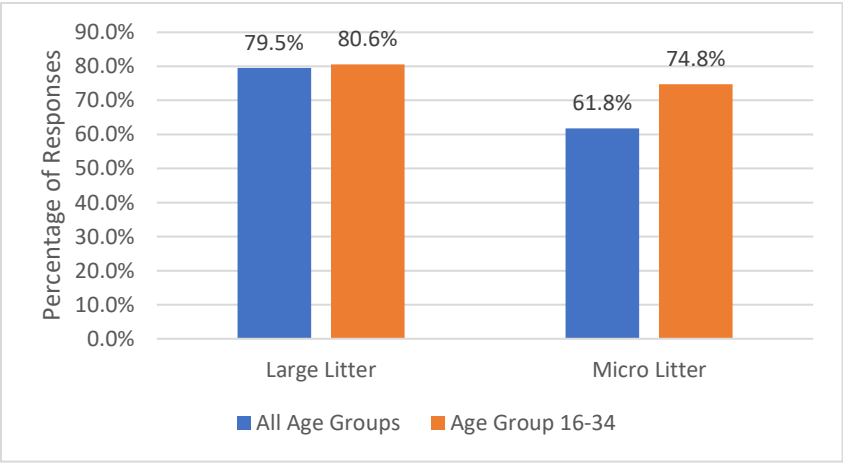


Figure 5.62. Litter Types along Texas Highways – Large vs. Micro, Age Group 16-34

Within the Age Group 16-34, 80.6% (4,062 respondents) reported seeing large litter along highways, while 74.8% (3,769 respondents) reported noticing micro litter. Compared with All Age Groups, the proportion of respondents observing large litter is slightly higher among the 16-34 cohort (80.6% vs. 79.5%). More notably, respondents aged 16-34 are more likely to report seeing micro litter along highways (74.8% vs. 61.8%).

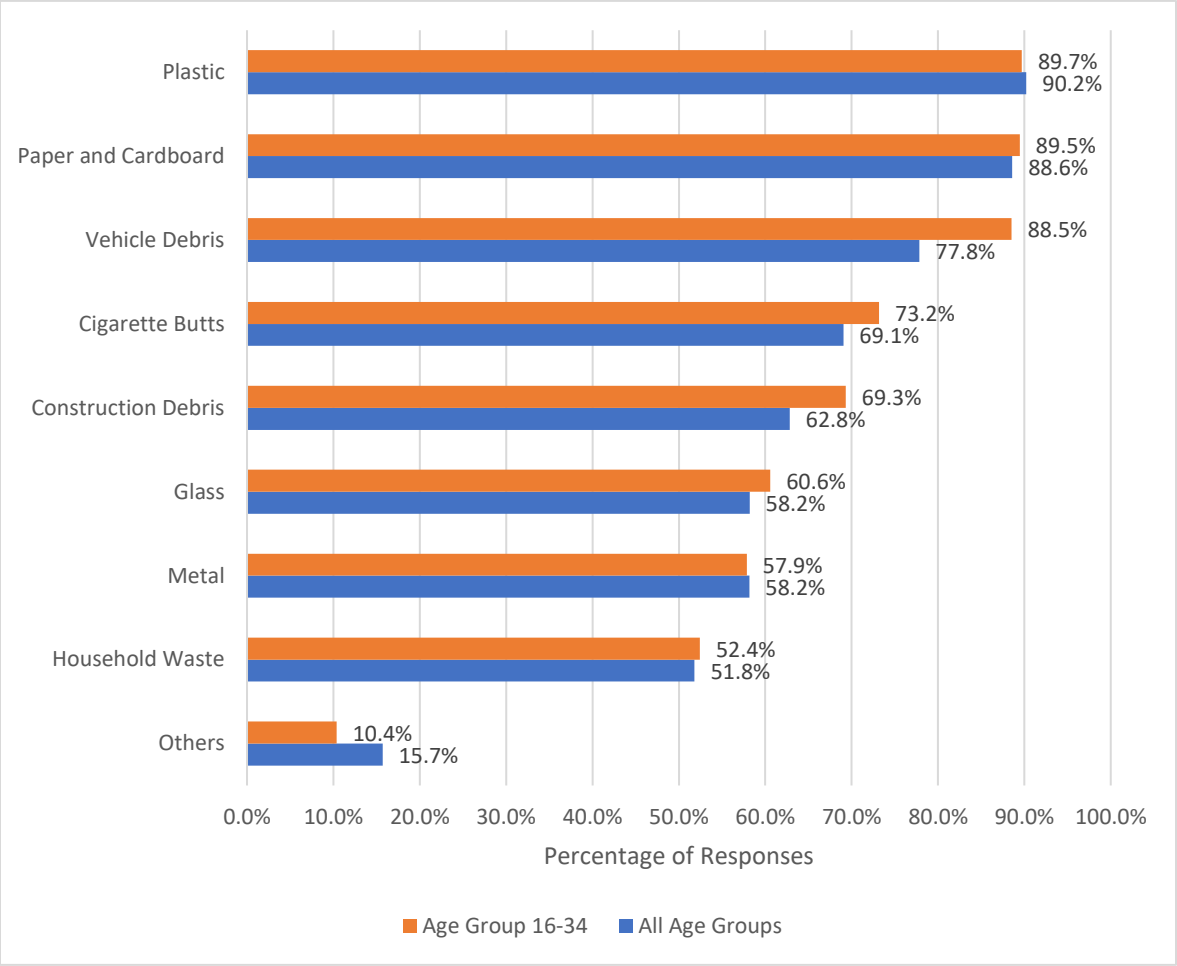


Figure 5.63. Litter Types along Texas Highways – Age Group 16-34

Within the Age Group 16-34, the most commonly reported litter types seen along highways are plastic (4,521 respondents or 89.7%), paper and cardboard (4,509 respondents or 89.5%), and vehicle debris (4,461 respondents or 88.5%), followed by cigarette butts (3,688 respondents or 73.2%), construction debris (3,494 respondents or 69.3%), glass (3,053 respondents or 60.6%), metal (2,916 respondents or 57.9%), and household waste (2,643 respondents or 52.4%). A smaller proportion of respondents reported observing other types of litter (523 respondents or 10.4%).

Compared with All Age Groups, Age Group 16-34 respondents are more likely to report seeing vehicle debris (88.5% vs. 77.8%), construction debris (69.3% vs. 62.8%), cigarette butts (73.2% vs. 69.1%), and glass (60.6% vs. 58.2%) along highways. In contrast, the proportions reporting plastic (89.7% vs. 90.2%), paper and cardboard (89.5% vs. 88.6%),

metal (57.9% vs. 58.2%), and household waste (52.4% vs. 51.8%) are relatively similar across both groups.

Q5.2.4.23. Why do you think people litter along the highway? Please check all that apply.

Number of valid responses: 4,995. This question is applicable to everyone. Question 5.2.4.23 tries to identify the reason why people litter along the highway. Note that this is a multiple-choice question and more than one answer can be selected.

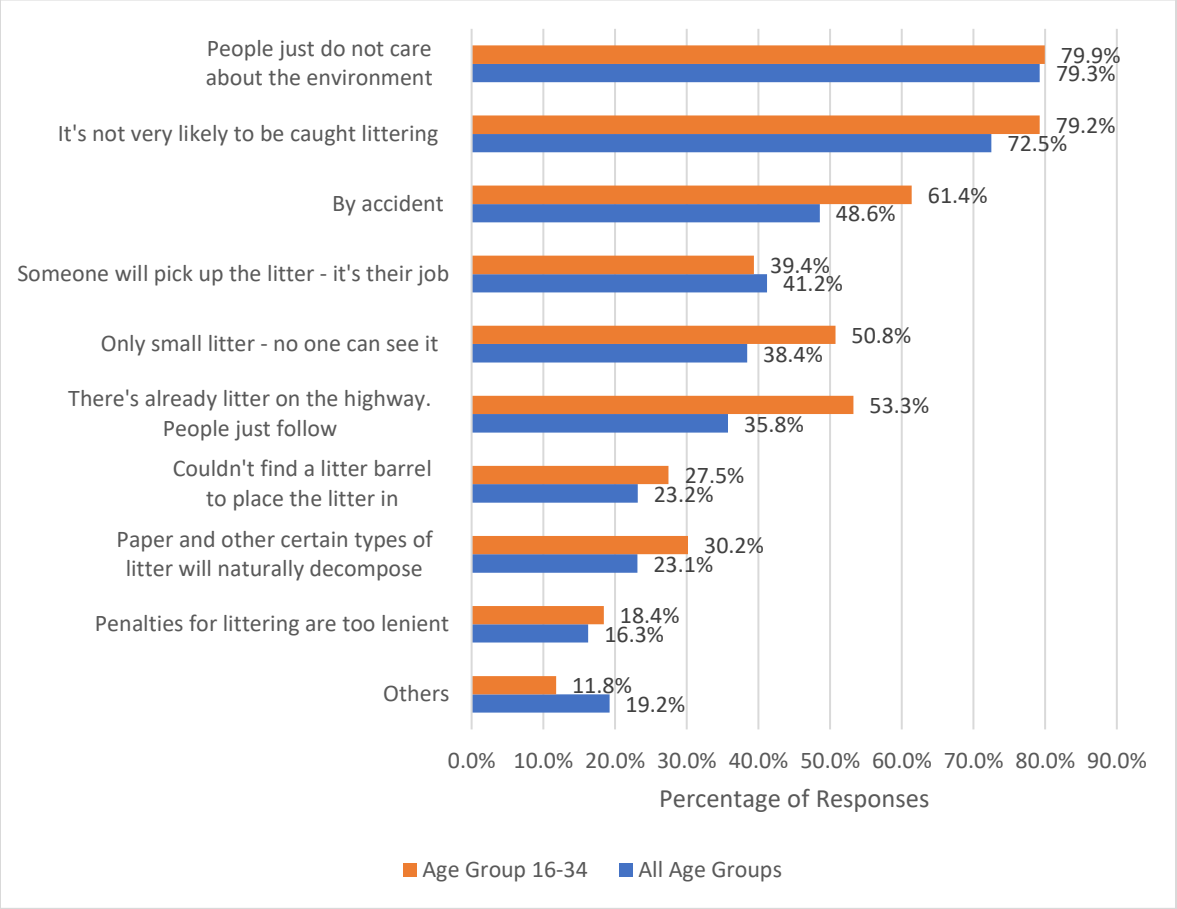


Figure 5.64. Reasons Why People Litter – Age Group 16-34

Most Age Group 16-34 respondents commonly cited reasons why people litter include "people do not care about the environment" (3,993 respondents or 79.9%), "it is not very likely to be caught littering" (3,958 respondents or 79.2%), and that littering occurs by accident (3,066 respondents or 61.4%). Additionally, over half of respondents indicated that people litter because there is already litter on the highway and others simply follow (2,660 respondents or 53.3%) or believe that no one will notice (2,535 respondents or 50.8%). Other frequently reported reasons include the perception that someone else will clean it up (1,968 respondents or 39.4%), some paper or certain types of litter will naturally decompose (1,508 respondents or 30.2%), the inability to find a litter barrel (1,372

respondents or 27.5%), and the belief that penalties for littering are too lenient (921 respondents or 18.4%).

In addition, 588 respondents (11.8%) provided potential reasons by selecting “Other reasons not listed”, example reasons including:

- Laziness and a lack of respect for others;
- Embarrassment and carelessness;
- Not enough enforcement when people litter;
- Unsecured truck loads;
- Trash bags opened by animals spreading litter everywhere;
- Just a matter of convenience;
- Lots of cars failing or crashing, and leaving tire and chassis fragments along the road.

Compared with All Age Groups, respondents aged 16-34 are more likely to attribute littering behavior to social and situational factors, such as following existing litter behavior (53.3% vs. 35.8%), assuming small litter is not noticeable (50.8% vs. 38.4%), or littering by accident (61.4% vs. 48.6%). Younger respondents are also more likely to believe that littering occurs because paper or certain types of litter will naturally decompose (30.2% vs. 23.1%) or because it is unlikely to be caught (79.2% vs. 72.5%). In contrast, they are slightly less likely to attribute littering to the belief that someone else will pick it up (39.4% vs. 41.2%).

Q5.2.4.24. After seeing and learning the "Don't mess with Texas" slogan, how likely are you to confront someone who litters?

Number of valid responses: 4,962. This question is applicable to everyone. Question 5.2.4.24 tries to identify respondents’ behavioral change regarding confronting someone who litters after learning the DMWT slogan.

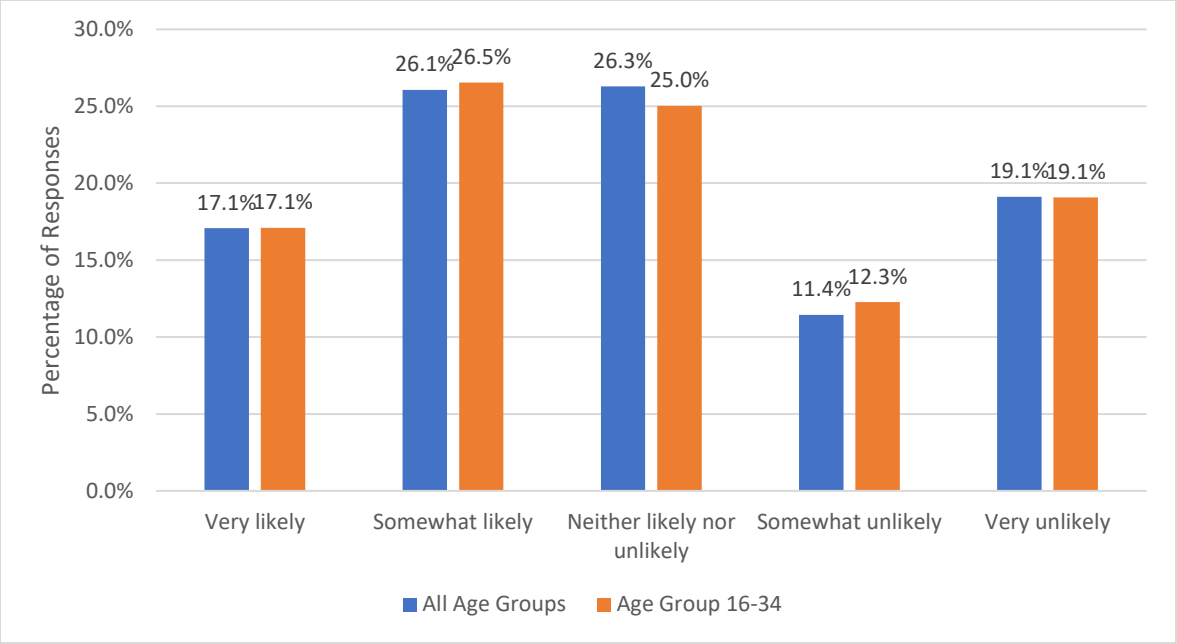


Figure 5.65. Likelihood to Confront Someone Who Litters – Age Group 16-34

Within the Age Group 16-34, 17.1% (848 respondents) indicated they are very likely to confront someone who litters, while 26.5% (1,317 respondents) reported being somewhat likely. Additionally, 25.0% (1,242 respondents) stated they are neither likely nor unlikely, 12.3% (609 respondents) are somewhat unlikely, and 19.1% (946 respondents) are very unlikely to confront someone about littering. Compared with All Age Groups, the proportion who are somewhat likely is slightly higher (26.5% vs. 26.1%). A smaller proportion of younger respondents reported being neutral (25.0% vs. 26.3%), while they are somewhat more likely to indicate being somewhat unlikely (12.3% vs. 11.4%). Overall, the likelihood of confronting someone who litters is generally similar.

Q5.2.4.25. Do you think the "Don't mess with Texas" slogan has helped reduce litter in your community?

Number of valid responses: 4,962. This question is applicable to everyone. Question 5.2.4.25 askes the respondents whether they believe the slogan has helped reduce litter in your community.

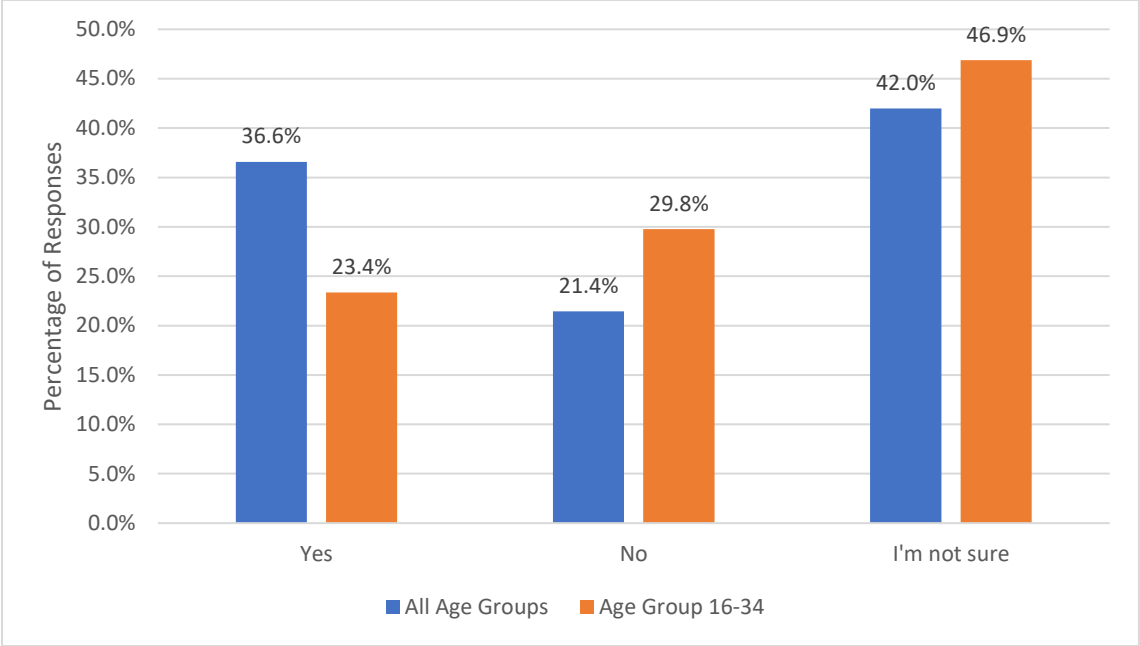


Figure 5.66. Whether DMWT Has Helped Reduce Litter in Community – Age Group 16-34

Within the Age Group 16-34, 23.4% (1,159 respondents) indicated that they believe the DMWT slogan helps reduce litter in their community, while 29.8% (1,477 respondents) reported that they do not believe it has such an impact. Additionally, 46.9% (2,326 respondents) selected “I’m not sure”.

Compared with All Age Groups, respondents aged 16-34 are less likely to believe that the DMWT slogan helps reduce litter in community (23.4% vs. 36.6%) and more likely to indicate that it does not (29.8% vs. 21.4%) or that they are unsure (46.9% vs. 42.0%). These results suggest that respondents in the Age Group 16-34 are less likely to perceive the DMWT slogan contributes to litter reduction in their communities.

Q5.2.4.26. In your opinion, how effective is the "Don't mess with Texas" slogan?

Number of valid responses: 4,957. This question is applicable to everyone. Question 5.2.4.26 tries to identify the overall effectiveness of the DMWT slogan.

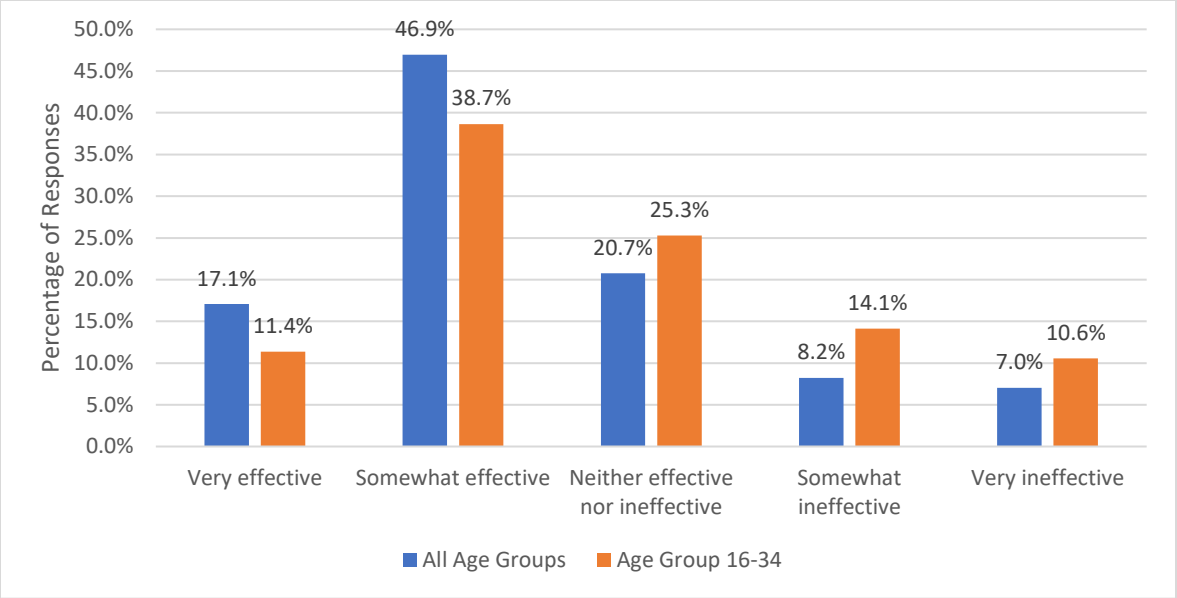


Figure 5.67. Overall Effectiveness of DMWT Slogan – Age Group 16-34

Within the Age Group 16-34, approximately 50.1% of respondents rated the DMWT slogan as either very effective (562 respondents or 11.4%) or somewhat effective (1,916 respondents or 38.7%), indicating that about half of younger respondents perceive the slogan as having a meaningful impact. 25.3% (1,253 respondents) indicated that the slogan is neither effective nor ineffective, while 14.1% (701 respondents) rated it as somewhat ineffective and 10.6% (524 respondents) as very ineffective. The Study Team assigned a five-point Likert scale: 5 – very effective, 4 – somewhat effective, 3 – neither effective nor ineffective, 2 – somewhat ineffective, and 1 – very ineffective. The average score is 3.3, reflecting widespread awareness and an overall positive perception.

Compared with All Age Groups, Age Group 16-34 respondents are less likely to rate the slogan as very effective (11.4% vs. 17.1%) or somewhat effective (38.7% vs. 46.9%), and more likely to report neutral (25.3% vs. 20.7%) or negative perceptions, including somewhat ineffective (14.1% vs. 8.2%) and very ineffective (10.6% vs. 7.0%). Consequently, the overall effectiveness score is lower (3.3 vs. 3.6). These findings suggest that while the DMWT slogan continues to resonate with a substantial portion of the Age Group 16-34, its perceived effectiveness may be comparatively weaker among younger respondents. This may reflect differences in message relevance, exposure channels, or evolving communication preferences, highlighting the importance of tailoring outreach strategies to better engage this demographic.

Q5.2.4.27. What do you think would be effective in preventing people from littering? Please select all that apply.

Number of valid responses: 4,887. This question is applicable to everyone. Question 5.2.4.27 tries to identify effective ways to prevent people from littering. Note that this is a multiple-choice question.

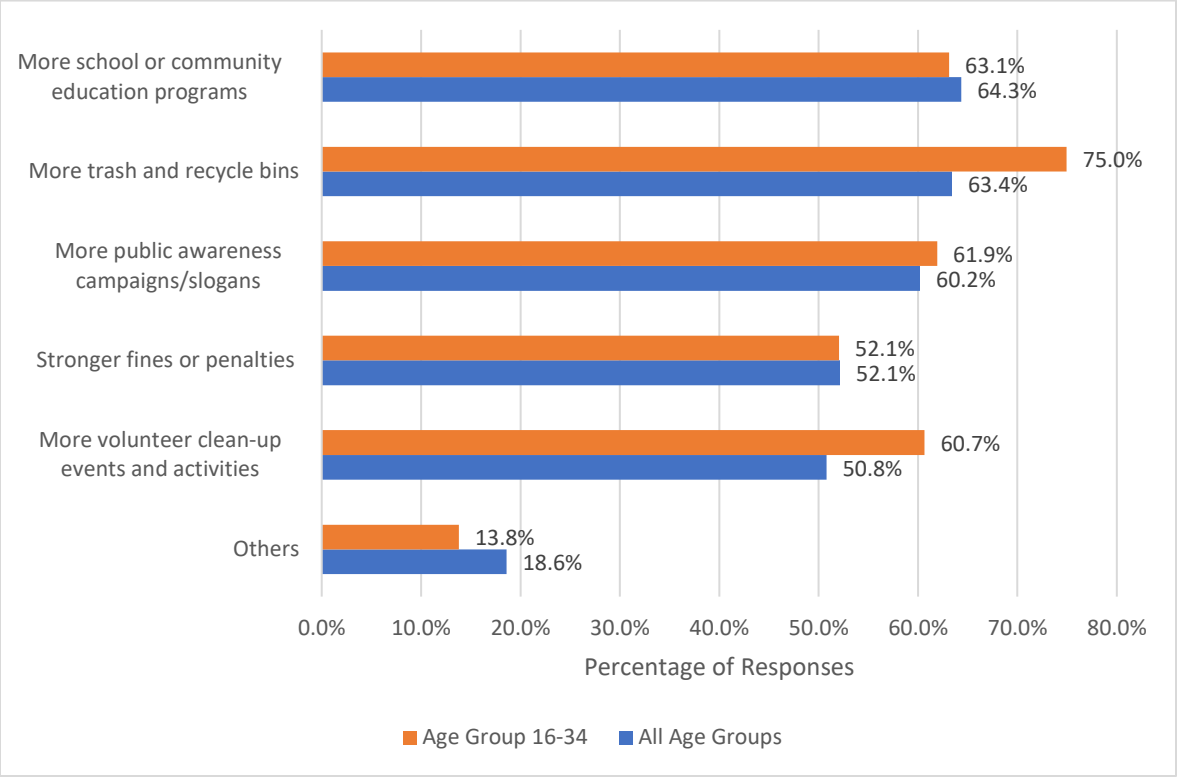


Figure 5.68. Ways to Prevent People from Littering – Age Group 16-34

Within the Age Group 16-34, respondents most commonly identified more trash and recycle bins (3,663 respondents or 75.0%) as an effective way to prevent people from littering, followed by more school or community education programs (3,085 respondents or 63.1%), more public awareness campaigns or slogans (3,025 respondents or 61.9%), more volunteer clean-up events and activities (2,964 respondents or 60.7%), and stronger fines or penalties (2,544 respondents or 52.1%).

In addition, 675 respondents (13.8%) provided the potential effective ways by selecting "Others", examples including:

- More/better focus on preserving/protecting the environment in legislation, especially for companies and big business
- More biodegradable materials, less consumption
- Along with stronger fines and penalties, I believe that it should be ENFORCED aggressively

- More ads/commercials. I feel like I used to hear the slogan all the time and now I can't remember the last time I've seen/heard it
- Incentive-reward based system enacted, made exploit-resistant/game-proof
- Incorporate it into the classroom to go clean it up as part of a requirement to do once before graduating

When compared with All Age Groups, respondents aged 16-34 are more likely to support infrastructure- and engagement-based approaches, such as more trash and recycle bins (75.0% vs. 63.4%) and more volunteer clean-up events (60.7% vs. 50.8%). Support for more public awareness campaigns or slogans is also higher among the younger group (61.9% vs. 60.2%). The level of support for stronger fines or penalties is the same across both groups (52.1%), while support for school or community education programs is slightly lower in the Age Group 16-34 (63.1% vs. 64.3%). The findings suggest that respondents aged 16-34 place greater emphasis on accessibility and participatory measures to prevent littering compared to respondents across All Age Groups.

Q5.2.4.28. Would you like to see the "Don't mess with Texas" slogan continue?

Number of valid responses: 4,897. This question is applicable to everyone. Question 5.2.4.28 asks the respondents whether they would like to see the slogan continue.

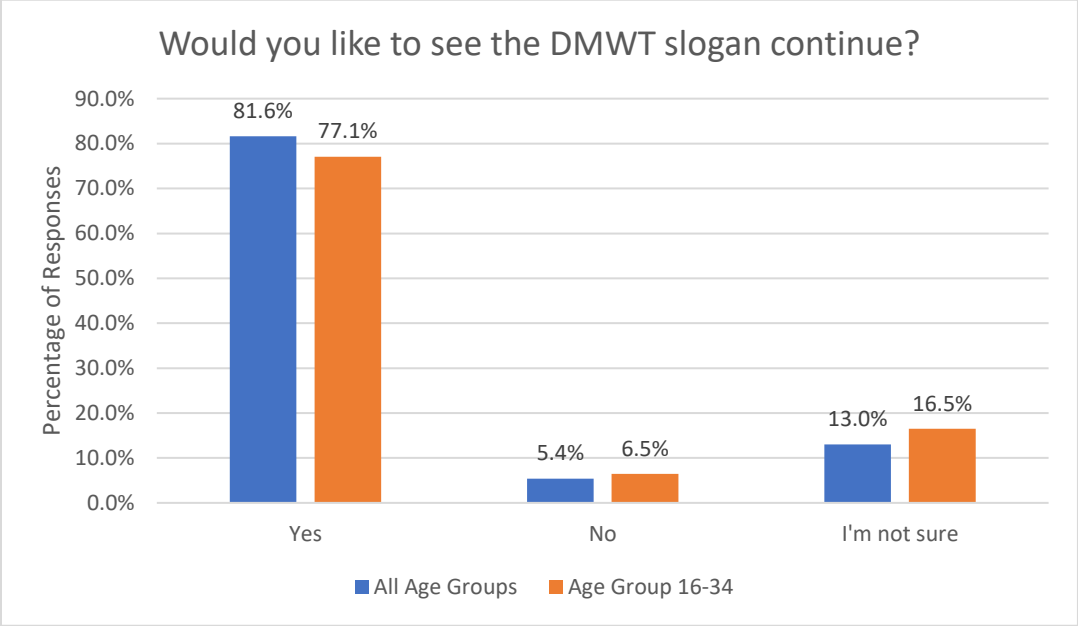


Figure 5.69. Whether Age Group 16-34 Respondents Would Like to See DMWT Continue

The survey results show that a majority of the Age Group 16-34 respondents want the DMWT slogan to continue. A total of 3,774 (77.1%) respondents responded "Yes", indicating strong support for its continuation, while only 316 (6.5%) said "No" and 807 (16.5%) were unsure. This suggests that the slogan is well regarded and broadly supported by the young generation.

Compared with All Age Groups, respondents aged 16-34 are slightly less likely to support the continuation of the DMWT slogan (77.1% vs. 81.6%), and somewhat more likely to indicate that they are unsure (16.5% vs. 13.0%) or do not support its continuation (6.5% vs. 5.4%).

Q5.2.4.29. Would you like to see the "Don't mess with Texas" slogan expand?

Number of valid responses: 4,895. This question is applicable to everyone. Question 5.2.4.29 asks the respondents whether they would like to see the slogan expand (e.g., awareness expansion through more advertising and publicizing efforts).

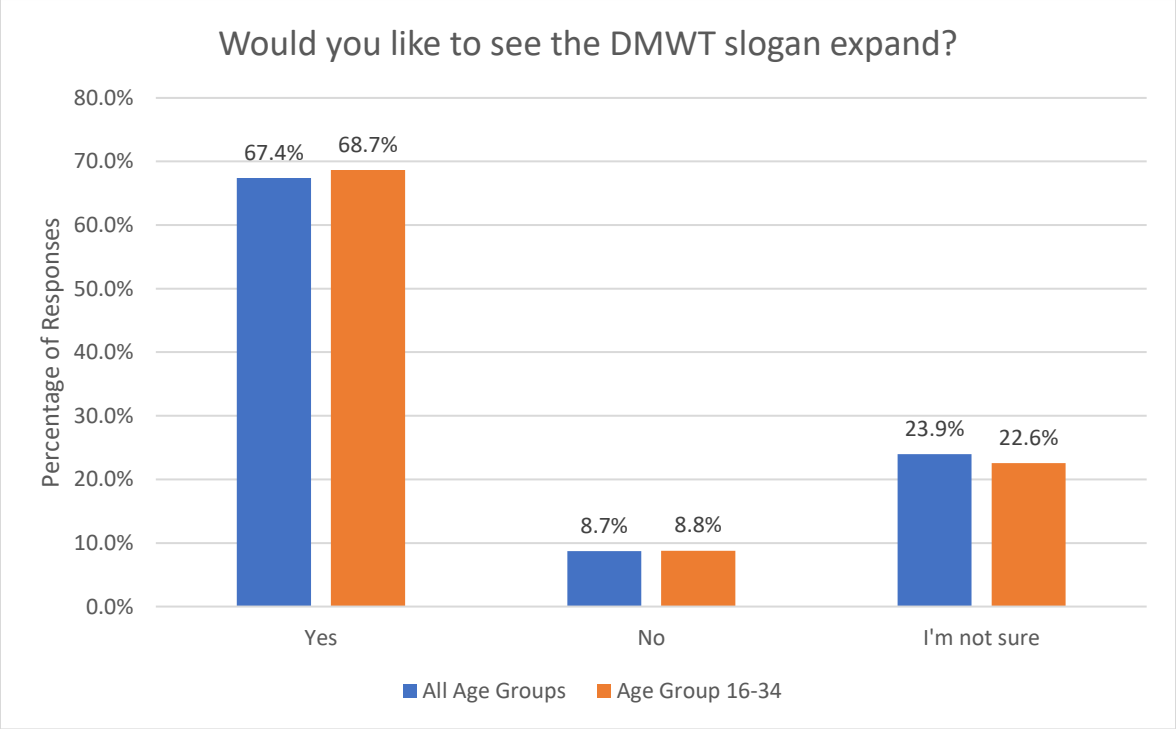


Figure 5.70. Whether Age Group 16-34 Respondents Would Like to See DMWT Expand

A clear majority of Age Group 16-34 respondents support expanding the DMWT slogan. 68.7% (3,361 respondents) indicated that they would like the DMWT slogan to expand, while only 8.8% (429 respondents) expressed opposition and 22.6% (1,105 respondents) reported being unsure.

Compared with All Age Groups, respondents aged 16-34 show slightly stronger support for expansion (68.7% vs. 67.4%) and a marginally lower level of uncertainty (22.6% vs. 23.9%). This pattern may indicate that younger respondents are generally open to broader applications or advertisement of the DMWT slogan, potentially reflecting their greater receptiveness to updated campaign strategies or new communication platforms.

Q5.2.4.30. Please provide any additional comments or future improvements for "Don't mess with Texas" slogan.

Number of valid responses: 1,180. This question is applicable to everyone. Question 2.4.30 intends to collect additional comments (if any) on future operations of DMWT campaign.

Comments received from Q5.2.4.30 are valuable and provide additional insights, selected examples including:

"*The DMWT Slogan is great. Don't change a good thing*"

"*More billboards! More advertising! I had never heard of it before this questionnaire!*"

"*Thank you for what you do, any campaign to help this cause is worth it!*"

"*I miss the Don't mess with Texas cartoon commercials*"

"*Tie it back to its original meaning or purpose. Leverage connecting with Gen Z Texans to do this. The slogan is iconic for a reason and if Texas can revive it, you may be able to make that connection again.*"

"*I love the idea of emphasizing environmental education! People love Texas's nature, the beautiful plants and animals. Especially people who enjoy public parks or hunting. And if you can get the kids involved it will have real power*."

"*Relate it to littering, I think it's meaning got too broad now that everyone uses it for marketing or merchandise*"

"*Make it a fundamental thing in schools and have folks watch videos on the importance of it when applying for a license or ID*"

"*More beautiful designs and funny road signs*"

"*Re-run the old campaigns- younger gen has never seen them*"

"*More campaign prominence. Right now, it's just a sticker and slogan. Radio adds, billboards, YouTube and TV adds need to come back. Maybe add the slogan to traffic signs about fines*"

"*I do truly appreciate the effort Texas has for keeping the state clean and littering controlled. I can definitely tell the difference between here and other states and even people who visit me from out of state comment on how clean the Texas highways are.*"

"*While I haven't seen much advertising for it recently, it is still a very iconic slogan and part of Texas culture and identity. I see no reason to even consider stopping it.*"

"*I like it. I hope it becomes more effective, which could come from the items mentioned in the survey*"

"*More targeted and nontargeted ads on social media*"

Q5.2.4.31. The last five questions are about the TxDOT Adopt-a-Highway program. Have you heard of the Adopt-a-Highway program in Texas?

Number of valid responses: 4,875. This question is applicable to all respondents. Question 5.2.4.31 asks the respondents about their awareness of AAH program.

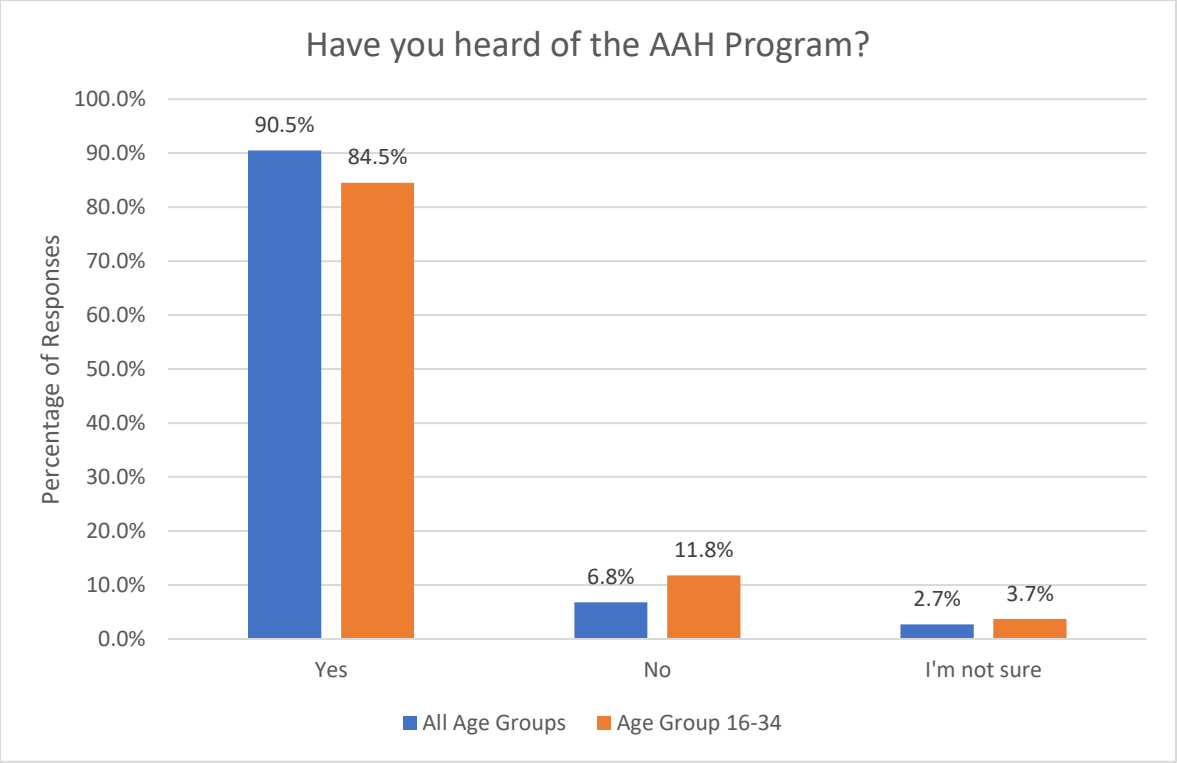


Figure 5.71. Awareness of AAH Program – Age Group 16-34

The survey results show that awareness of the Adopt-a-Highway program is high among the Age Group 16-34 respondents. 84.5% (4,120 respondents) indicated that they are aware of the AAH Program, while 11.8% (575 respondents) reported that they are not aware, and 3.7% (180 respondents) selected “I’m not sure”.

Compared with All Age Groups, the awareness of the AAH Program is somewhat lower among respondents aged 16-34 (84.5% vs. 90.5%), while the proportions reporting lack of awareness (11.8% vs. 6.8%) or uncertainty (3.7% vs. 2.7%) are higher in the younger cohort. This pattern suggests that although overall awareness of the AAH Program remains relatively high among the Age Group 16-34, it may not be as widely recognized by younger individuals as it is by All Age Groups. The difference could reflect varying levels of exposure to traditional outreach channels or community-based initiatives that are more familiar to older respondents. These findings may indicate an opportunity to enhance targeted awareness efforts for the AAH Program among younger audiences through communication platforms and engagement strategies that better align with their media consumption habits.

Q5.2.4.32. How likely would you be to volunteer for the Adopt-a-Highway program or be part of an organization that sponsors a roadway and volunteers as a group?

Number of valid responses: 4,840. This question is applicable to all respondents. Question 5.2.4.32 asks the respondents about the likelihood they voluntarily participate in the AAH program.

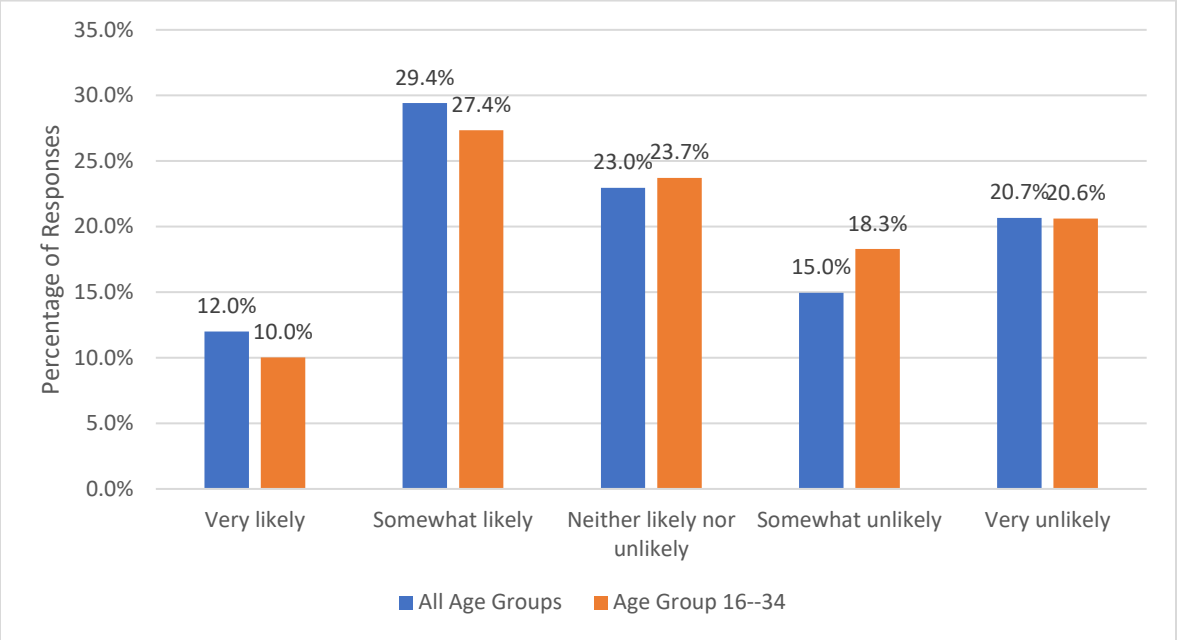


Figure 5.72. Likelihood to Participate in AAH Program – Age Group 16-34

Within the Age Group 16-34, 10.0% (485 respondents) indicated that they are very likely to participate in the AAH Program, while 27.4% (1,324 respondents) reported being somewhat likely. Additionally, 23.7% (1,148 respondents) stated they are neither likely nor unlikely, 18.3% (885 respondents) are somewhat unlikely, and 20.6% (998 respondents) are very unlikely to participate.

When compared to All Age Groups, respondents aged 16-34 are slightly less likely to report positive intent to participate, including very likely (10.0% vs. 12.0%) and somewhat likely (27.4% vs. 29.4%). In contrast, a higher proportion of younger respondents reported being somewhat unlikely (18.3% vs. 15.0%), while the shares indicating neutrality (23.7% vs. 23.0%) or being very unlikely (20.6% vs. 20.7%) are relatively similar across both groups. Analytically, these findings suggest that although interest in participating in the AAH Program exists among the Age Group 16-34, their overall willingness to engage may be slightly lower compared to All Age Groups. This could indicate potential barriers such as time constraints, competing priorities, or limited familiarity with program participation processes among younger individuals. As such, targeted outreach emphasizing flexible participation opportunities or highlighting community and social benefits may help improve engagement within this age group.

Q5.2.4.33. What barriers exist for you in taking part in the Adopt-a-Highway program? Please select all that apply.

Number of valid responses: 4,709. This question is applicable to all respondents. Question 5.2.4.33 tries to identify the barriers that prevent respondents from participating in the AAH program. Note that this is a multiple-choice question.

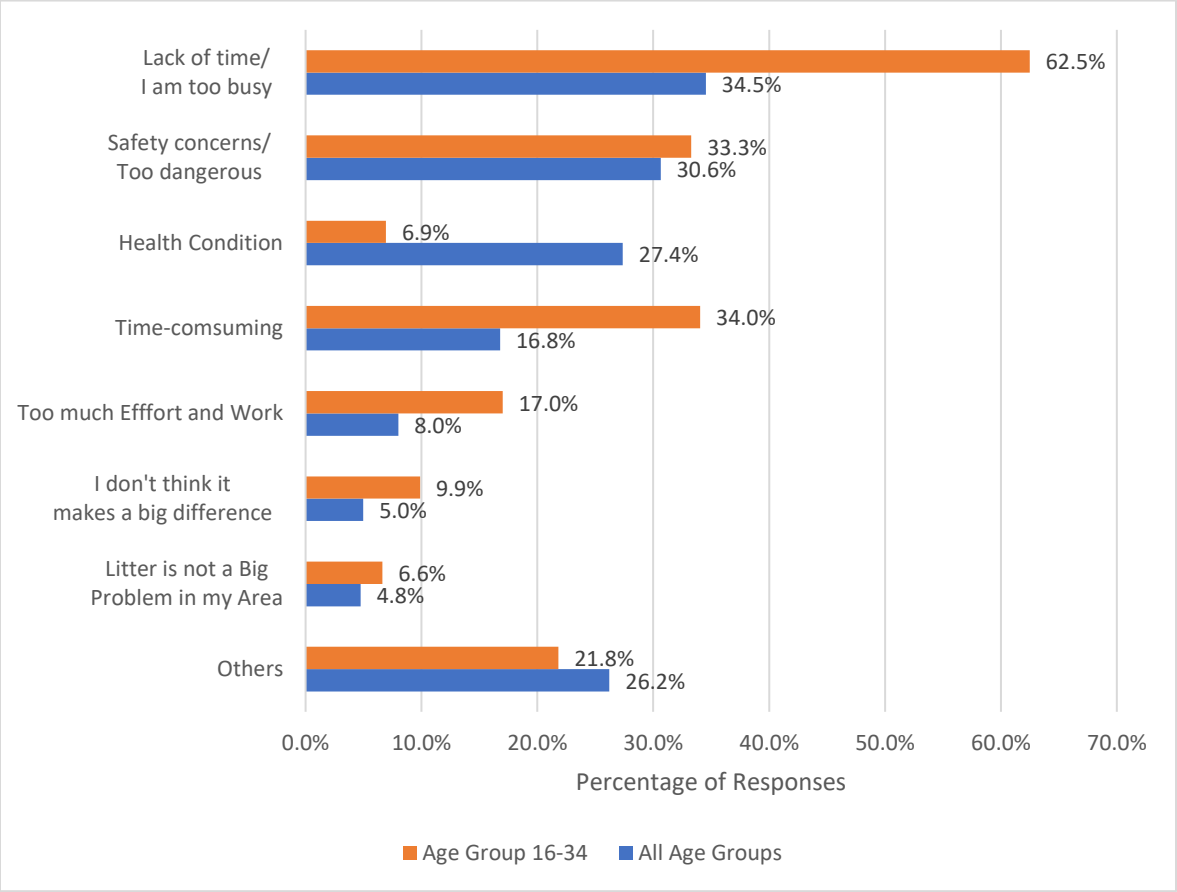


Figure 5.73. Barriers in Participating AAH Program – Age Group 16-34

Within the Age Group 16-34, the most commonly reported barriers include lack of time or being too busy (2,942 respondents or 62.5%), followed by time-consuming commitments (1,603 respondents or 34.0%) and safety concerns or perceived danger (1,567 respondents or 33.3%). Other frequently cited barriers include the perception that participation requires too much effort or work (801 respondents or 17.0%), or that involvement may not make a big difference (465 respondents or 9.9%), while a smaller proportion indicated that litter is not a big problem in their area (312 respondents or 6.6%) or health conditions (327 respondents or 6.9%).

In addition, 1,027 respondents (21.8%) provided additional barriers by selecting “Others”, example including:

- Too much to do on my own and not part of a group that does it;

- Money (think you have to pay) and not knowing how to get involved/ where to start;
- Lack of public transportation and access to said transportation;
- I don't care;
- Not enough incentives;
- Too hot in the summer;
- Laziness;
- I would participate in a cleanup effort but lack the organizational and networking skills required to launch an event;
- The state needs to fund litter crews; and
- Too much responsibility. I would join spontaneous efforts or just pick up trash on my own.

Compared with All Age Groups, the Age Group 16-34 respondents are substantially more likely to report time-related constraints, including lack of time (62.5% vs. 34.5%) and participation being time-consuming (34.0% vs. 16.8%). Younger respondents also report higher levels of perceived effort required (17.0% vs. 8.0%) and slightly greater safety concerns (33.3% vs. 30.6%). In contrast, they are significantly less likely to cite health conditions (6.9% vs. 27.4%) as a barrier. The results suggest that participation barriers for the Age Group 16-34 are driven more by competing time demands and perceived effort rather than physical limitations. This may reflect lifestyle factors such as school, work, or family commitments that limit availability for volunteer activities. As such, strategies that emphasize flexible scheduling, shorter participation commitments, or group-based involvement opportunities may be particularly effective in improving engagement with the AAH Program among younger respondents.

Q5.2.4.34. Do you think the Adopt-a-Highway program helped reduce litter in your community?

Number of valid responses: 4,836. This question is applicable to all respondents. Question 5.2.4.34 askes the respondents whether they believe the AAH program has helped reduce litter in their community.

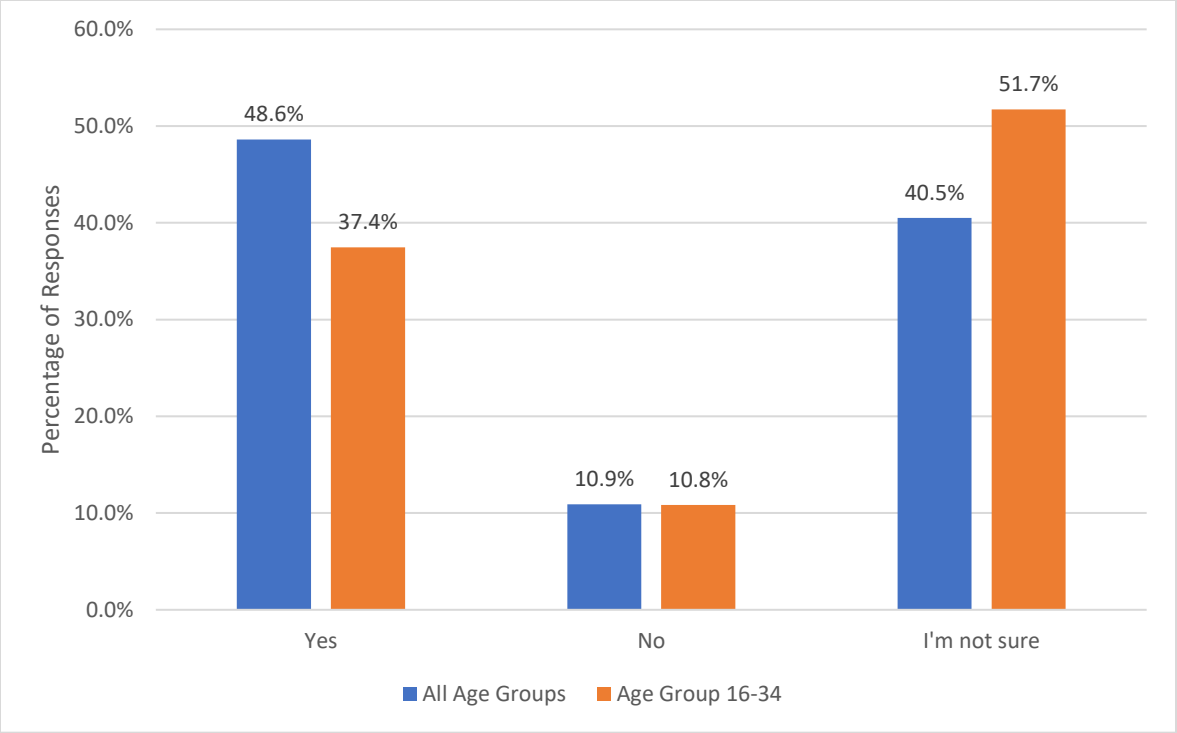


Figure 5.74. Whether the AAH Program Has Helped Reduce Litter in Community – Age Group 16-34

Within the Age Group 16-34, 37.4% (1,811 respondents) indicated that they believe the AAH Program has helped reduce litter in their community, while 10.8% (524 respondents) reported that they do not believe it has had such an impact. Notably, a majority of respondents in this age group (2,501 respondents or 51.7%) selected "I'm not sure".

Compared with All Age Groups, respondents aged 16-34 are less likely to believe that the AAH Program has contributed to litter reduction (37.4% vs. 48.6%), while reporting similar levels of disagreement (10.8% vs. 10.9%). A substantially higher proportion of younger respondents indicated uncertainty (51.7% vs. 40.5%). This pattern suggests that although the AAH Program is recognized by many respondents in the Age Group 16-34, its perceived impact on community-level litter reduction may not be as clearly understood or visible to younger individuals. The higher level of uncertainty could indicate limited direct exposure to or involvement in the program among this cohort. Increasing program visibility or communicating measurable outcomes may help improve perceptions of effectiveness within the 16-34 age group.

Q5.2.4.35. In your opinion, how effective is the Adopt-a-Highway program?

Number of valid responses: 4,802. This question is applicable to all respondents. Question 5.2.4.35 tries to identify the overall effectiveness of AAH program.

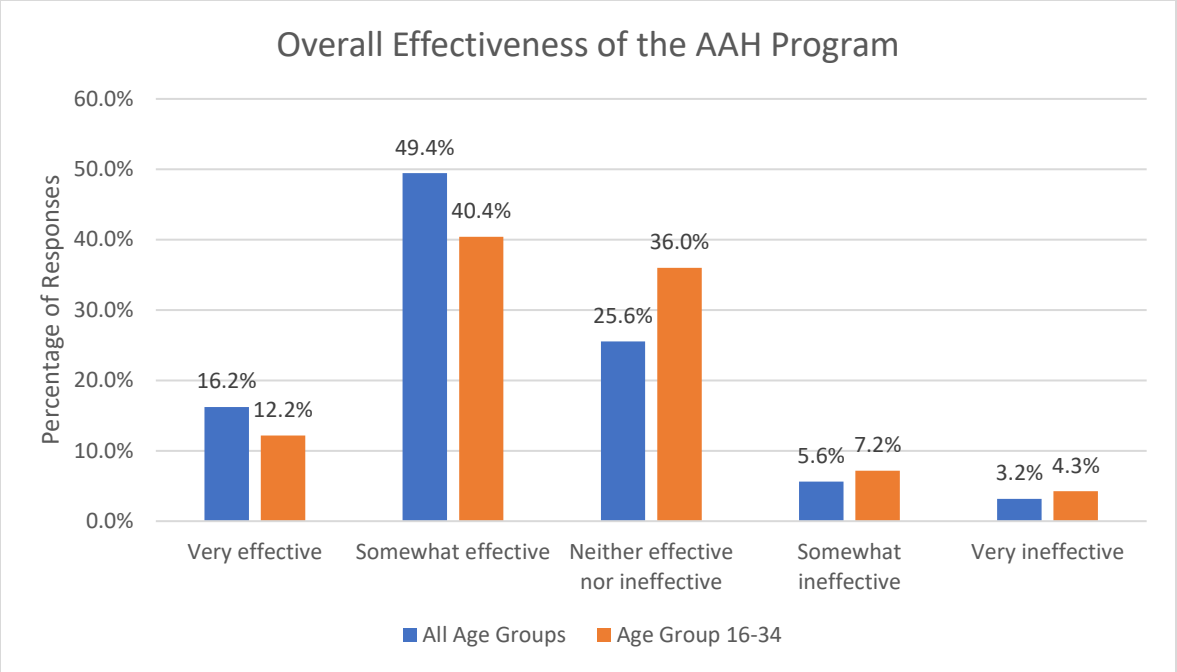


Figure 5.75. Overall Effectiveness of AAH Program – Age Group 16-34

Within the Age Group 16-34, over half (52.6%) of younger respondents perceive the program as having a positive impact: 12.2% (584 respondents) rated the AAH program as very effective, while 40.4% (1,940 respondents) considered it somewhat effective. In A substantial proportion (1,729 respondents or 36.0%) indicated that the program is neither effective nor ineffective, while 7.2% (344 respondents) rated it as somewhat ineffective and 4.3% (205 respondents) as very ineffective. The Study Team assigned a five-point Likert scale: 5 – very effective, 4 – somewhat effective, 3 – neither effective nor ineffective, 2 – somewhat ineffective, and 1 – very ineffective. The average effectiveness score is 3.5, indicating that the AAH program is generally perceived favorably, with most participants recognizing its effectiveness in reducing litter.

Compared with All Age Groups, respondents aged 16-34 are less likely to view the AAH program as effective, with lower proportions rating it as very effective (12.2% vs. 16.2%) or somewhat effective (40.4% vs. 49.4%). Conversely, younger respondents are more likely to report neutral (36.0% vs. 25.6%) or negative perceptions, including somewhat ineffective (7.2% vs. 5.6%) and very ineffective (4.3% vs. 3.2%). The results suggest that although the AAH program is viewed positively by a majority of respondents in the Age Group 16–34, its perceived effectiveness is somewhat lower compared to respondents across All Age Groups. The higher proportion of neutral responses may indicate limited familiarity with or direct exposure to the program among younger individuals, suggesting a potential need for enhanced outreach or engagement efforts to improve program visibility and perceived impact within this demographic.

Q5.2.4.36. Please provide any additional comments or future improvements for the Adopt-a-Highway program.

Number of valid responses: 1,085. This question is applicable to everyone. Question 5.2.4.36 intends to collect additional comments (if any) on future operations of the AAH program.

Comments received from Q5.2.4.36 are valuable and provide additional insights, selected examples including:

"*More penalties are needed for those caught, and people should be encouraged to tie down truck loads better.*"

"*Encouraging more community-centered events could improve outreach*"

"*I think adopt-a-highway is the most effective program that has come out since it puts the work into small manageable pieces that small organizations can handle*"

"*More signage along highways. More clarity on how to sign up*."

"*Even if I have heard/read "Adopt-a-Highway" before, I was not aware it was a program against littering. I assumed it was more to finance repairs and/or expansions*."

"*Vehicle registration and toll revenue should be raised for professional road maintenance and not entirely rely on the free labor of volunteering*."

"*Further public education on program*"

"*Provide more incentives for active participation and possibly enact a score/grade-letter report system that assesses adopted highway cleanliness in proportion to frequency of litter accumulation and recognizes good-quality upkeep so as to provide some form(s) of prestige or accolades to outstanding participant groups*."

"*Highways in my area and former area of west Texas have been very clean, in part to these programs and community engagement*."

"*More people need to be educated on what the program is and how it benefits the community and environment*"

"*I always like looking at the signs that say who's adopted a highway. It makes me feel more favorable towards organizations that do that*."

"*It's so thoughtful for those who consistently volunteer. If we could prevent those who are careless and selfish from continuing to litter then it would absolutely make a difference*."

"*For areas that see more litter on an ongoing basis, help multiple organizations coordinate to share the same section to volunteer (like trading off every-other-month or by calendar year quarter) so that there are more boots on the ground overall but without the burden falling on any one group*"

Q5.2.4.37. Do you have children under the age of 18 living in your household who are willing to take a tailored survey on "Don't mess with Texas" slogan under your supervision?

Number of valid responses: 4,815. This question is applicable to everyone. Question 5.2.4.37 tries to identify appropriate candidates to take the youth survey under adult's supervision.

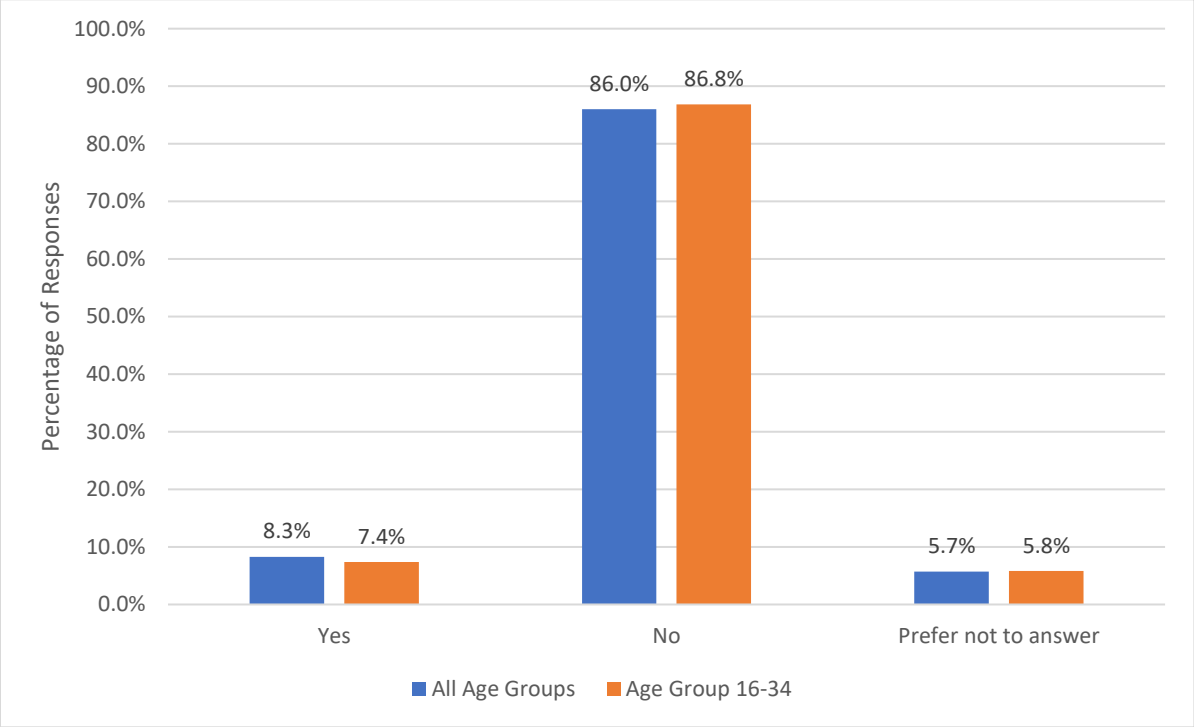


Figure 5.76. Availability of Youth under 18 and Willingness to Take Youth Survey – Age Group 16-34

Within the Age Group 16-34, the majority (4,181 or 86.8%) reported that they do not have children under 18 in their household. Only 280 (5.8%) indicated that there are youth in their household and they are willing to take the youth survey.

Findings from respondents aged 16-34 indicate that the DMWT campaign continues to demonstrate strong long-term relevance and cultural integration among younger Texans, with very high awareness (94.1%) and broad support for continuation and expansion. This cohort encounters the slogan through more diversified and contemporary channels, including social media, peer networks, and retail partnerships, indicating that the campaign has successfully adapted to evolving communication environments and remains embedded in younger Texans' daily experiences. At the same time, opportunities exist to reinforce the slogan's core antilittering message and leverage younger audiences demonstrated willingness to participate in volunteer and awareness activities, supporting sustained behavioral impact and future program effectiveness.

The detailed analysis of youth survey data is presented in Section 5.3.

5.3 Youth Survey

Section 5.3 details the youth survey distribution and data processing procedures as well as the analysis of survey responses, which is organized as follows: Section 5.3.1 documents the survey distribution and data validation processes; and Section 5.3.2 provides the detailed survey data analysis.

5.3.1. Youth Survey Distribution and Validation

The study team understands that it is important to obtain the opinions of young people about littering since they represent both current and future drivers, pedestrians, and community members whose attitudes and behaviors will shape long-term litter prevention outcomes. Youth are often highly influenced by messaging, social norms, and media, making their perceptions critical for assessing whether the DMWT slogan remains relevant, understandable, and motivating to newer generations. Their feedback can help identify gaps in awareness, inform age-appropriate education strategies, and guide updates or expansions of the campaign to ensure it continues to resonate. Additionally, engaging youth in the evaluation process fosters early civic responsibility and environmental stewardship, increasing the likelihood of sustained anti-litter behaviors over time. Therefore, the Study Team developed a separate structured Qualtrics™ survey for youth under 18 with 25 questions regarding the overall effectiveness of the DMWT slogan. Again, no personal identifying information was collected.

As mentioned in Section 5.2, the last question of the Texas resident survey asked whether there are youth under 18 in their household and are willing to take the tailored youth survey under adult's supervision. The link to the youth survey is provided at the end of the Texas resident survey. It needs to be pointed out that the in both the Texas adult resident and youth surveys, the Study Team required the youth survey to be completed under adult's supervision. Appendix C and Appendix D contain the blank Texas resident survey in English and Spanish, respectively.

Following the same data validation criteria used in Section 5.2.2, a total of 233 youth surveys were identified as invalid and removed from subsequent analysis, resulting in 771 valid responses.

5.3.2. Youth Survey Analysis

Since the survey contains no mandatory questions and each question can be answered at the respondent's discretion, the number of valid responses may vary for each question. The following analyses are organized by the question order in the survey. Questions are asked for every respondent unless otherwise stated. The analysis follows the survey question order attached in Appendix C and Appendix D.

Q5.3.2.1. What is your age group?

Number of valid responses: 770. The valid response percentage distribution is presented in Figure 5.77.

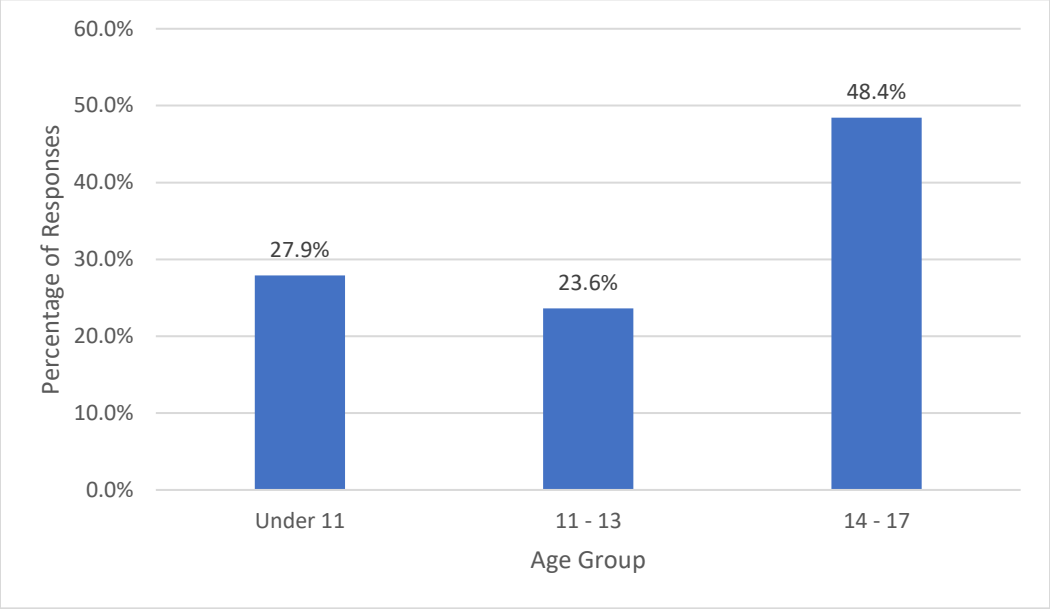


Figure 5.77. Percentages of Youth Survey Valid Responses by Age Group

The youth survey sample is primarily composed of older adolescents, with respondents aged 14-17 representing the largest group (373 or 48.4%), followed by those under age 11 (215 or 27.9%), and aged 11-13 (182 or 23.6%). This distribution indicates that the survey captures perspectives across a broad youth age range, while placing greater emphasis on teens who are more likely to have independent exposure to public messaging, media, and transportation environments. The representation of the 14-17 age group is particularly valuable, as this cohort is approaching driving age and can provide meaningful insight on the effectiveness and relevance of the “Don’t mess with Texas” message for future road users.

Q5.3.2.2. What is your gender?

Number of valid responses: 770. The valid response percentage distribution is presented in Figure 5.78.

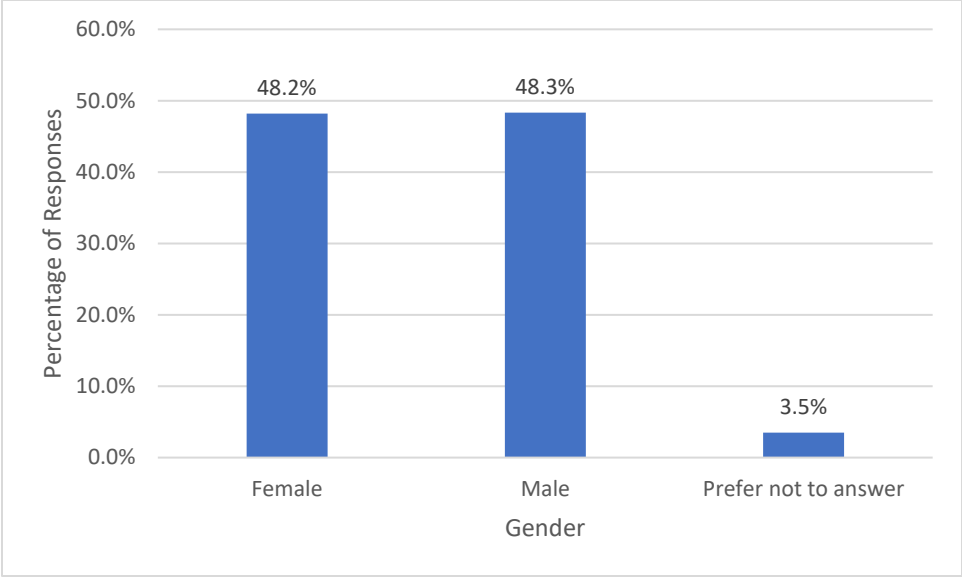


Figure 5.78. Percentage of Youth Survey Valid Responses by Gender

The gender distribution of survey respondents was nearly balanced, with a slightly higher proportion of males (372 or 48.3%) than females (371 or 48.2%), which is consistent with Texas resident survey.

Q5.3.2.3. What is your race?

Number of valid responses: 770. Figure 5.79 shows the percentage of valid responses by race.

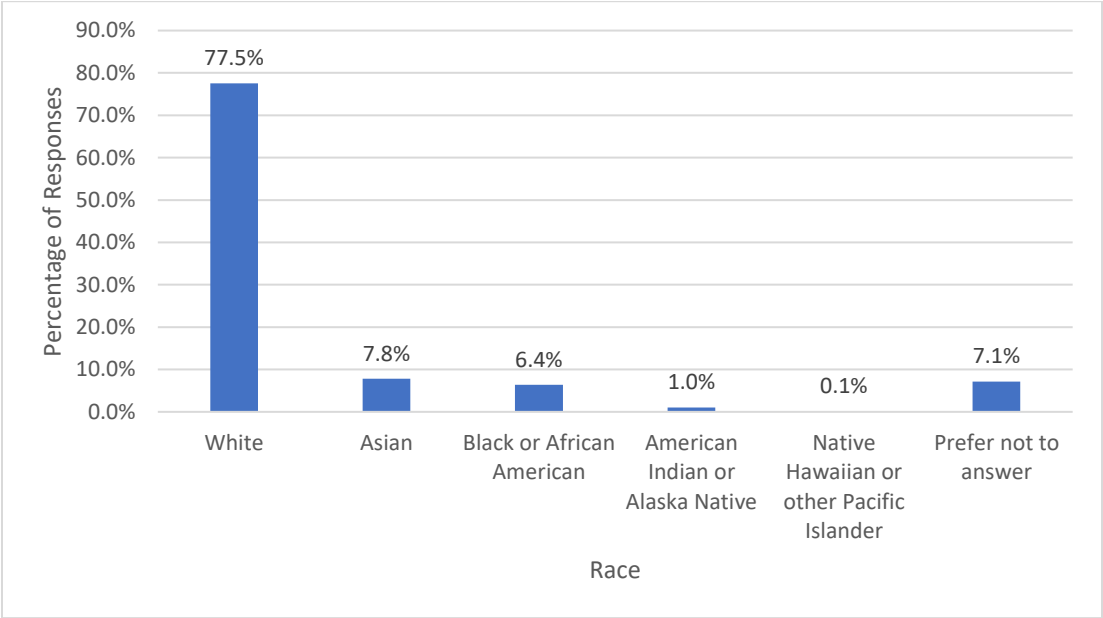


Figure 5.79. Percentage of Youth Survey Valid Responses by Race

The racial composition of the respondents was predominantly White (597 or 77.5%). Other racial groups were less represented, with Asian (60 or 7.8%) and Black or African American (49 or 6.4%) being the largest minority groups. Approximately 7.1% of respondents (55) preferred not to disclose their race.

Q5.3.2.4. Are you of Hispanic or Latino origin?

Number of valid responses: 768. The percentage is presented in Figure 5.80.

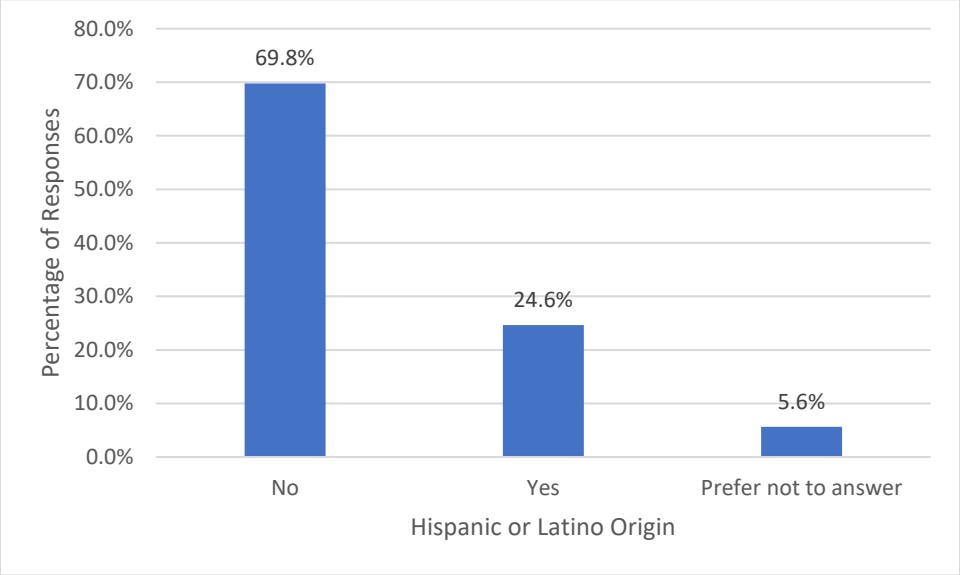


Figure 5.80. Whether a Youth Survey Respondent is Hispanic or Latino Origin

The majority of respondents are not Hispanic or Latino (536 or 69.8%), while about 24.6% (189) reported being of Hispanic or Latino origin. A small share of respondents (43 or 5.6%) preferred not to disclose their Hispanic or Latino origin.

Q5.3.2.5. Your current Texas residence location

This question collects information from respondents regarding their residence location in terms of city, county, and zip code, respectively. This provides geographic context that helps explain differences in responses across areas.

By City

Number of valid responses: 731. Figure 5.81 presents the heat map of the youth respondents' residency city.

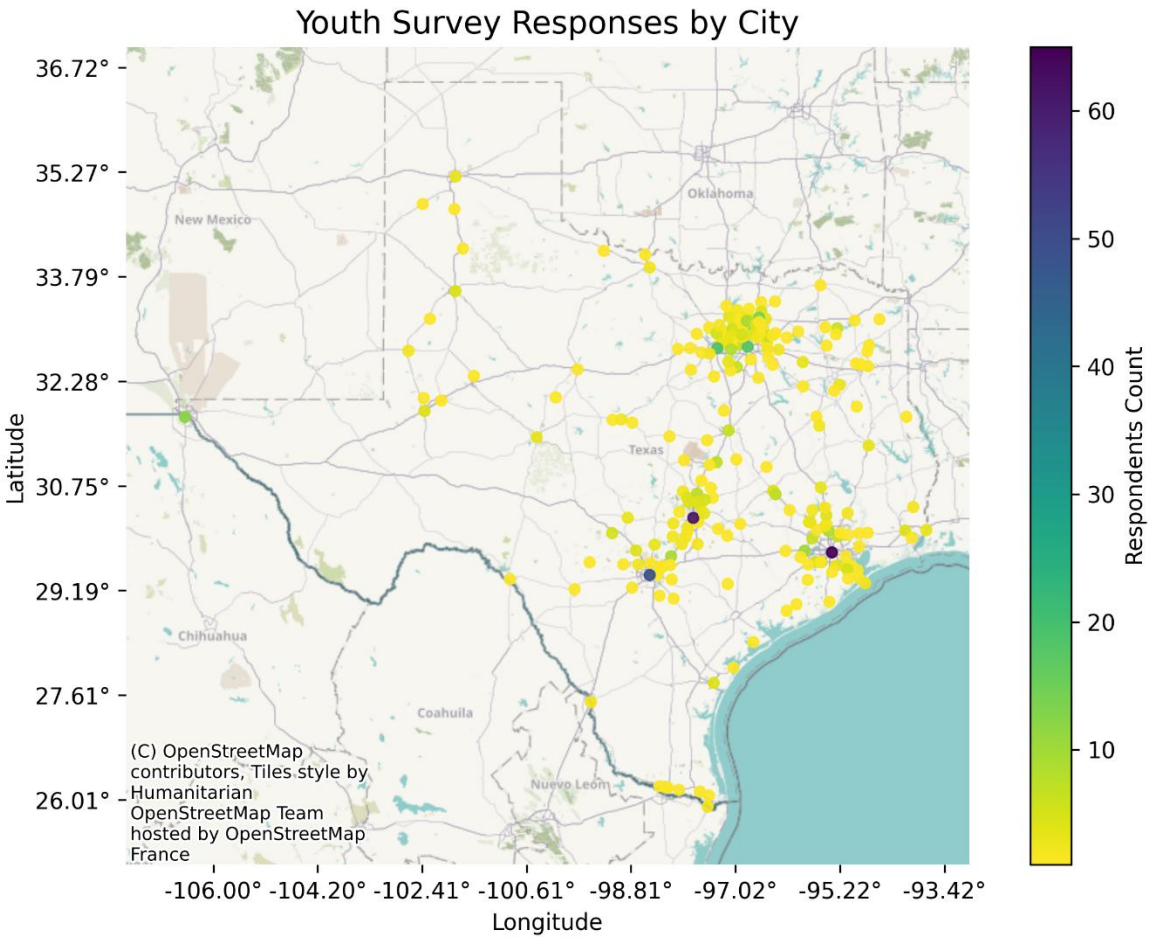


Figure 5.81. Heat Map of Youth Survey Responses by City

In Figure 5.81, darker color indicates the city where a higher number of youth respondent lives. Table 5.8 lists the top 10 cities where the survey respondents' home addresses are.

Table 5.8. Top 10 Cities where Youth Survey Respondents Live

City	Number of Responses
Houston	65
Austin	61
San Antonio	49
Fort Worth	19
Dallas	18
McKinney	13
El Paso	12
Plano	12
Katy	10
Frisco	9

Most of the top ten ranked cities are large metropolitan areas, accounting for 36.7% of the total responses (268 out of 731). This is consistent with Texas resident survey.

By County

Number of valid responses: 574. Figure 5.82 presents the heat map of the youth respondents' residency county.

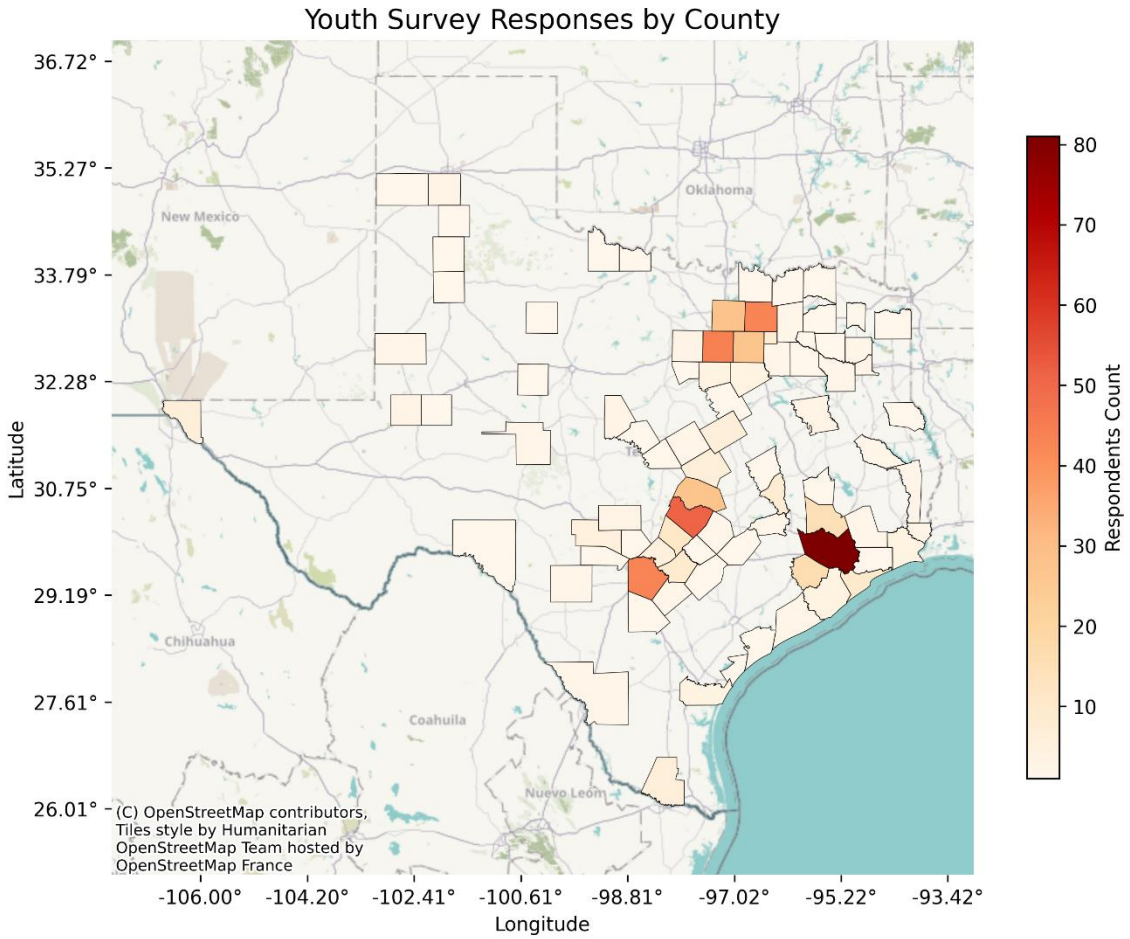


Figure 5.82. Heat Map of Youth Survey Responses by County

In Figure 5.82, darker color indicates the county where a higher number of youth respondent lives. Table 5.9 lists the top 10 counties where the survey respondents' home addresses are.

Table 5.9. Top 10 Counties where Youth Survey Respondents Live

County	Number of Responses
Harris	81
Travis	51
Tarrant	44
Bexar	43

County	Number of Responses
Collin	43
Denton	28
Dallas	27
Williamson	27
Fort Bend	16
Montgomery	15

Similar to cities, most of the top ten ranked counties are also associated with large metropolitan areas, accounting for 65.3% of the total responses (375 out of 574).

By Zip Code

Number of valid responses: 725. Figure 5.83 presents the heat map of the youth respondents' residency zip code.

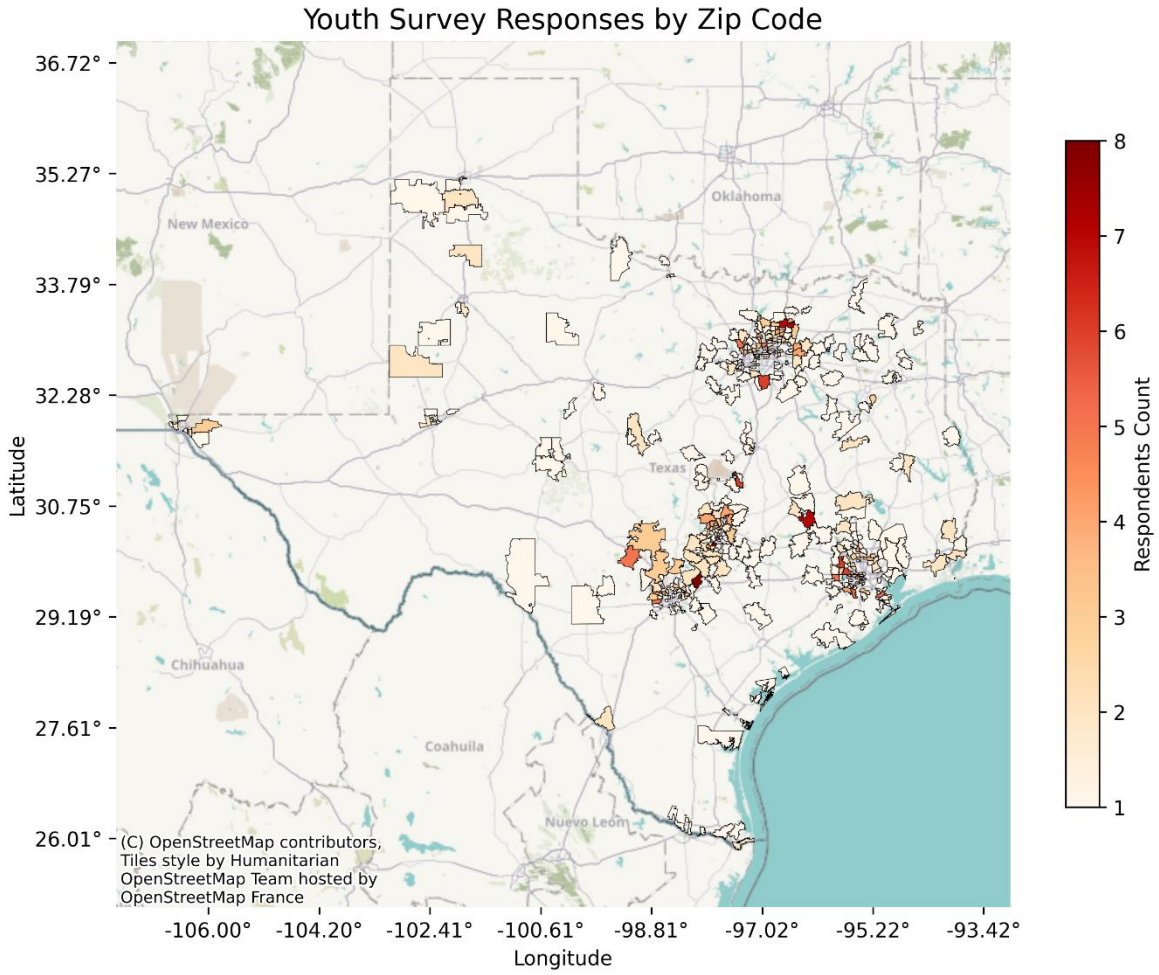


Figure 5.83. Heat Map of Youth Survey Responses by Zip Code

In Figure 5.83, darker color indicates the zip code where a higher number of youth respondent lives. Table 5.10 lists the top 10 zip codes where the survey respondents' home addresses are.

Table 5.10. Top 10 Zip Codes where Youth Survey Respondents Live

Zip Code	Number of Responses
78130	8
78745	8
75071	7
77845	7
76065	6
76502	6
77084	6
77433	6
75019	5
76052	5

Consistent with city and county, most of the top ten ranked zip codes are large metropolitan areas, accounting for 8.8% of the total responses (64 out of 725). This is reasonable considering a city or county may have multiple zip codes.

Q5.3.2.6. Which grade are you in?

Number of valid responses: 761. This question is applicable to all respondents.

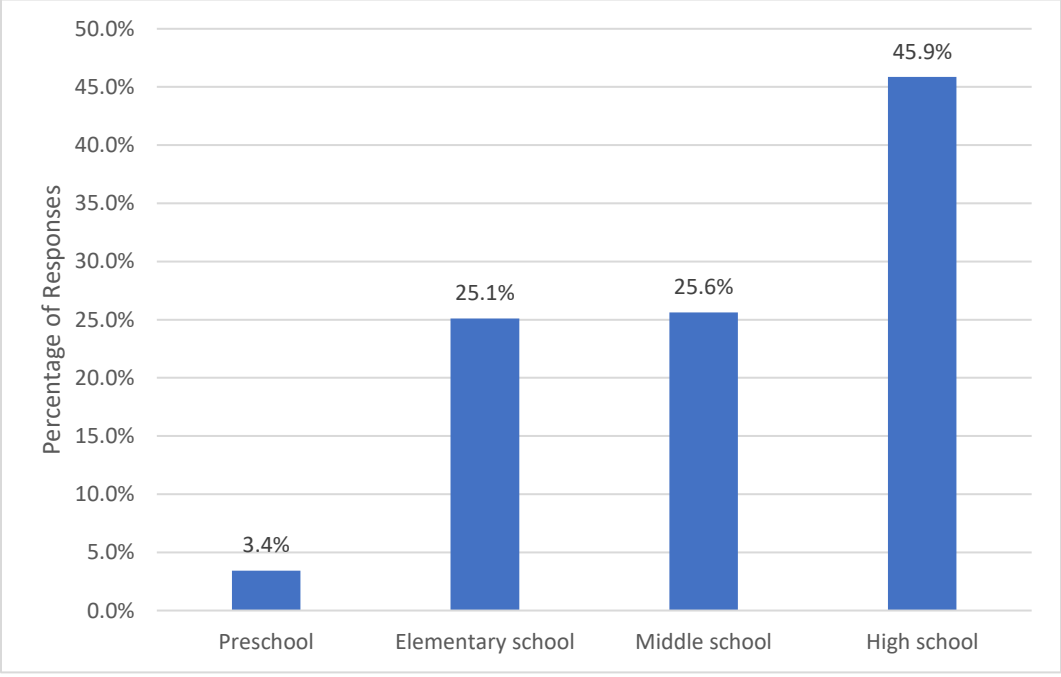


Figure 5.84. School Level Distribution of Youth Survey Respondents

The youth survey results show that high school students make up the largest portion of respondents (349 or 45.9%), followed by middle school (195 or 25.6%) and elementary school students (191 or 25.1%), with a much smaller representation from preschool-aged children (26 or 3.4%). This distribution indicates that the findings are largely driven by school-aged youth, particularly adolescents who are more cognitively able to understand and evaluate public messaging such as the DMWT slogan. This is consistent with the age group distribution shown in Figure 5.77.

Q5.3.2.7. Do you know what littering is?

Number of valid responses: 762. This question is applicable to all respondents. Question 5.3.2.7 asks the youth whether they know what littering is.

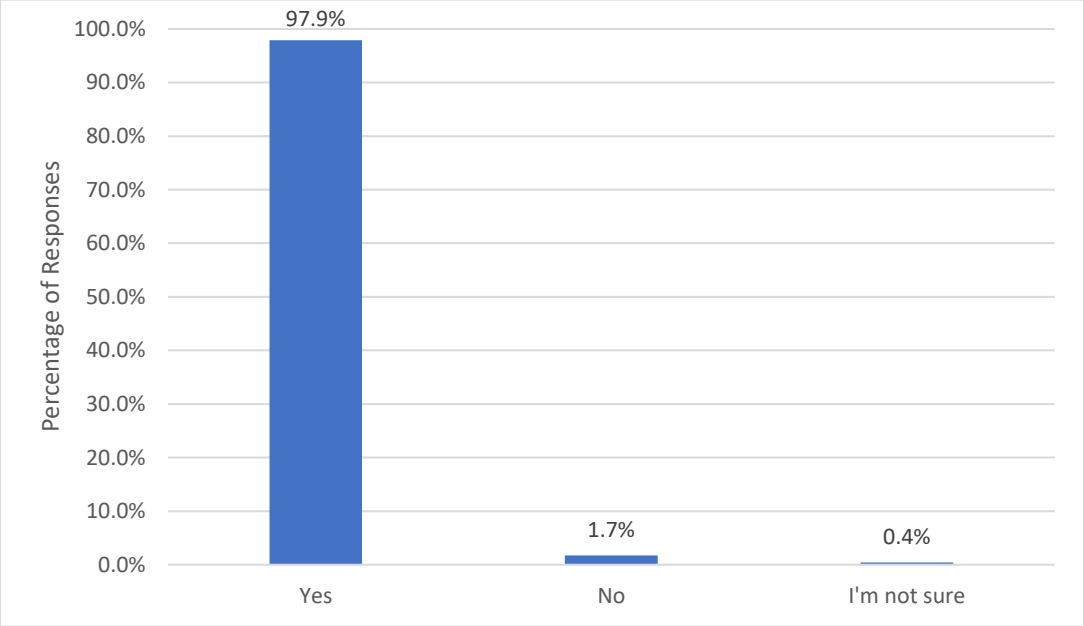


Figure 5.85. Understanding of Littering – Youth Survey

The survey results indicate that youth respondents have a very strong understanding of what littering is. An overwhelming majority (746 or 97.9%) reported “Yes”, while only a small number said “No” (13 or 1.7%) or were unsure (3 or 0.4%). This suggests that basic awareness and comprehension of littering concepts are well established among youth, providing a solid foundation for prevention programs and campaigns such as DMWT to focus on behavior change rather than basic definitions.

Q5.3.2.8. Who taught you about littering and not to litter?

Number of valid responses: 736. This question is only applicable to all respondents who answered “Yes” to Question 5.3.2.7. Question 5.3.2.8 asks the respondents the sources where they learn not to litter.

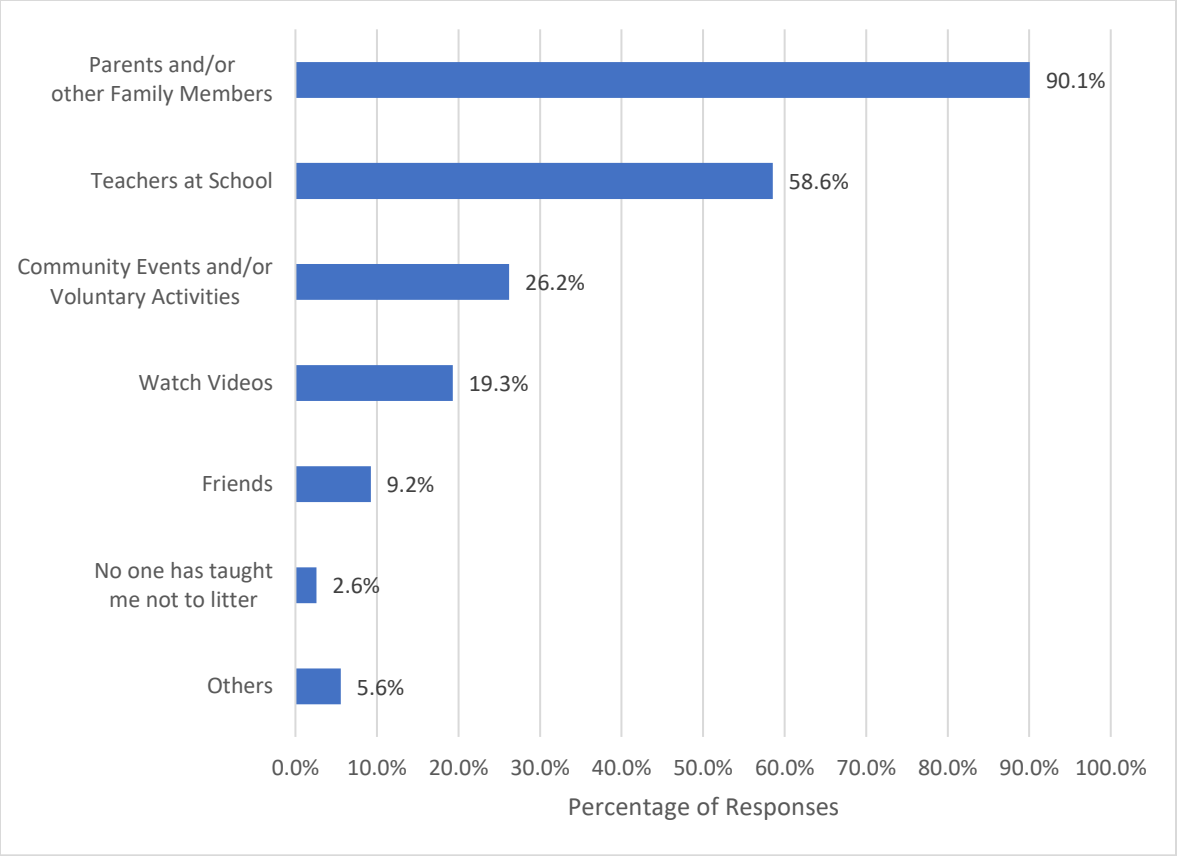


Figure 5.86. Sources to Learn not to Litter

Based on the survey results, youth primarily learn not to litter through parents and other family members (663 or 90.1%) and teachers at school (431 or 58.6%), indicating that home and school environments are the most influential sources. Community events and voluntary activities (193 or 26.2%) and watching videos (142 or 19.3%) also play meaningful but secondary roles, suggesting that organized outreach efforts and media can reinforce messaging delivered by adults. In contrast, friends (68 or 9.2%) have relatively limited influence, and only a very small share of respondents report that no one has taught them not to litter (19 or 2.6%). Overall, the findings suggest that the slogan's effectiveness is strongest when supported by family guidance, school instruction, and community-based education, rather than relying solely on peer influence or passive exposure.

In addition, 41 respondents (5.6%) provided the information sources by selecting "others", including:

- A friend invited me to join her in taking part in an Adopt a Highway litter pickup with her family;
- Boy Scouts;
- Special visitor program and presentation at school;
- Signs at parks and ponds that say not to litter;

- Books;
- American Heritage Girls troop

Q5.3.2.9. Have you heard of the "Don't mess with Texas" slogan?

Number of valid responses: 749. This question is applicable to all respondents. Question 5.3.2.9 asks the youth respondents about their awareness of DMWT slogan.

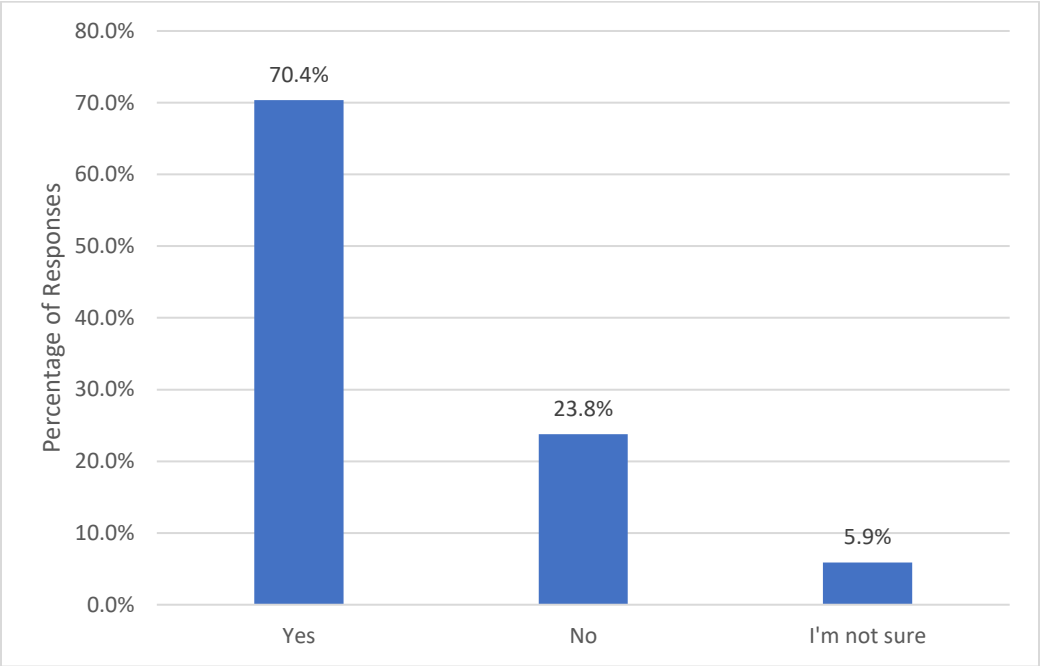


Figure 5.87. Youth Survey Respondents' Awareness of DMWT Slogan

The survey results show high awareness of the DMWT slogan among youth, with 527 (70.4%) respondents indicating "Yes", compared to 178 (23.8%) who were not aware and 44 (5.9%) who were unsure. Although lower than the Texas resident survey awareness (96.6%), the results still demonstrate strong visibility and awareness. The presence of youth who are either unaware or uncertain (29.6%) suggests there is still room to improve clarity and reinforcement, particularly through schools, families, and community-based education efforts to ensure consistent understanding of the slogan's anti-littering message.

Q5.3.2.10. How frequently do you see or hear the "Don't mess with Texas" slogan?

Number of valid responses: 521. This question is only applicable to those who answered "Yes" to Question 5.3.2.9. Question 5.3.2.10 asks the respondents about the frequency they see or hear the slogan.

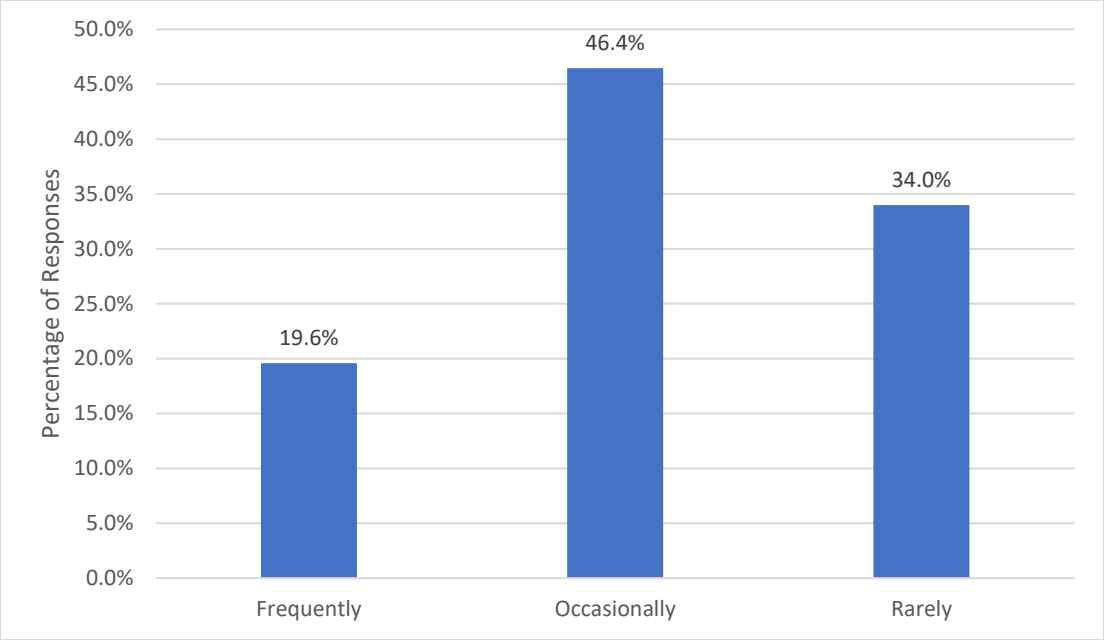


Figure 5.88. Frequency to see or hear DMWT Slogan – Youth Survey

The results indicate that youth exposure to the DMWT slogan is moderate but not constant, with 242 (46.4%) respondents reporting occasional exposure, compared to 102 (19.6%) who encounter it frequently and 177 (34.0%) who hear or see it rarely. This pattern suggests that while the slogan remains visible and recognizable, it is most often encountered intermittently rather than as a regular or sustained message. The relatively smaller share of frequent exposure may limit the slogan's ability to consistently reinforce anti-littering behavior, indicating an opportunity to increase repetition through schools, community programs, digital media, and youth-oriented platforms to strengthen long-term impact.

Q5.3.2.11. How did you hear/learn about the "Don't mess with Texas" slogan? Check all that apply.

Number of valid responses: 520. This question is only applicable to those who answered "Yes" to Question 5.3.2.9. Question 5.3.2.11 asks the youth respondents about the sources where they hear or learn about DMWT slogan. Note that this is a multiple-choice question.

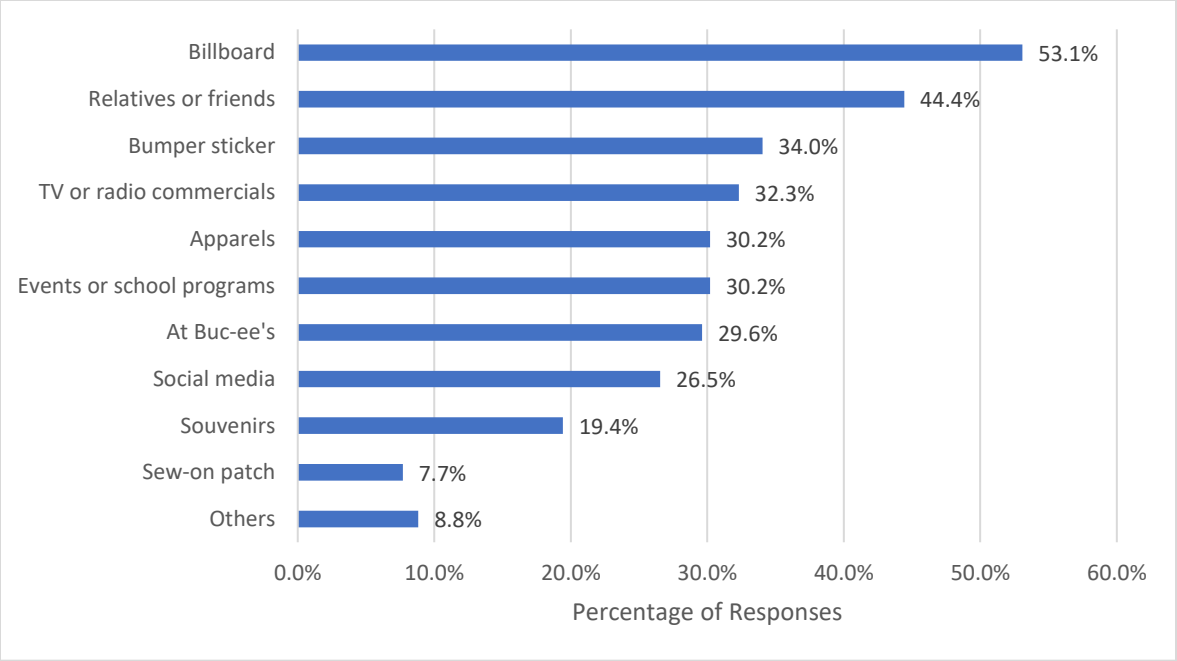


Figure 5.89. Sources Youth Heard or Learned about DMWT Slogan

The survey results show that youth most commonly hear or learn the DMWT slogan through billboards (276 or 53.1%) and relatives or friends (231 or 44.4%), highlighting the importance of both visible public messaging and interpersonal reinforcement. Traditional and everyday exposure channels, such as bumper stickers (177 or 34.0%) and TV or radio commercials (168 or 32.3%), continue to play a strong role, while apparel (157 or 30.2%) and events or school programs (157 or 30.2%) demonstrate the effectiveness of integrating the slogan into youth environments and activities. At Buc-ee's (154 or 29.6%) and social media (138 or 26.5%) also serve as notable touchpoints, suggesting opportunities to further leverage popular destinations and digital platforms.

In addition, 46 respondents (8.8%) provided the information sources by selecting "others", including:

- Drivers' education courses;
- Highway signs;
- Books;
- TV shows;
- At museums, e.g., Judge Roy Bean Museum, Bob Bullock Museum;
- Local stores, e.g., HEBs;
- Sport events;
- In a song and movies;
- Seeing the barrels in person.

Overall, the findings indicate that the slogan reaches youth through a diverse mix of public infrastructure, social networks, and branded experiences, reinforcing its message across multiple settings.

Q5.3.2.12. What do you think the "Don't mess with Texas" slogan means? Check all that apply

Number of valid responses: 736. This question is only applicable to those who answered "Yes" to Question 5.3.2.9. Question 5.3.2.12 intends to collect whether youth respondents understand the meaning of DMWT slogan. Note that this is a multiple-choice question and more than one answer can be selected.

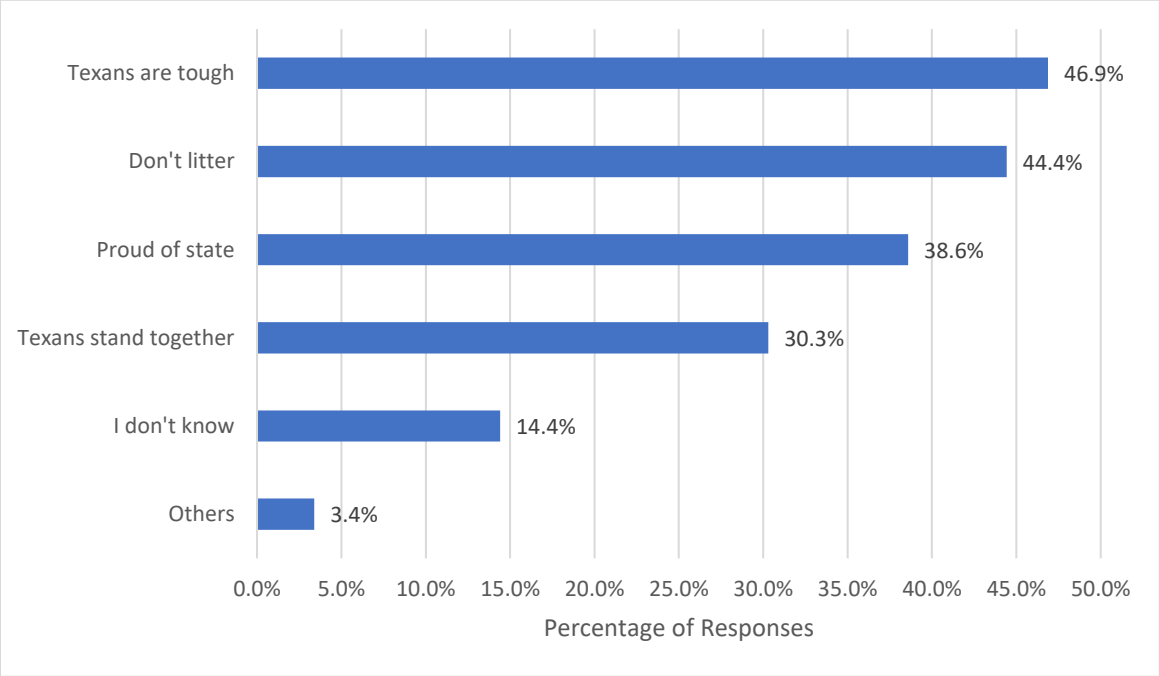


Figure 5.90. Meanings of DMWT Slogan – Youth Survey

The survey findings show that although "Don't litter" (327 or 44.4%) reflects recognition of the slogan's original intent, even more youth associate it with "Texans are tough" (345 or 46.9%). Other understandings include "Proud of the state" (284 or 38.6%), and "Texans stand together" (223 or 30.3%). A relatively small number of respondents selected "I don't know" (106 or 14.4%). This suggests that, for youth audiences, reinforcing the direct connection between Texas pride and anti-littering behavior could improve clarity and effectiveness of the message.

In addition, 25 respondents (3.4%) provided their understandings by selecting "Other meanings not listed", including:

- We should look beyond ourselves in how to be a better person;
- To protect someone;
- Don't mess with Texas because people carry guns;

- Don’t do anything bad to Texas;
- I didn't know it was about littering till I saw the ad. Just thought it was a generic program at first;
- Don't change anything about Texas.

Q5.3.2.13. How do you think the "Don't mess with Texas" slogan has affected your behavior about littering?

Number of valid responses: 506. This question is only applicable to those who answered “Yes” to Question 5.3.2.9. Question 5.3.2.13 asks the youth respondent whether the DMWT slogan has changed their behavior about littering.

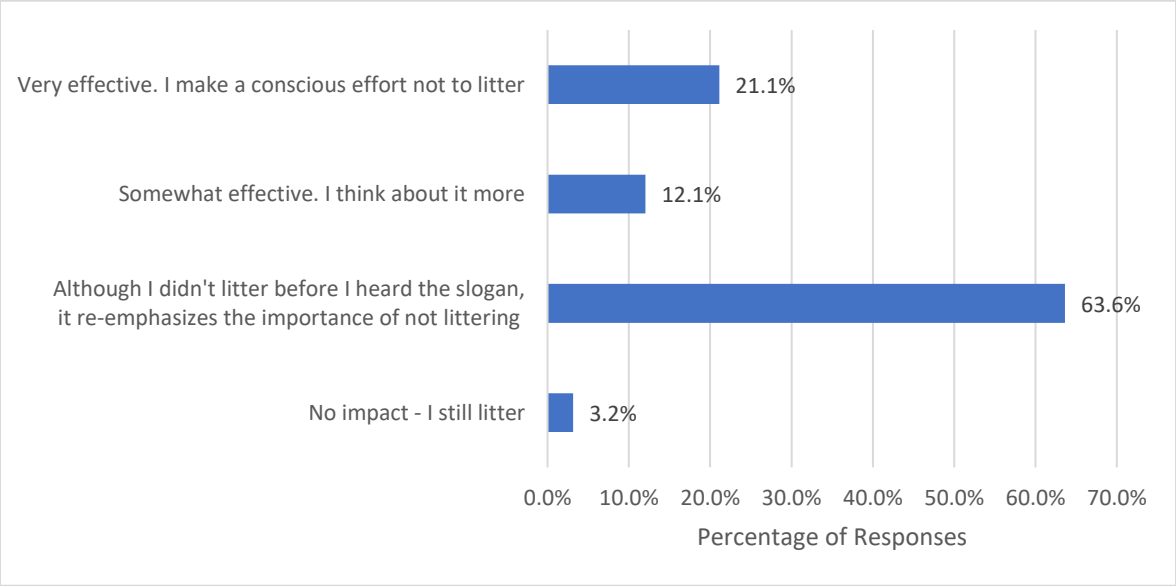


Figure 5.91. Whether DMWT Has Changed Youth’s Behavior Regarding Littering

The survey results indicate that the DMWT slogan has had a positive influence on youth littering behavior, particularly as a reinforcing message. A majority of respondents report beneficial effects, with 322 (63.6%) youth stating that the slogan re-emphasizes the importance of not littering, even if they did not litter previously. Additionally, 107 (21.1%) respondents say the slogan is very effective, leading them to make a conscious effort not to litter, and 61 (12.1%) report it is somewhat effective, prompting them to think more about their behavior. In contrast, only 16 (3.2%) respondents report no impact and continue to litter. Overall, these findings suggest that the slogan is effective at both reinforcing existing positive behaviors and encouraging more mindful anti-littering actions among youth.

Q5.3.2.14. How do you think "Don't mess with Texas" slogan will affect your behavior about littering?

Number of valid responses: 205. This question is only applicable to those who answered “No” or “I’m not sure” to Question 5.3.2.9. Question 5.3.2.14 asks the youth respondent

whether the DMWT slogan will change their behavior about littering after they learned about its meaning.

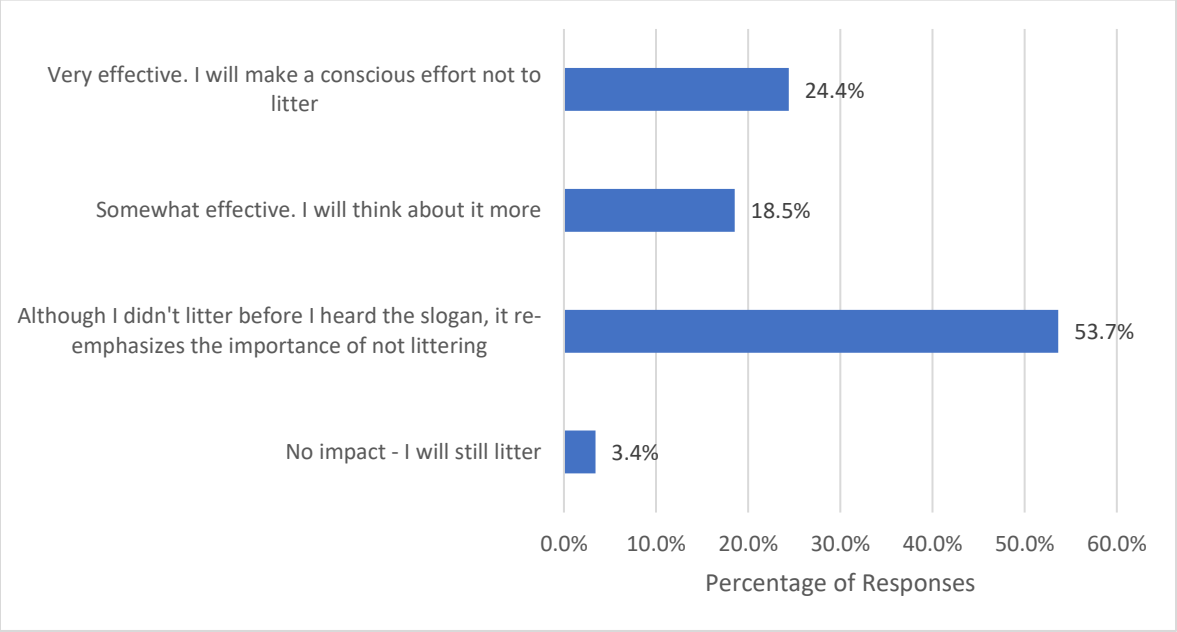


Figure 5.92. Whether DMWT Will Change Youth's Behavior Regarding Littering

The survey indicates that the DMWT slogan is likely to influence youth littering behavior for the majority of respondents. Most youth see the slogan as reinforcing positive behavior, with 110 (53.7%) stating it re-emphasizes the importance of not littering, even if they already avoided littering. 50 (24.4%) respondents report it is very effective, motivating them to make a conscious effort not to litter, while 38 (18.5%) find it somewhat effective, prompting them to think more about their actions. Only a small minority (7 or 3.4%) believe the slogan will have no impact and that they will still litter.

Q5.3.2.15. Do you like and support the "Don't mess with Texas" slogan?

Number of valid responses: 715. This question is applicable to all respondents. Question 5.3.2.15 asks whether the youth respondents like the slogan or not.

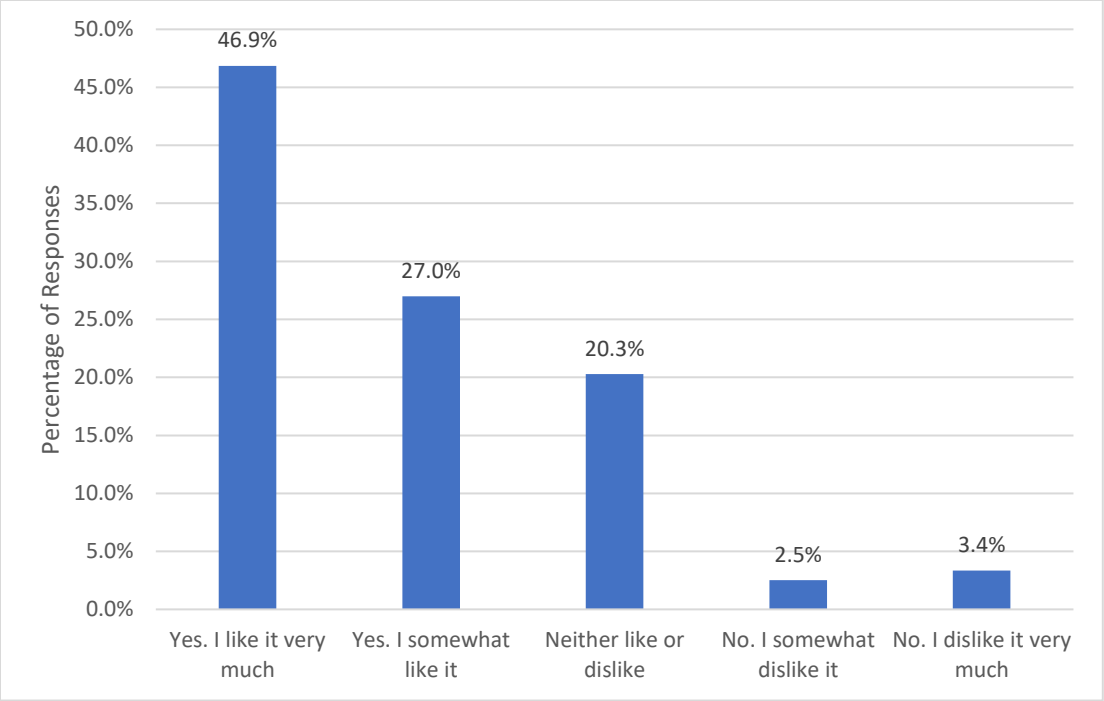


Figure 5.93. Whether the Youth Respondents Like the DMWT Slogan

The survey shows strong support for the DMWT slogan among youth. A large majority, 335 (46.9%) respondents "like it very much", indicating that nearly half of the youth are highly enthusiastic about the slogan. 193 (27.0%) - "somewhat like it". Only a small number of respondents (42 or 5.9%) express negative feelings, with 18 (2.5%) somewhat disliking it and 24 (3.4%) disliking it very much, while 145 (20.3%) are neutral. The Study Team assigned a five-point Likert scale: 5 – like very much, 4 – somewhat like it, 3 – neither like nor dislike, 2 – somewhat dislike, and 1 – dislike very much. The average score is 4.1, suggesting that the slogan is well-received by youth, with broad approval and a generally positive perception that likely contributes to its effectiveness in promoting anti-littering behavior.

Q5.3.2.16. How often do you see people littering?

Number of valid responses: 716. This question is applicable to everyone. Question 5.3.2.16 asks the youth respondents about the frequency they saw people littering.

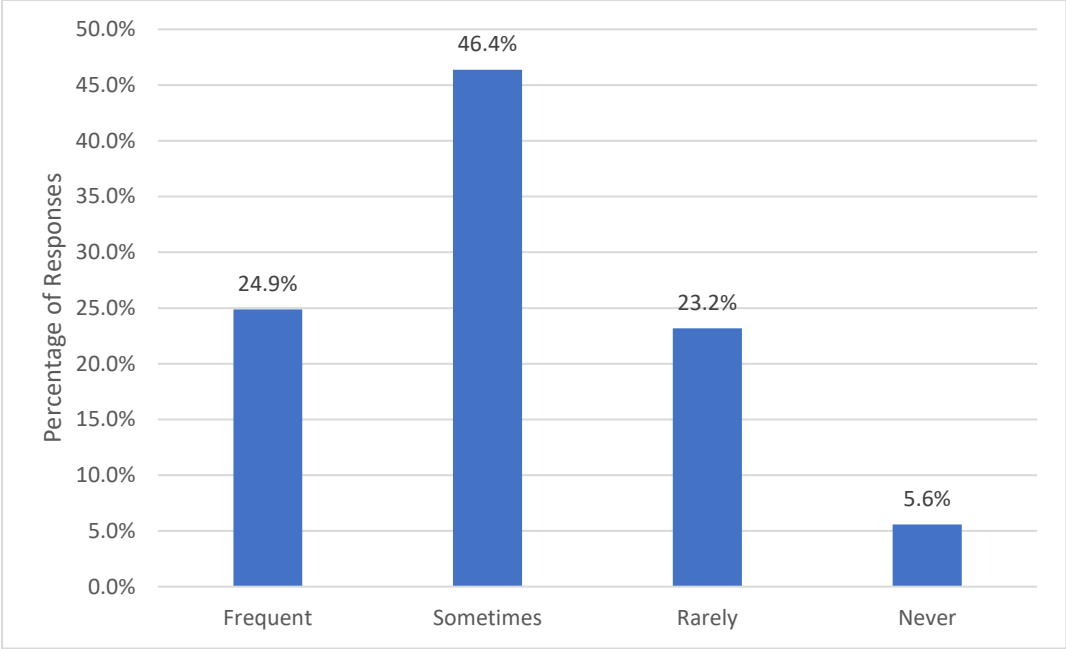


Figure 5.94. Frequency of Seeing Someone Littering – Youth Survey

The survey results indicate that youth observe littering with varying frequency. Most respondents report witnessing it "sometimes" (332 or 46.4%), followed by "frequent" (178 or 24.9%), suggesting that littering is a visible but not constant behavior in their environment. 166 (23.2%) youth see littering rarely, while only 40 (5.6%) report never seeing it. This pattern highlights that littering remains a noticeable issue, providing opportunities for campaigns like DMWT to reinforce anti-littering norms, especially in areas where youth encounter litter more frequently.

Q5.3.2.17. What types of litter have you seen on Texas highways? Please select all that apply.

Number of valid responses: 706. This question is applicable to everyone. Question 5.3.2.17 intends to collect information on litter types along Texas highways. Note that this is a multiple-choice question.

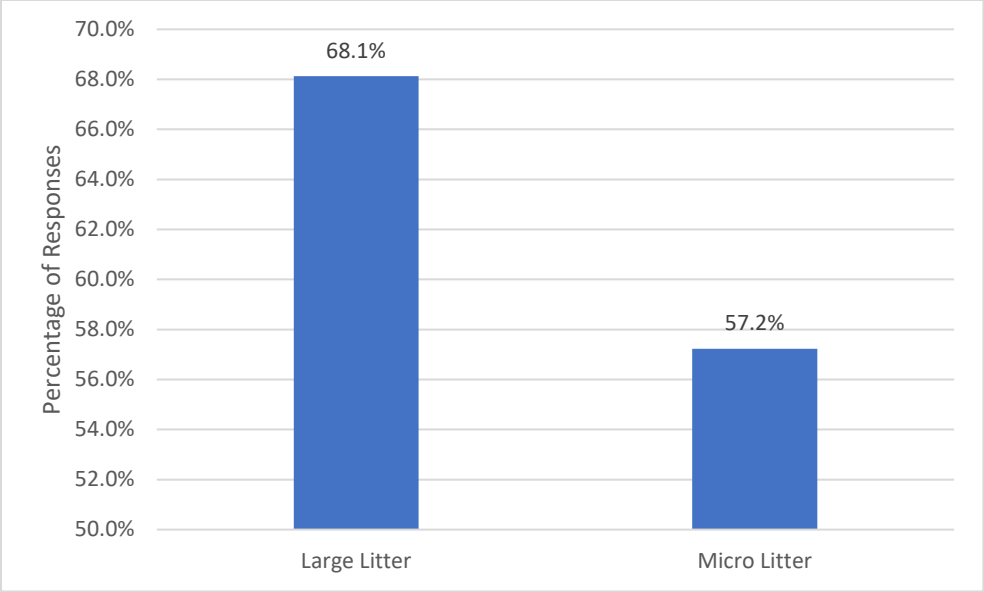


Figure 5.95. Litter Types along Texas Highways – Large vs. Micro, Youth Survey

The results indicate that respondents most commonly observe large litter, which was identified by 481 respondents (68.1%), suggesting that visibly larger items are the most noticeable form of litter. Micro litter, while less frequently reported, was still identified by a substantial number of respondents (404 or 57.2%), highlighting that smaller debris such as cigarette butts and small packaging is also a widespread concern.

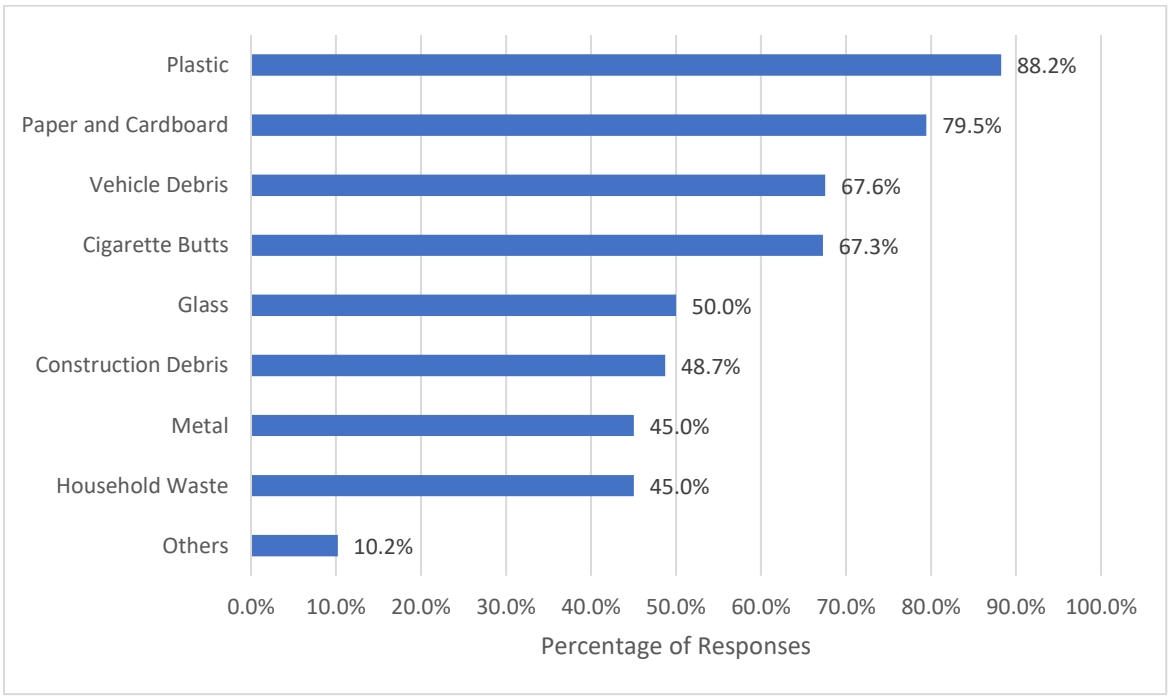


Figure 5.96. Litter Types along Texas Highways – Youth Survey

The youth survey results are consistent with adult survey: plastic (623 or 88.2%) and paper and cardboard (561 or 79.5%) are the most commonly identified types of litter, highlighting the prevalence of everyday consumer waste along roadways. Vehicle-related debris (477 or 67.6%) and cigarette butts (475 or 67.3%) are also frequently reported, indicating significant contributions from transportation activities and individual behavior. In addition, glass (50.0%), construction debris (48.7%), metal (45.0%), and household waste (45.0%) are widely observed, suggesting that litter originates from both personal and commercial sources. Other types of litter (10.2%) are relatively less frequently reported.

Q5.3.2.18. Why do you think people litter along the highway? Please check all that apply.

Number of valid responses: 705. This question is applicable to everyone. Question 5.3.2.25 tries to identify the reason why people litter along the highway from a youth's perspective. Note that this is a multiple-choice question and more than one answer can be chosen.

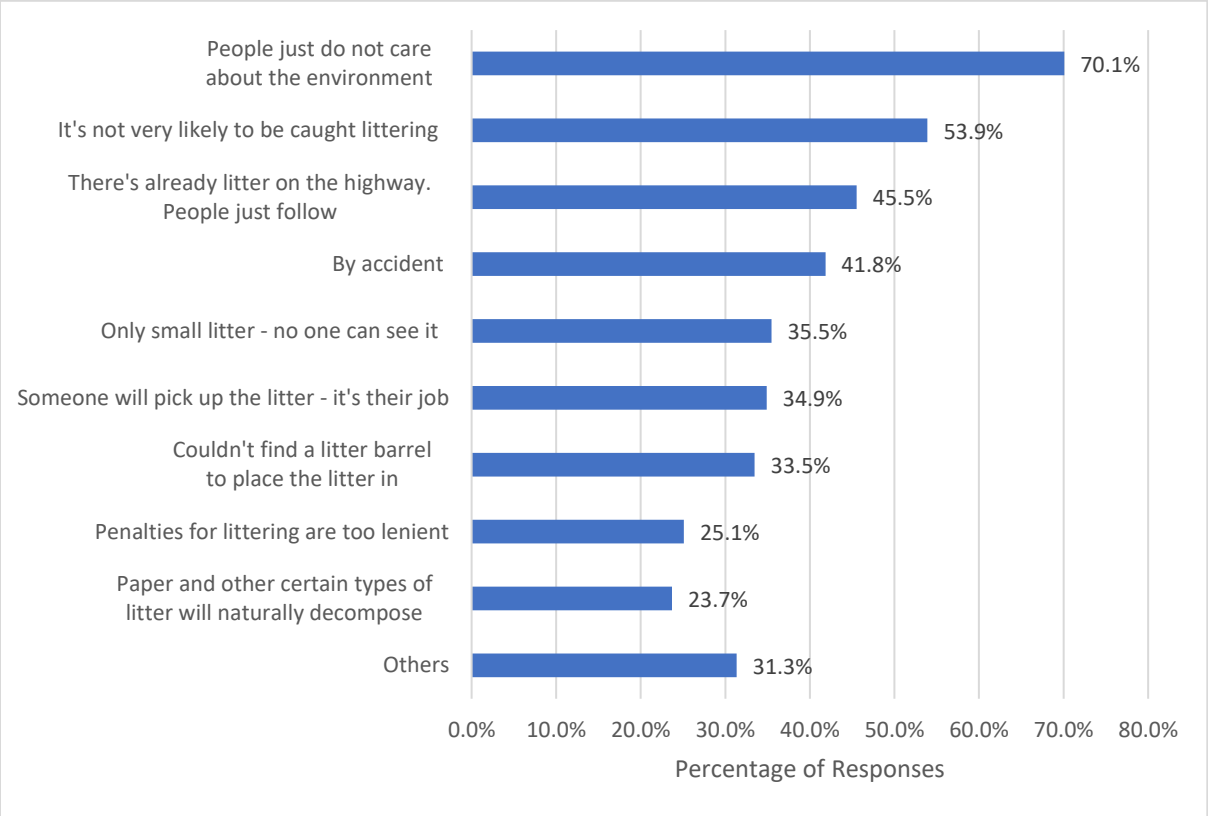


Figure 5.97. Reasons Why People Litter – Youth Survey

The survey results suggest that youth perceive littering as driven primarily by attitudes and perceived lack of consequences, rather than by a lack of knowledge. The most commonly cited reason is that people do not care about the environment (494 or 70.1%), followed by beliefs that it is not very likely to be caught littering (380 or 53.9%) and that existing litter encourages others to follow (321 or 45.5%). Practical and situational factors also play a role, including littering by accident (295 or 41.8%), thinking small litter is unnoticeable

(250 or 35.5%), assuming someone else will pick it up (246 or 34.9%), and not being able to find a trash barrel (236 or 25.1%). Fewer respondents attribute littering to lenient penalties (177 or 25.1%) or misconceptions about decomposition (167 or 23.7%).

In addition, 221 respondents (31.3%) provided potential reasons by selecting “Other reasons not listed”, example reasons including:

- Because they're lazy and can't just simply take a minute to find a spot for it;
- People will do it because they do not care about anyone but themselves;
- It is an inconvenience to stop therefore people just take the easy way out and throw it out the window;
- People don't think/care what happens to their trash as they throw it out the window;
- Not enough space in vehicle;
- Because they are rude and it’s probably teenagers doing it;
- No one taught them or told them not to;
- People are sometimes just inconsiderate;
- Not enough advertising or don't litter signs, education.

Q5.3.2.19. After seeing and learning the "Don't mess with Texas" slogan, how likely are you to confront someone who litters?

Number of valid responses: 704. This question is applicable to everyone. Question 5.3.2.19 tries to identify youth respondents’ behavioral change regarding confronting someone who litters after learning the DMWT slogan.

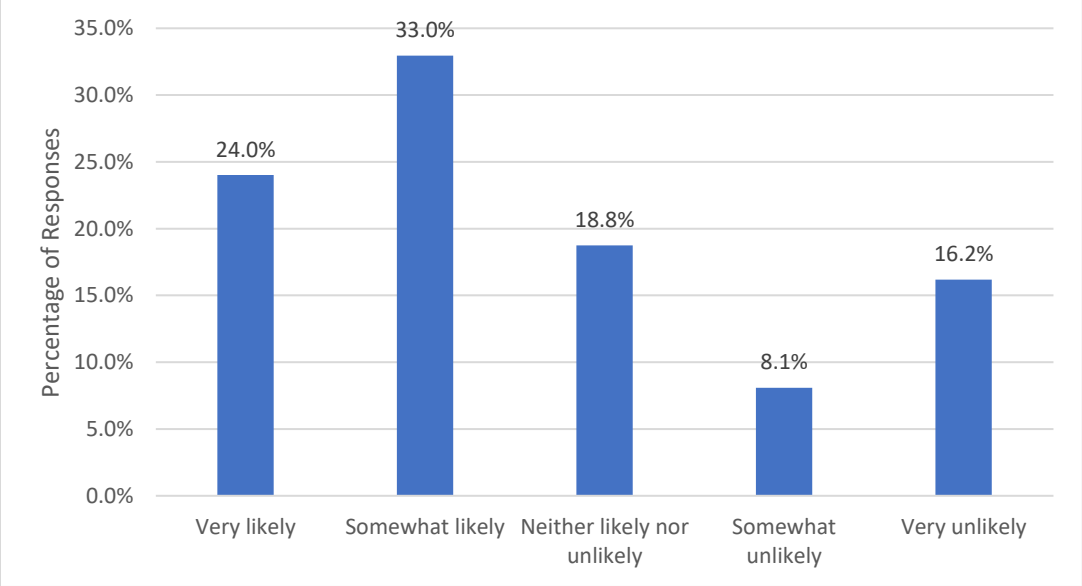


Figure 5.98. Likelihood to Confront Someone Who Litters – Youth Survey

The survey results indicate mixed willingness among youth to confront someone who litters. While a substantial share report being very likely (169 or 24%) or somewhat likely

(232 or 33.0%) to intervene, a sizable group remains hesitant, with 132 (18.8%) respondents feeling neutral. Fewer youth indicate resistance to confrontation, with 57 (8.1%) somewhat unlikely and 114 (16.2%) very unlikely to speak up. The findings suggest that although many youths are open to addressing littering behavior, social discomfort and uncertainty may limit direct intervention.

Q5.3.2.20. Do you think the "Don't mess with Texas" slogan has helped reduce litter in your community?

Number of valid responses: 702. This question is applicable to everyone. Question 5.3.2.20 askes the youth respondents whether they believe the slogan has helped reduce litter in their community.

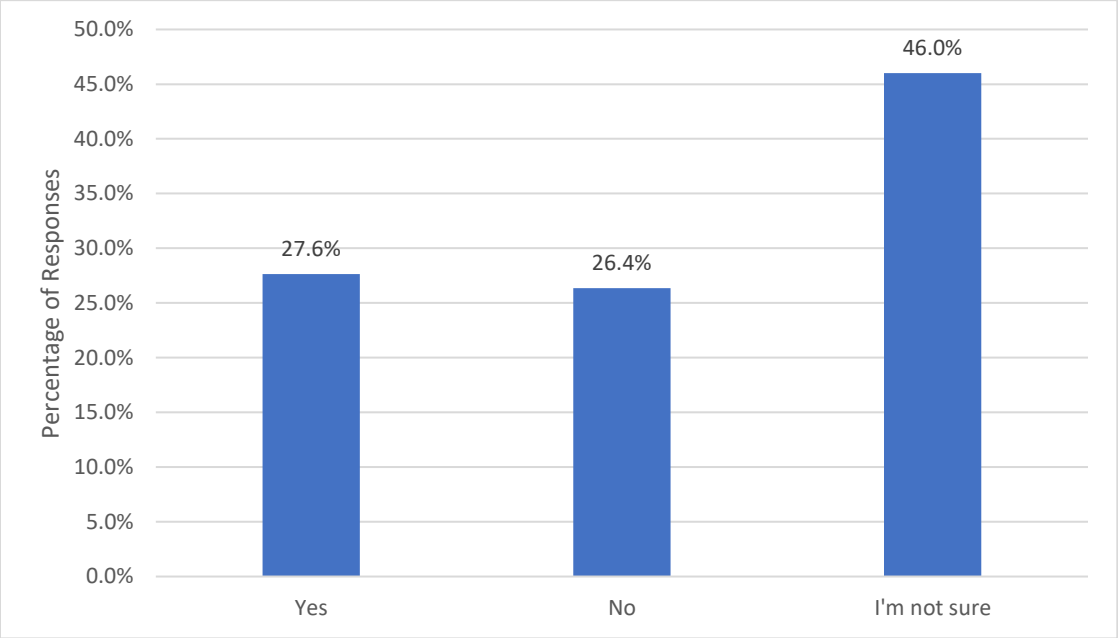


Figure 5.99. Whether DMWT Has Helped Reduce Litter in Community – Youth Survey

The survey results show that youth perceptions of whether DMWT helps reduce litter in their community are mixed and uncertain. While 194 (27.6%) respondents believe the slogan does help, nearly the same number (185 or 26.4%) feel it does not. Notably, the largest group (323 or 46.0%) are unsure, suggesting that many youths may recognize the slogan but have difficulty linking it directly to observable changes in local litter conditions.

Q5.3.2.21. In your opinion, how effective is the "Don't mess with Texas" slogan?

Number of valid responses: 703. This question is applicable to everyone. Question 5.3.2.21 tries to identify the overall effectiveness of DMWT slogan from youth's perspective.

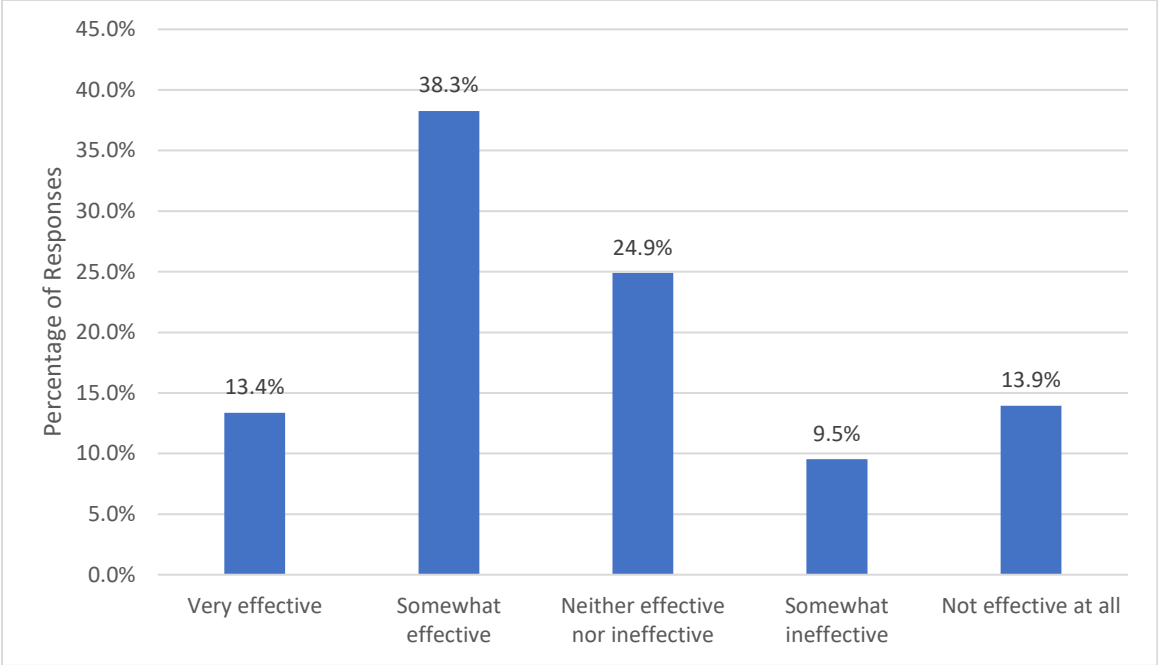


Figure 5.100. Overall Effectiveness of DMWT Slogan – Youth Survey

The survey results indicate that youth generally view the DMWT slogan as effective overall. Over half (363 or 51.6%) of the respondents rate it as very effective (13.4%) or somewhat effective (38.3%), suggesting that many youths believe the slogan positively influences awareness and behavior. At the same time, a substantial number perceive limited impact, with 175 (24.9%) indicating it is neither effective nor ineffective and 165 (23.5%) viewing it as somewhat or not effective at all. This distribution suggests that while the slogan maintains relevance and positive influence for many youths, its effectiveness may vary by level of exposure and personal connection, highlighting opportunities to strengthen engagement and reinforce the slogan's anti-littering message among certain youth groups.

Q5.3.2.22. What do you think would be effective in preventing people from littering? Please select all that apply.

Number of valid responses: 697. This question is applicable to everyone. Question 5.3.2.22 tries to identify effective ways to prevent people from littering from the perspective of a youth. Note that this is a multiple-choice question and more than one answer can be chosen.

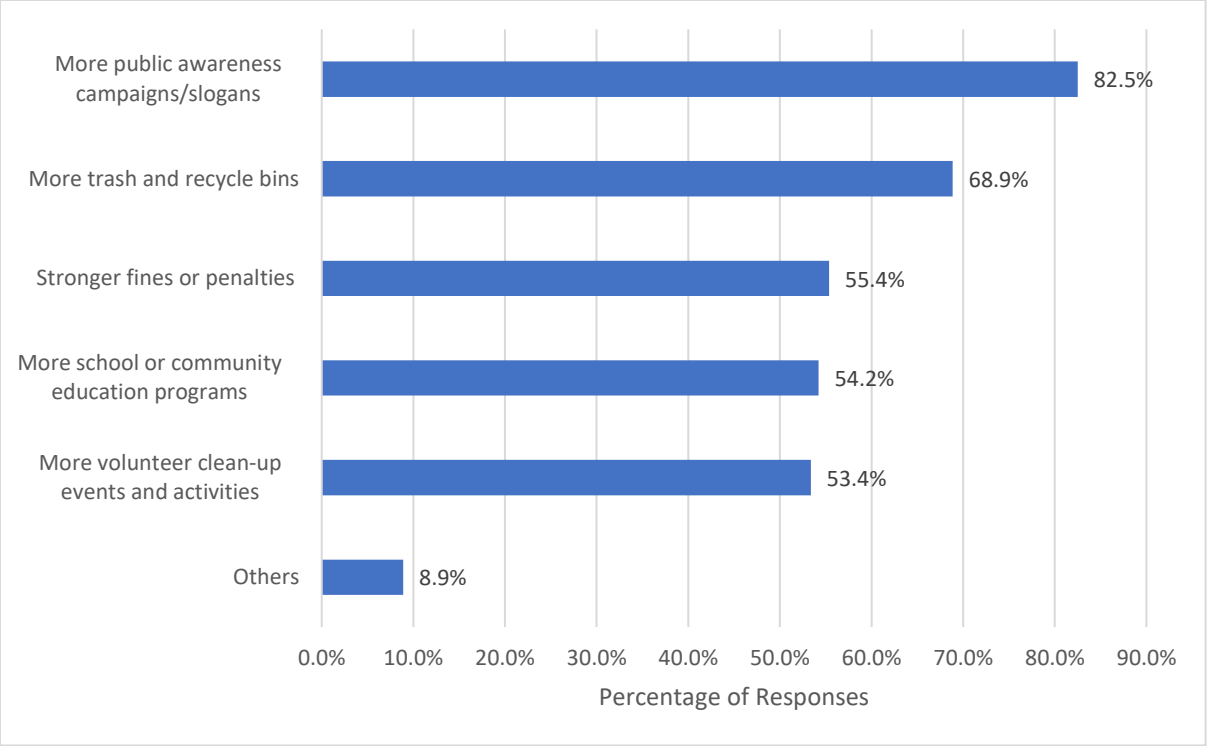


Figure 5.101. Ways to Prevent People from Littering – Youth Survey

The survey results indicate that youth believe structural support and continued education are the most effective ways to prevent littering. The most frequently cited strategy is more public awareness campaigns and slogans (575 or 82.5%), underscoring the continued importance of messaging such as DMWT. This is followed by more trash and recycling bins (480 or 68.9%), highlighting the need to make proper disposal more convenient. Youth also emphasize stronger fines or penalties (386 or 55.4%), as well as expanded school or community education programs (378 or 54.2%) and more volunteer clean-up events and activities (372 or 53.4%). Only a small number selected other approaches (62 or 8.9%), examples including:

- Pay people to pick up litter. I have heard that California will pay people to Adopt-a-Highway and pick up litter - this would be a great way for younger people to earn some money and clean the roads;
- More “Don’t mess with Texas” signs;
- Making sure when educating the kids not to litter that their teachers don’t litter;
- Social media should be used more to fight littering;
- More awareness about the impact on the environment from littering;
- Cameras that can catch and give tickets;
- Make the effects of this litter shown, show the trash buildup in oceans, show how this litter could be recycled and put back into use;
- Get a celebrity to make an advertisement

Q5.3.2.23. Would you like to see the "Don't mess with Texas" slogan continue?

Number of valid responses: 703. This question is applicable to everyone. Question 5.3.2.23 asks the youth respondents whether they would like to see the slogan continue.

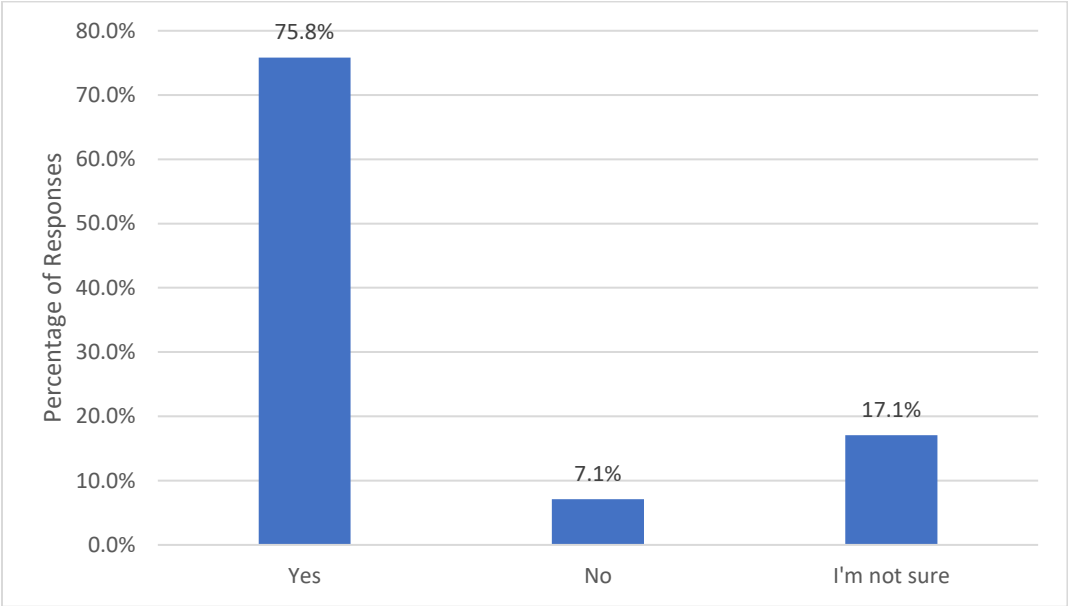


Figure 5.102. Whether Youth Survey Respondents Would Like to See DMWT Continue

The survey results show that the majority of youth respondents want the DMWT slogan to continue. A total of 533 (75.8%) participants responded “Yes”, indicating strong support for its continuation, while only 50 (7.1%) said “No” and 120 (17.1%) were unsure. This suggests that the slogan remains highly valued and widely endorsed by the youth.

Q5.3.2.24. Would you like to see the "Don't mess with Texas" slogan expand?

Number of valid responses: 704. This question is applicable to everyone. Question 5.3.2.24 asks the youth respondents whether they would like to see the slogan expand (e.g., awareness expansion through more advertising and publicizing efforts).

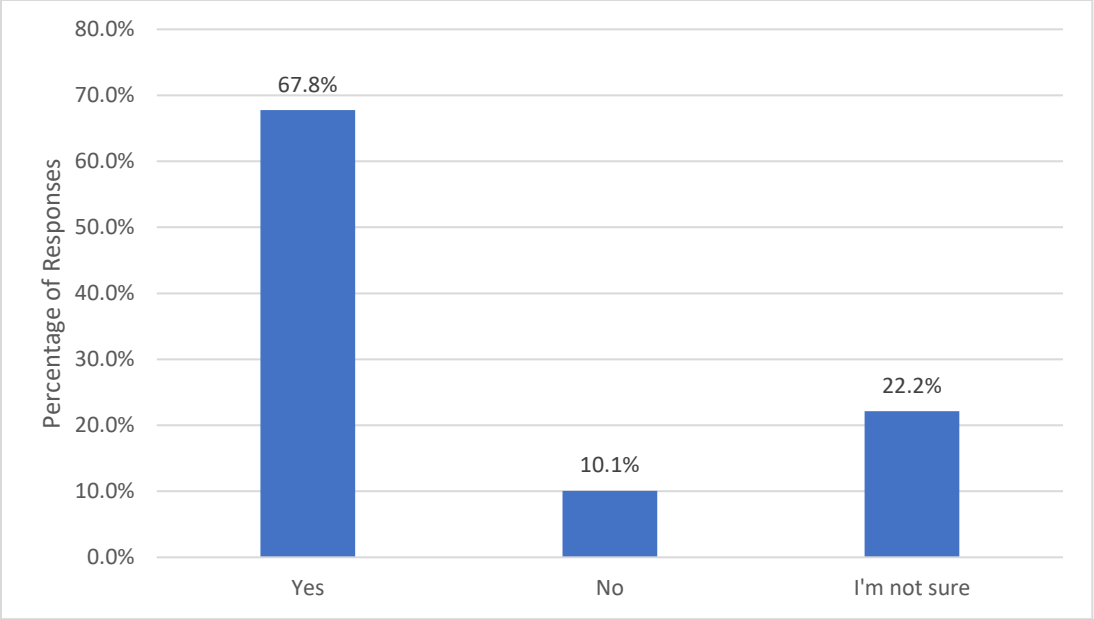


Figure 5.103. Whether Youth Survey Respondents Would Like to See DMWT Expand

The survey results indicate that a majority of youth respondents support expanding the DMWT slogan, though with less unanimity than for its continuation. A total of 477 (67.8%) participants said "Yes" while 71 (10.1%) opposed expansion and 156 (22.2%) were unsure. This suggests that while there is strong interest in broadening the slogan's reach, a notable portion of youth respondents remains uncertain or hesitant, which is consistent with the adult survey in Section 5.2.

Q5.3.2.25. Please provide any additional comments or future improvements for "Don't mess with Texas" slogan.

Number of valid responses: 194. This question is applicable to everyone. Question 5.3.2.25 intends to collect additional comments (if any) on future operations of the DMWT slogan from youth's perspective. Selected comments include:

"*Less patriotic, more specific to littering.*"

"*Law enforcement officers need to heavily enforce penalties. People do not care about the environment at times but they will always care about their money.*"

"*Start teaching children younger and telling kids the importance of not littering and keeping our environment clean.*"

"*It has a good meaning behind it, but only once you know that it's anti-littering. The context should be made clearer for the average Joe to understand the message.*"

"*From someone just seeing it for the first time, it does nothing to show that it has connections to litter. Also, it doesn't give a reason or convincing thing to tell people not to litter.*"

"*Give more trash cans so people can have places to throw away litter.*"

"*More elementary School outreach for the slogan meaning*"

"*I think that if the slogan was more exposed to the public and more advertised it would have a greater impact on the environment*"

"*The 'Don't mess with Texas' slogan makes me a little proud to be a Texan*."

"*I completely honestly had no idea what it actually meant until now and think it should be more advertised*."

"*I would suggest more enforcement on the penalties and fines. And more teachings at school for our generation to listen. Start at school*."

"*I think the Don't mess with Texas is good and will help get people to stop. If we could get someone with a high social status to call out to the people and tell them what littering is doing. Maybe Mathew McConaughey could go on social media and make a video telling Texans what it's doing and showing it as well.*"

"*I think people should influence the slogan and what it means throughout the community more because it will most likely have a bigger impact on people's perspective of littering.*"

5.4 Chapter Conclusion

Chapter 5 provides a comprehensive analysis and summary of the Texas resident survey and youth survey regarding the effectiveness of DMWT slogan, aiming to collect Texas resident's opinions on DMWT slogan (main focus) and AAH program.

The Texas resident survey was distributed to over 9.4 million individuals across the state of Texas, and a total number of 36,110 valid responses was received for the Texas resident survey and 771 valid responses were received for the youth survey. The study team thoroughly analyzed survey data and presented survey findings in the format of tangible results such as tables and figures to convey more concise and explicit information.

To summarize, key survey findings include:

- Texas Resident Survey:
    - Very high level of awareness: 96.6% of respondents had heard of DMWT slogan, and 90.5% had heard of AAH program
    - Traditional and highly visible media are the dominant sources through which respondents hear/learn about DMWT slogan, top 3 sources are billboards (70.9%), TV commercial (62.5%), and bumper stickers (42.8%)
    - 80.6% of the respondents understand the meaning of DMWT slogan correctly
    - For respondent who had heard about DMWT slogan, there is a predominantly positive influence on behavior and attitudes toward littering: 92.0% reported that the slogan either was very effective in prompting a

conscious effort not to litter (32.4%) or re-emphasized the importance of not littering (59.6%)
    - For respondents who did not hear about DMWT slogan, after learning the slogan, 85.5% reported that the slogan either was very effective in prompting a conscious effort not to litter (19.3%) or re-emphasized the importance of not littering (66.2%)
    - Strongly positive reception of the DMWT slogan: 66.8% reported that they like it very much, with an additional 13.8% indicating they somewhat like it
    - 43.2% of respondents reported being very likely (17.1%) or somewhat likely (26.1%) to confront a litterer
    - 36.6% of respondents believe that the DMWT slogan has helped reduce litter in community
    - A majority (67.6%) of respondents rated DMWT slogan as very effective (20.7%) or somewhat effective (46.9%), suggesting that the slogan is generally perceived as effective overall
    - 81.6% of the respondents would like the slogan to continue
    - 12.0% reported that they are very likely to volunteer in AAH program and 29.4% indicated somewhat likely
    - 48.6% of respondents believe that the AAH has helped reduce litter in community
    - A majority (65.6%) of respondents rated AAH as very effective (16.2%) or somewhat effective (49.4%), suggesting that the program is generally perceived as effective overall
- Texas Resident Survey – Age Group 16-34:
    - High level of awareness: 94.1% of respondents had heard of DMWT slogan, and 84.5% had heard of AAH program, demonstrating that they successfully reach audiences born decades after their original launch
    - Traditional and highly visible media are the dominant sources through which respondents hear/learn about DMWT slogan, top 3 sources are billboards (69.2%), bumper stickers (51.0%), and TV commercials (41.3%). Younger respondents encounter the DMWT slogan through more diversified channels, with significantly higher exposure via social media (30.4% vs. 17.2%), interpersonal/peer networks (30.1% vs. 14.5%), and retail partnerships such as Buc-ee's (29.3% vs. 12.8%), indicating the campaign's cultural integration into younger Texans' daily environments
    - 64.1% of the respondents understand the meaning of DMWT slogan correctly, which is lower than All Age Groups (80.6%), highlighting the need to strengthen the anti-littering message through targeted educational content
    - For respondent who had heard about DMWT slogan, there is a positive influence on behavior and attitudes toward littering: 89.4% reported that the slogan either was very effective in prompting a conscious effort not to litter

(21.5%) or re-emphasized the importance of not littering (67.9%), which is slightly less predominant than All Age Groups (92.0%)
    - For respondents who did not hear about DMWT slogan, after learning the slogan, 78.7% reported that the slogan either was very effective in prompting a conscious effort not to litter (18.9%) or re-emphasized the importance of not littering (59.8%)
    - Positive reception of the DMWT slogan: 52.4% reported that they like it very much, with an additional 20.6% indicating they somewhat like it
    - 43.6% of respondents reported being very likely (17.1%) or somewhat likely (26.5%) to confront a litterer
    - 23.4% of respondents believe that the DMWT slogan has helped reduced litter in community
    - Over half (50.1%) of respondents rated DMWT slogan as very effective (11.4%) or somewhat effective (38.7%), suggesting that the slogan is generally perceived as effective overall
    - 77.1% of the respondents would like the slogan to continue, confirming strong demand for the DMWT campaign among the next generation of Texas road users
    - 10.0% reported that they are very likely to volunteer in AAH program and 27.4% indicated somewhat likely
    - 37.4% of respondents believe that the AAH has helped reduce litter in community
    - A total of 52.6% respondents rated AAH as very effective (12.2%) or somewhat effective (40.4%), suggesting that the program is generally perceived as effective overall
- Youth Survey:
    - 97.9% of youth know what littering is and 70.4% had heard of DMWT slogan – a relative high slogan awareness among the young generation
    - Top 6 sources to learn about DMWT slogan include billboard (53.1%), relatives or friends (44.4%), bumper sticker (34.0%), TV or radio commercials (32.3%), events or school programs (30.2%), and apparel (30.2%)
    - Only 44.4% of the youth understand the meaning of DMWT slogan correctly, while 46.9% misunderstand the slogan as “Texans are tough”
    - For youth who had heard about DMWT slogan, 84.8% reported that the slogan either was very effective in prompting a conscious effort not to litter (21.1%) or re-emphasized the importance of not littering (63.6%)
    - For youth who did not hear about DMWT slogan, after learning the slogan, 78.0% reported that the slogan either was very effective in prompting a conscious effort not to litter (24.4%) or re-emphasized the importance of not littering (53.7%)
    - 46.9% reported that they like the slogan very much, with an additional 27.0% indicating they somewhat like it

- 40.2% of youth reported being very likely (16.2%) or somewhat likely (24.0%) to confront a litterer
- 27.6% of youth believe that the DMWT slogan has helped reduce litter in community
- A majority (51.6%) of youth rated DMWT slogan as very effective (13.4%) or somewhat effective (38.3%), suggesting that the slogan is generally perceived as effective overall
- 75.8% of youth would like the slogan to continue

In addition, valuable comments from the respondents provide meaningful insights. Overall, based on the survey results, the DMWT slogan is well-liked, widely recognized, and perceived as effective.

Chapter 6. Conclusions

This study provides a comprehensive evaluation of the Don't mess with Texas (DMWT) campaign, examining its historical development, effectiveness in reducing litter and behavioral change, and potential future challenges as Texas continues to experience significant population growth and demographic change. The study team integrates a review of historical studies, analysis of litter trends, evaluation of future population and travel patterns, and findings from a statewide survey of Texas residents and youth. Together, these analyses provide insight into how the DMWT campaign has effectively influenced public awareness and behavior.

6.1 Summary of Key Findings

Long-Term Success of the DMWT Campaign

The DMWT campaign has demonstrated sustained success over nearly four decades as a behavior-change initiative aimed at reducing roadside litter. The campaign's early success was driven by its unique messaging strategy that framed litter prevention as an expression of Texas pride and identity rather than solely as an environmental responsibility. This approach helped establish the slogan as a widely recognized cultural symbol and contributed to substantial reductions in visible roadside litter following the campaign's launch.

Historical studies and litter surveys indicate that large, visible litter items have decreased significantly over time, reflecting long-term progress in addressing traditional forms of littering behavior. The campaign's consistent presence through television advertising, billboards, celebrity endorsements, community outreach, and social media has maintained high levels of public recognition across multiple generations of Texans.

Continued High Public Awareness and Support

The statewide resident survey confirms that the campaign continues to achieve very high public awareness, with 96.6% respondents reporting familiarity with the DMWT slogan. A large majority of respondents indicated that the campaign reinforces the importance of not littering and supports continued implementation of the program.

Survey findings also suggest that traditional communication channels such as billboards, television advertising, and bumper stickers remain among the most common ways residents encounter the slogan. At the same time, differences in media consumption patterns indicate that younger audiences may engage with the campaign through different platforms than older residents.

Changing Composition of Roadside Litter

While large litter items have declined, the composition of roadside litter has shifted significantly over time. Micro-litter now represents the majority of litter pieces, with cigarette butts identified as the most common type. These items often result from habitual behaviors rather than deliberate littering decisions, making them more difficult to address through traditional awareness messaging alone. These findings suggest that future litter prevention strategies may benefit from messaging approaches that address routine or automatic behaviors, particularly those related to cigarette butt disposal.

Influence of Population Growth and Travel Demand

Texas continues to experience substantial population growth and increases in daily vehicle travel. Population forecasts indicate that the state may grow significantly in the coming decades, with most growth occurring within major metropolitan regions. Increased population density and traffic volumes may contribute to higher potential litter generation along major roadway corridors. These trends underscore the importance of maintaining effective litter prevention strategies alongside ongoing roadway maintenance and cleanup activities.

6.2 Implications for TxDOT

The findings of this study suggest several implications for the continued success of Texas's anti-litter initiatives.

- The DMWT campaign remains a highly effective and widely recognized program that continues to influence public awareness and behavior. Maintaining the visibility and consistency of the campaign will remain important as Texas's population grows and demographic patterns evolve;
- Changing media consumption pattern highlights the importance of multi-channel outreach strategies. While traditional advertising platforms remain effective, digital communication platforms and social media provide opportunities to reach younger audiences and new residents who may be less familiar with the campaign;
- The increasing prevalence of micro-litter suggests that future messaging strategies may benefit from behavioral insights that address habitual disposal behaviors. Messaging approaches that emphasize routine decision-making, social norms, and convenience may help address litter types that persist despite high levels of awareness; and
- Population growth and demographic change highlight the importance of maintaining broad outreach that reaches both long-time Texas residents and newcomers. As Texas continues to experience rapid population growth, particularly in metropolitan regions, ensuring that new residents understand the campaign's message may help maintain its effectiveness over time.

6.3 Opportunities for Future Research

While this study provides a comprehensive evaluation of the DMWT campaign and related litter prevention programs, several opportunities exist for future research and data collection.

- Improving the consistency and comparability of litter measurement methodologies. Historical litter surveys have used different approaches and classification systems, which can complicate long-term trend comparisons. Continued refinement of standardized data collection methods may improve the ability to monitor litter trends over time;
- More detailed analysis of behavioral factors influencing littering. Understanding why individuals continue to litter, particularly in relation to micro-litter and cigarette butt disposal, could help inform more targeted messaging and outreach strategies;
- Additional research could also examine how different demographic groups perceive and respond to the DMWT campaign. In particular, studies focused on younger residents, digital-native audiences, and individuals who recently moved to Texas may provide insights that support future campaign design; and
- Continued monitoring of population growth, travel trends, and litter composition will help TxDOT anticipate emerging challenges and adapt its litter prevention strategies accordingly.

6.4 Final Remarks

For the past forty years, the DMWT campaign has played a significant role in promoting cleaner highways and encouraging responsible behavior among Texas motorists. Its combination of culturally resonant messaging, consistent outreach, and strong public recognition has contributed to measurable reductions in roadside litter and helped establish a shared norm of environmental responsibility among Texans.

As Texas continues to grow and evolve, maintaining the effectiveness of the campaign will require continued evaluation and adaptation. By building on the campaign's strong legacy while embracing new communication approaches and improved data collection methods, TxDOT can continue to support cleaner roadways and preserve the visual and environmental quality of Texas highways for future generations.

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Appendix A: Blank Texas Resident Survey (English Version)

Don't mess with Texas Study Survey (English Version)

This survey is being conducted by The University of Texas at Austin - Center for Transportation Research (UT-CTR) for the Texas Department of Transportation (TxDOT). We are very interested in your awareness about the "Don't mess with Texas" anti-litter campaign slogan and Adopt-a-Highway program, as well as your opinions about their effectiveness.

Your responses are anonymous and cannot be traced back to you, your email address or other personal information, or to the device you use to take the survey. **Your experiences and opinions are greatly appreciated.**

The survey will take approximately **10 - 15 minutes** to complete; we do very much appreciate your time and patience. If you choose, you can complete part of the survey now, close it and reopen it later to complete the survey, though completion must be within 1 week.

If you have any questions or comments, please feel free to contact us at the following email address or telephone number. The CTR website is listed at the bottom of the page for your reference.

Thank you very much.

Zhe Han, Ph.D., P.E.
Research Engineer
Contact: (512) 232-2626 (English)

Michael Murphy, Ph.D., P.E.
Deputy Director
Contact: (512) 300-3875 (English)

Susanna Gallun, J.D.
Research Engineer/Scientist Assistant, Attorney
Contact: (512) 232-3143 (English and Spanish)

UT Center for Transportation Research (CTR) 3925 West Braker Lane Austin, Texas 78759

CTR Website: https://ctr.utexas.edu/

Q1 Please indicate your age group

16 - 24 (2)

25 - 29 (3)

30 - 34 (9)

35 - 39 (4)

40 - 44 (10)

45 - 49 (5)

50 - 54 (11)

55 - 59 (6)

60 - 64 (12)

65 or older (7)

Prefer not to answer (8)

Q2 What is your gender?

Male (1)

Female (2)

Prefer not to answer (3)

Q3 What is your race?

American Indian or Alaska Native (1)

Asian (2)

Black or African American (3)

Native Hawaiian or other Pacific Islander (4)

White (5)

Prefer not to answer (6)

Q4 Are you of Hispanic or Latino origin?

Yes (1)

No (2)

Prefer not to answer (3)

Q5 What is the highest level of education you have completed?

Less than high school (1)

High school diploma or equivalent (2)

Some college, no degree (3)

Associate degree (4)

Bachelor's degree (5)

Master's degree (6)

Doctoral or professional degree (7)

Prefer not to answer (8)

Q6 What is your approximate annual household income?

Less than $25,000 (1)

$25,000 - $49,999 (2)

$50,000 - $74,999 (3)

$75,000 - $99,999 (4)

$100,000 - $149,999 (5)

$150,000 - $200,000 (6)

More than $200,000 (7)

Prefer not to answer (8)

Q7 Your current Texas residence location:

CITY: (1) _____

COUNTY: (2) _____

ZIP CODE: (3) _____

Q8 Have you ever heard of the "Don't mess with Texas" slogan?

Yes (1)

No (2)

I'm not sure (3)

Display this question:

If Have you ever heard of the "Don't mess with Texas" slogan? = Yes

Q9 How frequently do you see or hear the "Don't mess with Texas" slogan?

Frequently (1)

Occasionally (2)

Rarely (3)

I used to see or hear the slogan frequently, but rarely now (4)

Display this question:

If Have you ever heard of the "Don't mess with Texas" slogan? = Yes

Q10 How did you hear/learn about the "Don't mess with Texas" slogan? Check all that apply.

TV commercial (1)

Radio commercial (2)

Social media (e.g., Facebook, X, Instagram, etc.) (3)

A relative or friend (4)

Events or school programs (5)

Billboard along the highway (6)

Bumper sticker (7)

Hat, T-shirt, or other apparel (8)

Sew-on patch with slogan (9)

Souvenirs (10)

At Buc-ee's (11)

Others. Please specify: (12)

_____

Q11 What do you think the "Don't mess with Texas" slogan means? Check all that apply

Texans are tough - don't mess with us (1)

Texans are proud of their state (2)

Texans have a sense of community they stand together (3)

Don't litter (4)

I don't know (5)

Other meanings not listed: (6) _____

Below is a brief introduction of the "Don't mess with Texas" slogan: "Don't mess with Texas" is the slogan for the Texas Department of Transportation's (TxDOT) anti-littering campaign, which was launched to the public in 1986 to combat a widespread problem of trash along the state's highways. The slogan, now a federal trademark, has become a symbol of Texas pride and cultural identity. Its original and ongoing purpose is to encourage people not to litter. Please continue to the next question.

Display this question:

If Have you ever heard of the "Don't mess with Texas" slogan? = Yes

Q12 How do you think the "Don't mess with Texas" slogan has affected your behavior about littering?

Very effective. I make a conscious effort not to litter (1)

Somewhat effective. I think about it more (2)

Although I didn't litter before I heard the slogan, it re-emphasizes the importance of not littering (3)

No impact - I still litter (4)

Display this question:

If Have you ever heard of the "Don't mess with Texas" slogan? = No

Or Have you ever heard of the "Don't mess with Texas" slogan? = I'm not sure

Q13 How do you think "Don't mess with Texas" slogan will affect your behavior about littering?

Very effective. I will make a conscious effort not to litter (1)

Somehow effective. I will think about it more (2)

Although I didn't litter before I heard the slogan, it re-emphasizes the importance of not littering (3)

No impact - I will still litter (4)

Q14 Do you like and support the "Don't mess with Texas" slogan? Why?

Yes. I like it very much. Reason: (1)
_____

Yes. I somewhat like it. Reason: (2)
_____

Neither like or dislike. Reason: (3)
_____

No. I somewhat dislike it. Reason: (4)
_____

No. I dislike it very much. Reason: (5)
_____

Q15 Have you lived in US state(s) other than Texas?

Yes. I lived in other US states. Please name the state(s): (1)
_____

No. I only lived in Texas (2)

Display this question:

If Have you lived in US state(s) other than Texas? = Yes. I lived in other US states. Please name the state(s):

Q16 Are you aware of any anti-littering campaign slogans from your former state(s)? If yes, please specify slogans and corresponding state.

Yes. Slogan and State: (1)

_____

No (2)

I don't remember (3)

Display this question:

If Have you lived in US state(s) other than Texas? = Yes. I lived in other US states. Please name the state(s):

Q17 Compared with Texas highways, do you think your former state(s)' highways have less litter?

Yes (1)

About the same (2)

Some are cleaner, but some are not (3)

No (4)

I don't know (5)

181 Have you lived in country(ies) other than the US?

Yes. I lived in other country(ies). Please name the country(ies): (1)

_____

No (2)

Display this question:

If Have you lived in country(ies) other than the US? = Yes. I lived in other country(ies). Please name the country(ies):

Q19 Are you aware of any anti-littering campaign slogans from your former country(ies)? If yes, please specify slogans and corresponding country.

Yes. Slogan and country: (1)

_____

No (2)

I don't remember (3)

Display this question:

If Have you lived in country(ies) other than the US? = Yes. I lived in other country(ies). Please name the country(ies):

Q20 Compared with Texas highways, do you think your former country or countries' highways have less litter?

Yes (1)

About the same (2)

Some are cleaner, but some are not (3)

No (4)

I don't know (5)

Q21 Are you aware that littering in Texas is against the law and can have fines of $500 to more than $4,000 and may also have jail time?

Yes (1)

No (2)

Q22 What types of litter have you seen on Texas highways? Please select all that apply

Large litter (two inches and larger) (1)

Micro litter (smaller than two inches) (2)

Plastic waste (e.g., bottles, six-pack yokes, food containers, etc.) (3)

Paper and cardboard (4)

Glass (5)

Metal (6)

Cigarette butts (7)

Construction debris (e.g., old boards, dry wall, paper cement bags, etc.) (8)

Vehicle debris (e.g., tires, batteries, etc.) (9)

Household waste (10)

Other litter types not listed above: (11)

_____

Q23 Why do you think people litter along the highway? Please check all that apply.

There's already litter on the highway. People just follow (1)

By accident (e.g., the wind blew the litter out of the car window) (2)

Only small litter (e.g., cigarette butt) - no one can see it (3)

Someone will pick up the litter - it's their job (4)

Paper and other certain types of litter will naturally decompose (5)

Couldn't find a litter barrel to place the litter in (6)

People just do not care about the environment (7)

Penalties for littering are too lenient (8)

It's not very likely to be caught littering (9)

Other reasons not listed: (10) _____

Q24 After seeing and learning the "Don't mess with Texas" slogan, how likely are you to confront someone who litters?

Very likely (1)

Somewhat likely (2)

Neither likely nor unlikely (3)

Somewhat unlikely (4)

Very unlikely (5)

Q25 Do you think the "Don't mess with Texas" slogan has helped reduce litter in your community?

Yes (1)

No (2)

I'm not sure (3)

Q26 In your opinion, how effective is the "Don't mess with Texas" slogan?

Very effective (1)

Somewhat effective (2)

Neither effective nor ineffective (3)

Somewhat ineffective (4)

Very ineffective (5)

Q27 What do you think would be effective in preventing people from littering? Please select all that apply

More trash and recycle bins in public areas (1)

Stronger fines or penalties for littering (2)

More public awareness campaigns/slogans (3)

More school or community education programs (4)

More volunteer clean-up events and activities (5)

Others, please specify: (6) _____

Q28 Would you like to see the "Don't mess with Texas" slogan continue?

Yes (1)

No (2)

I'm not sure (3)

Q29 Would you like to see the "Don't mess with Texas" slogan expand?

Yes (1)

No (2)

I'm not sure (3)

Q30 Please provide any additional comments or future improvements for "Don't mess with Texas" slogan:

_____

_____

_____

_____

_____

Q31 The last five questions are about the TxDOT Adopt-a-Highway program. Have you heard of the Adopt-a-Highway program in Texas?

Yes (1)

No (2)

I'm not sure (3)

Display this question:

If The last five questions are about the TxDOT Adopt-a-Highway program. Have you heard of the Adopt-... = No

Or The last five questions are about the TxDOT Adopt-a-Highway program. Have you heard of the Adopt-... = I'm not sure

Below is a brief introduction of TxDOT the Adopt-a-Highway program: The Texas Department of Transportation's (TxDOT) Adopt-a-Highway program is a long-standing volunteer initiative that invites individuals, businesses, and community groups to take an active role in keeping Texas highways clean and attractive. By adopting a two-mile section of a state-maintained roadway, participants commit to collecting litter at least four times a year, helping to preserve the natural beauty of Texas while promoting community pride and environmental stewardship. In return, TxDOT provides safety materials, support for cleanup efforts, and installs a roadside sign recognizing each group's contribution to a cleaner, safer Texas. Please continue to the next question.

Q32 How likely would you be to volunteer for the Adopt-a-Highway program or be part of an organization that sponsors a roadway and volunteers as a group?

Very likely (1)

Somewhat likely (2)

Neither likely nor unlikely (3)

Somewhat unlikely (4)

Very unlikely (5)

Q33 What barriers exist for you in taking part in the Adopt-a-Highway program? Please select all that apply.

Too time-consuming (1)

My health condition prevents me from taking part (2)

Too much effort and work (3)

Litter is not a big problem in my area (4)

I don't think it makes a big difference (5)

Lack of time/I am too busy (6)

Safety concerns/Too dangerous (7)

Others: (8) _____

Q34 Do you think the Adopt-a-Highway program helped reduce litter in your community?

Yes (1)

No (2)

I'm not sure (3)

Q35 In your opinion, how effective is the Adopt-a-Highway program?

Very effective (1)

Somewhat effective (2)

Neither effective nor ineffective (3)

Somewhat ineffective (4)

Very ineffective (5)

Q36 Please provide any additional comments or future improvements for Adopt-a-Highway program:

_____

_____

_____

_____

_____

Q37 We would also survey how the "Don't mess with Texas" slogan resonates with younger generation. Do you have children under the age of 18 living in your household who are willing to take a tailored survey on "Don't mess with Texas" slogan under your supervision? If yes, please click the link on next page to access a separate survey.

Yes (1)

No (2)

Prefer not to answer (3)

Appendix B: Blank Texas Resident Survey (Spanish Version)

Don't mess with Texas Study Survey (Spanish Version)

Esta encuesta la realiza el Centro de Investigación del Transporte de la Universidad de Texas en Austin (UT-CTR) para el Departamento de Transporte de Texas (TxDOT). Nos interesa conocer cuánto sabe sobre el lema de la campaña contra la basura **"No te metas con Texas"** y sobre el programa **"Adopta una Carretera"**, así como su opinión sobre su eficacia.

Sus respuestas son completamente anónimas. No se vincularán a su nombre, correo electrónico, información personal ni al dispositivo que utilice para contestar la encuesta. **Agradecemos sinceramente su tiempo, sus experiencias y sus opiniones.**

La encuesta le tomará aproximadamente entre **10 y 15 minutos**. Si lo prefiere, puede comenzar ahora, cerrar la encuesta y regresar más tarde para terminarla; solo recuerde completarla dentro de una semana.

Si tiene alguna pregunta o comentario, no dude en comunicarse con nosotros por correo electrónico o por teléfono. El sitio web del CTR se encuentra al final de la página para su referencia.

Muchas gracias por su participación.

Dr. Zhe Han, doctor en ingeniería eléctrica, ingeniero profesional
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Contacto: (512) 232-2626 (Inglés)

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Susanna Gallun, JD
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Centro de Investigación del Transporte de la Universidad de Texas (CTR) 3925 West Braker Lane Austin, Texas 78759

Sitio web de CTR: https://ctr.utexas.edu/

Q1 Por favor indique su grupo de edad

16 - 24 (2)

25 - 29 (3)

30 - 34 (9)

35 - 39 (4)

40 - 44 (10)

45 - 49 (5)

50 - 54 (11)

55 - 59 (6)

60 - 64 (12)

65 años o más (7)

Prefiero no responder (8)

Q2 ¿Cuál es su género?

Masculino (1)

Femenino (2)

Prefiero no responder (3)

Q3 ¿Cuál es su raza?

Indígena americano/a o nativo/a de Alaska (1)

Asiático/a (2)

Negro/a o afroamericano/a (3)

Nativo/a de Hawái u otra isla del Pacífico (4)

Blanco/a (5)

Prefiero no responder (6)

Q4 ¿Eres de origen hispano o latino?

Sí (1)

No (2)

Prefiero no responder (3)

Q5 ¿Cuál es el nivel más alto de educación que has completado?

Menos que la secundaria (1)

Diploma de escuela secundaria o equivalente (GED) (2)

Algunos cursos universitarios, sin título (3)

Título de asociado (4)

Licenciatura (5)

Maestría (6)

Doctorado o título profesional (7)

Prefiero no responder (8)

Q6 ¿Cuál es su ingreso familiar anual aproximado?

Menos de $25,000 (1)

$25,000 - $49,999 (2)

$50,000 - $74,999 (3)

$75,000 - $99,999 (4)

$100,000 - $149,999 (5)

$150,000 - $200,000 (6)

Más de $200,000 (7)

Prefiero no responder (8)

Q7 Su lugar de residencia en Texas:

CIUDAD: (1) _____

CONDADO: (2) _____

CÓDIGO POSTAL: (3)
_____

Q8 ¿Ha oído alguna vez el lema “No te metas con Texas”?

Sí (1)

No (2)

No estoy seguro (3)

Display this question:

If Have you ever heard of the "Don't mess with Texas" slogan? = Yes

Q9 ¿Con qué frecuencia ves o escuchas el lema "No te metas con Texas"?

Frecuentemente (1)

Ocasionalmente (2)

Casi nunca (3)

Solía ver o escuchar el eslogan con frecuencia, pero ahora rara vez. (4)

Display this question:

If Have you ever heard of the "Don't mess with Texas" slogan? = Yes

Q10 ¿Cómo se enteró del lema "No te metas con Texas"? Marque todas las opciones que correspondan.

anuncio de televisión (1)

Anuncio de radio (2)

Redes sociales (por ejemplo, Facebook, X, Instagram, etc.) (3)

Un pariente o amigo (4)

Eventos o programas escolares (5)

Cartelera a lo largo de la carretera (6)

Calcomanía (7)

Ropa (gorras, camisetas, etc.) (8)

Parche para coser con eslogan (9)

Recuerdos (10)

En Buc-ee's (11)

Otros. Por favor, especifique: (12)

_____

Q11 ¿Qué crees que significa el lema "No te metas con Texas"? Marca todas las opciones que correspondan.

Los tejanos somos duros, no te metas con nosotros (1)

Los tejanos están orgullosos de su estado (2)

Los tejanos tienen un sentido de comunidad: se mantienen unidos. (3)

No tires basura (4)

No sé (5)

Otros significados no enumerados: (6)

_____

A continuación se presenta una breve introducción al lema "No te metas con Texas": «¡No te metas con Texas!» es el lema de la campaña contra la basura del Departamento de Transporte de Texas (TxDOT), lanzada en 1986 para combatir el problema generalizado de la basura en las carreteras del estado. El lema, ahora una marca registrada federal, se ha convertido en un símbolo del orgullo y la identidad cultural de Texas. Su propósito original y vigente es fomentar que la gente no tire basura. Por favor, continúe con la siguiente pregunta.

Display this question:

If Have you ever heard of the "Don't mess with Texas" slogan? = Yes

Q12 ¿Cómo crees que el lema “No te metas con Texas” ha afectado tu comportamiento respecto a tirar basura?

Muy efectivo. Hago un esfuerzo consciente para no tirar basura. (1)

Algo efectivo. Lo pienso más. (2)

Aunque no tiraba basura antes de escuchar el eslogan, este vuelve a enfatizar la importancia de no tirar basura. (3)

Sin impacto - Sigo tirando basura (4)

Display this question:

If Have you ever heard of the "Don't mess with Texas" slogan? = No

Or Have you ever heard of the "Don't mess with Texas" slogan? = I'm not sure

Q13 ¿Cómo crees que el lema "No te metas con Texas" afectará tu comportamiento respecto a tirar basura?

Muy efectivo. Haré un esfuerzo consciente para no tirar basura. (1)

De alguna manera efectivo. Lo pensaré con más atención. (2)

Aunque no tiraba basura antes de escuchar el eslogan, este vuelve a enfatizar la importancia de no tirar basura. (3)

Sin impacto - Seguiré tirando basura (4)

Q14 ¿Te gusta y apoyas el lema "No te metas con Texas"? ¿Por qué?

Sí. Me gusta mucho. Razón: (1)
_____

Sí. Me gusta un poco. Razón: (2)
_____

Ni me gusta ni me disgusta. Razón: (3)
_____

No. Me disgusta un poco. Razón: (4)
_____

No. Me disgusta mucho. Razón: (5)
_____

Q15 ¿Ha vivido en otro estado de EE. UU. aparte de Texas?

Sí. Viví en otros estados de EE. UU. Por favor, indique el/los estado(s): (1)
_____

No. Solo viví en Texas. (2)

Display this question:

If Have you lived in US state(s) other than Texas? = Yes. I lived in other US states.
Please name the state(s):

Q16 ¿Conoce algún eslogan de campaña contra la basura en su(s) anterior(es) estado(s)? En caso afirmativo, especifique los eslóganes y el estado correspondiente.

Sí. Lema y Estado: (1)

_____

No (2)

No lo recuerdo (3)

Display this question:

If Have you lived in US state(s) other than Texas? = Yes. I lived in other US states. Please name the state(s):

Q17 En comparación con las carreteras de Texas, ¿cree que las carreteras de su(s) antiguo(s) estado(s) tienen menos basura?

Sí (1)

Más o menos lo mismo (2)

Algunos están más limpios, pero otros no. (3)

No (4)

No sé (5)

Q18 ¿Ha vivido en otro país además de los EE. UU.?

Sí. Viví en otros países. Por favor, dígame el/los país(es): (1)

_____

No (2)

Display this question:

If Have you lived in country(ies) other than the US? = Yes. I lived in other country(ies). Please name the country(ies):

Q19 ¿Conoce algún eslogan de campaña contra la basura en su(s) anterior(es)? En caso afirmativo, especifique los eslóganes y el país correspondiente.

Sí. Eslogan y país: (1)

_____

No (2)

No lo recuerdo (3)

Display this question:

If Have you lived in country(ies) other than the US? = Yes. I lived in other country(ies). Please name the country(ies):

Q20 En comparación con las carreteras de Texas, ¿cree que las carreteras de su antiguo país o países tienen menos basura?

Sí (1)

Más o menos lo mismo (2)

Algunos están más limpios, pero otros no. (3)

No (4)

No sé (5)

Q21 ¿Sabías que tirar basura en Texas es ilegal y puedes recibir multas de $500 a más de $4,000 y también puedes cumplir una pena de cárcel?

Sí (1)

No (2)

Q22 ¿Qué tipos de basura ha visto en las carreteras de Texas? Seleccione todas las opciones que correspondan.

Basura grande (de dos pulgadas o más) (1)

Basura pequeña / microbasura (menor de dos pulgadas) (2)

Residuos plásticos (por ejemplo, botellas, latas de six-pack, envases de alimentos, etc.) (3)

Papel y cartón (4)

Vidrio (5)

Metal (6)

Colillas de cigarro (7)

Escombros de construcción (por ejemplo, tablas viejas, paneles de yeso, bolsas de papel y cemento, etc.) (8)

Residuos del vehículo (por ejemplo, neumáticos, baterías, etc.) (9)

Residuos domésticos (10)

Otros tipos de arena no enumerados anteriormente: (11)
_____

Q23 ¿Por qué crees que la gente tira basura en la carretera? Marca todas las opciones que correspondan.

Ya hay basura en la carretera. La gente simplemente la sigue. (1)

Por accidente (por ejemplo, el viento arrojó la basura por la ventanilla del coche) (2)

Solo basura pequeña (por ejemplo, colillas de cigarrillos): nadie puede verla (3)

Alguien recogerá la basura: es su trabajo. (4)

El papel y otros tipos de basura se descompondrán naturalmente. (5)

No pude encontrar un bote de basura. (6)

A la gente simplemente no le importa el medio ambiente. (7)

Las sanciones por tirar basura son demasiado leves (8)

No es muy probable que te pillen tirando basura. (9)

Otras razones no enumeradas: (10)

_____

Q24 Después de ver y aprender el lema "No te metas con Texas", ¿qué probabilidades hay de que te enfrentes a alguien que tira basura?

Muy probable (1)

Algo probable (2)

Ni probable ni improbable (3)

Algo improbable (4)

Muy improbable (5)

Q25 ¿Crees que el lema “No te metas con Texas” ayudó a reducir la basura en tu comunidad?

Sí (1)

No (2)

No estoy seguro (3)

Q26 En tu opinión, ¿qué tan efectivo es el lema “No te metas con Texas”?

Muy eficaz (1)

Algo efectivo (2)

Ni eficaz ni ineficaz (3)

Algo ineficaz (4)

Muy ineficaz (5)

Q27 ¿Qué crees que sería eficaz para evitar que la gente tire basura? Selecciona todas las opciones que correspondan.

Más contenedores de basura y reciclaje en áreas públicas (1)

Multas o sanciones más severas por tirar basura (2)

Más campañas/lemas de concienciación pública (3)

Más programas educativos escolares o comunitarios (4)

Más eventos y actividades de limpieza voluntaria (5)

Otros, por favor especificar: (6) _____

Q28 ¿Te gustaría que el lema "No te metas con Texas" continúe?

Sí (1)

No (2)

No estoy seguro (3)

Q29 ¿Te gustaría ver el lema "No te metas con Texas" ampliado?

Sí (1)

No (2)

No estoy seguro (3)

Q30 Proporcione cualquier comentario adicional o mejora futura para el lema "No te metas con Texas":

_____

_____

_____

_____

_____

Q31 Las últimas cinco preguntas son sobre el programa "Adopta una Carretera" del Departamento de Transporte de Texas (TxDOT). ¿Ha oído hablar del programa "Adopta una Carretera" en Texas?

Sí (1)

No (2)

No estoy seguro (3)

Display this question:

If The last five questions are about the TxDOT Adopt-a-Highway program. Have you heard of the Adopt-... = No

Or The last five questions are about the TxDOT Adopt-a-Highway program. Have you heard of the Adopt-... = I'm not sure

A continuación se muestra una breve introducción del programa Adopte una carretera de TxDOT: El programa "Adopta una Carretera" del Departamento de Transporte de Texas (TxDOT) es una iniciativa de voluntariado de larga trayectoria que invita a personas, empresas y grupos comunitarios a participar activamente en el mantenimiento de las carreteras de Texas limpias y atractivas. Al adoptar un tramo de tres kilómetros de una carretera estatal, los participantes se comprometen a recoger basura al menos cuatro veces al año, lo que contribuye a preservar la belleza natural de Texas y promueve el orgullo comunitario y la gestión ambiental. A cambio, TxDOT proporciona materiales de seguridad, apoya las labores de limpieza e instala una señal vial que reconoce la contribución de cada grupo a un Texas más limpio y seguro. Por favor, pase a la siguiente pregunta.

Q32 ¿Qué probabilidades hay de que usted se ofrezca como voluntario para el programa Adopte una Carretera o sea parte de una organización que patrocina una carretera y se ofrece como voluntario en grupo?

Muy probable (1)

Algo probable (2)

Ni probable ni improbable (3)

Algo improbable (4)

Muy improbable (5)

Q33 ¿Qué barreras encuentras para participar en el programa "Adopta una Carretera"? Selecciona todas las que correspondan.

Demasiado lento (1)

Mi estado de salud me impide participar (2)

Demasiado esfuerzo y trabajo (3)

La basura no es un gran problema en mi zona. (4)

No creo que haga una gran diferencia. (5)

Q34 ¿Crees que el programa Adopta una Carretera ayudó a reducir la basura en tu comunidad?

Sí (1)

No (2)

No estoy seguro (3)

Q35 En su opinión, ¿qué tan efectivo es el programa Adopta una Carretera?

Muy eficaz (1)

Algo efectivo (2)

Ni eficaz ni ineficaz (3)

Algo ineficaz (4)

Muy ineficaz (5)

Q36 Proporcione cualquier comentario adicional o mejoras futuras para el programa Adopte una Carretera:

_____

_____

_____

_____

_____

Q37 También nos gustaría analizar cómo el lema "No te metas con Texas" resuena entre las generaciones más jóvenes. ¿Tiene hijos menores de 18 años viviendo en su hogar que estén dispuestos a participar en una encuesta personalizada sobre el lema "No te metas con Texas" bajo su supervisión? Si es así, haga clic en el enlace de la página siguiente para acceder a una encuesta aparte.

Sí (1)

No (2)

Prefiero no responder (3)

Appendix C: Blank Youth Survey (English Version)

DMWT Survey for Youth under 18 (English Version)

This survey is being conducted by The University of Texas at Austin - Center for Transportation Research (UT-CTR) for the Texas Department of Transportation (TxDOT). We are very interested in your awareness about the "Don't mess with Texas" anti-litter campaign slogan and Adopt-a-Highway program, as well as your opinions about their effectiveness.

Your responses are anonymous and cannot be traced back to you, your email address or other personal information, or to the device you use to take the survey. **Your experiences and opinions are greatly appreciated. The survey is designated for youth under 18 only, who should complete the survey under adult supervision.**

The survey will take approximately **5 - 10 minutes** to complete; we do very much appreciate your time and patience. If you choose, you can complete part of the survey now, close it and reopen it later to complete the survey, though completion must be within 1 week.

If you have any questions or comments, please feel free to contact us at the following email address or telephone number. The CTR website is listed at the bottom of the page for your reference.

Thank you very much.

Zhe Han, Ph.D., P.E.
Research Engineer
Contact: (512) 232-2626 (English)

Michael Murphy, Ph.D., P.E.
Deputy Director
Contact: (512) 300-3875 (English)
Susanna Gallun, J.D.

Research Engineer/Scientist Assistant, Attorney
Contact: (512) 232-3143 (English and Spanish)
UT Center for Transportation Research (CTR) 3925 West Braker Lane Austin, Texas 78759

CTR Website: https://ctr.utexas.edu/

Q1 What is your age group?

Under 11 (1)

11 - 13 (2)

14 - 17 (3)

Q2 What is your gender?

Male (1)

Female (2)

Prefer not to answer (3)

Q3 What is your race?

American Indian or Alaska Native (1)

Asian (2)

Black or African American (3)

Native Hawaiian or other Pacific Islander (4)

White (5)

Prefer not to answer (6)

Q4 Are you of Hispanic or Latino origin?

Yes (1)

No (2)

Prefer not to answer (3)

Q5 Your current Texas residence location:

CITY (1) _____

COUNTY (2) _____

ZIP CODE (3) _____

Q6 Which grade are you in?

Preschool (1)

Elementary school (2)

Middle school (3)

High school (4)

Q7 Do you know what littering is?

Yes (1)

No (2)

I'm not sure (3)

Display this question:
If Do you know what littering is? = Yes

Q8 Who taught you about littering and not to litter?

Parents, grandparents, and/or other family members (1)

A friend (2)

Teachers at school (3)

Watch videos (7)

Community events and/or voluntary activities (4)

No one has taught me not to litter (5)

Others not listed: (6) _____

Display this question:
If Do you know what littering is? = No
Or Do you know what littering is? = I'm not sure

What is littering? Littering is the act of improperly disposing of waste in public places instead of using designated trash bins or recycling facilities. Please continue to next question.

Q9 Have you heard of the "Don't mess with Texas" slogan?

Yes (1)

No (2)

I'm not sure (3)

Display this question:

If Have you heard of the "Don't mess with Texas" slogan? = Yes

Q10 How frequently do you see or hear about the "Don't mess with Texas" slogan?

Frequently (1)

Occasionally (2)

Rarely (3)

Display this question:

If Have you heard of the "Don't mess with Texas" slogan? = Yes

Q11 How did you hear or learn about the "Don't mess with Texas" slogan? Please select all the apply

Events or school programs (1)

Relatives or friends (2)

TV or radio commercials (3)

Social media (e.g., Facebook, X, Instagram, etc.) (4)

Billboard along the highway (5)

Bumper sticker (6)

Hat, T-shirt, or other apparels (7)

Sew-on patch (8)

Souvenirs (9)

At Buc-ee's (10)

Others not listed. Please specify: (11)

_____

Q12 What do you think the "Don't mess with Texas" slogan means? Please select all the apply

Texans are tough - don't mess with us (1)

Texans are proud of their state (2)

Texans have a sense of community they stand together (3)

Don't litter (4)

I don't know (5)

Other meanings not listed. Please specify: (6) _____

Below is a brief introduction of the "Don't mess with Texas" slogan: “Don't mess with Texas" is the slogan for the Texas Department of Transportation's (TxDOT) anti-littering campaign, which was launched to the public in 1986 to combat a widespread problem of trash along the state's highways. The slogan, now a federal trademark phrase, has become a symbol of Texas pride and cultural identity. Its original and ongoing purpose is to encourage people not to litter. Please continue to the next question.

Display this question:

If Have you heard of the "Don't mess with Texas" slogan? = Yes

Q13 How do you think the "Don't mess with Texas" slogan has affected your behavior about littering?

Very effective. I make a conscious effort not to litter (1)

Somewhat effective. I think about it more (2)

Although I didn't litter before I heard the slogan, it re-emphasizes the importance of not littering (3)

No impact - I still litter (4)

Display this question:

If Have you heard of the "Don't mess with Texas" slogan? = No

Or Have you heard of the "Don't mess with Texas" slogan? = I'm not sure

Q14 How do you think the "Don't mess with Texas" slogan will affect your behavior about littering?

Very effective. I will make a conscious effort not to litter (1)

Somewhat effective. I will think about it more (2)

Although I didn't litter before I heard the slogan, it re-emphasizes the importance of not littering (3)

No impact - I will still litter (4)

Q15 Do you like and support the "Don't mess with Texas" slogan?

Yes. I like it very much (1)

Yes. I somewhat like it (2)

Neither like or dislike (3)

No. I somewhat dislike it (4)

No. I dislike it very much (5)

Q16 How often do you see people littering?

Frequent (1)

Sometimes (2)

Rarely (3)

Never (4)

Q17 What types of litter have you seen on Texas highways? Please select all that apply

Large litter (two inches and larger) (1)

Micro litter (smaller than two inches) (2)

Plastic waste (e.g., bottles, six-pack yokes, food containers, etc.) (3)

Paper and cardboard (4)

Glass (5)

Metal (6)

Cigarette butts (7)

Construction debris (e.g., old boards, dry wall, paper cement bags, etc.) (8)

Vehicle debris (e.g., tires, batteries, etc.) (9)

Household waste (10)

Other litter types not listed: (11) _____

18 Why do you think people litter along the highway? Please check all that apply

There's already litter on the highway. People just follow (1)

By accident (e.g., the wind blew the litter out of the car window) (2)

Only small litter (e.g., cigarette butts) - no one can see it (3)

Someone will pick up the litter - it's their job (4)

Paper and other certain types of litter will naturally decompose (5)

Couldn't find a litter barrel to place the litter in (6)

People just do not care about the environment (7)

Penalties for littering are too lenient (8)

It's not very likely to be caught littering (9)

Other reasons not listed: (10)

Q19 After seeing and learning the "Don't mess with Texas" slogan, how likely are you to confront someone at your age who litters?

Very likely (1)

Somewhat likely (2)

Neither likely nor unlikely (3)

Somewhat unlikely (4)

Very unlikely (5)

Q20 Do you think the "Don't mess with Texas" slogan helped reduce litter in your community?

Yes (1)

No (2)

I'm not sure (3)

Q21 In your opinion, how effective is the "Don't mess with Texas" slogan?

Very effective (1)

Somewhat effective (2)

Neither effective nor ineffective (3)

Somewhat ineffective (4)

Not effective at all (5)

Q22 What do you think would be effective in preventing people from littering? Please select all that apply

More school or community education programs (1)

More trash and recycle bins in public areas (2)

Fines or penalties for littering (3)

More public awareness campaigns/slogans (4)

More volunteering clean-up events and activities (5)

Others not listed: (6) _____

Q23 Would you like to see the "Don't mess with Texas" slogan continue?

Yes (1)

No (2)

I'm not sure (3)

Q24 Would you like to see the "Don't mess with Texas" slogan expand?

Yes (1)

No (2)

I'm not sure (3)

Q25 Please provide any comments or future improvements for the "Don't mess with Texas" slogan:

_____

_____

_____

_____

_____

Appendix D: Blank Youth Survey (Spanish Version)

DMWT Survey for Youth under 18 (Spanish Version)

Esta encuesta es realizada por el Centro de Investigación del Transporte de la Universidad de Texas en Austin (UT-CTR), en colaboración con el Departamento de Transporte de Texas (TxDOT). Nos gustaría saber cuánto conoce sobre el lema de la campaña contra la basura “No te metas con Texas” y sobre el programa “Adopta una Carretera”, así como su opinión sobre qué tan eficaces son.

Sus respuestas son completamente anónimas. No se asociarán con su nombre, correo electrónico, información personal, ni con el dispositivo que use para contestar. Agradecemos sinceramente sus experiencias y opiniones. **Esta encuesta está dirigida únicamente a jóvenes menores de 18 años y debe completarse bajo la supervisión de un adulto.**

Contestar la encuesta tomará entre **5 y 10 minutos. Le agradecemos mucho su tiempo y paciencia.** Si lo desea, puede comenzar ahora, cerrar la encuesta y regresar más tarde para terminarla; solo recuerde completarla dentro de una semana.

Si tiene alguna pregunta o comentario, no dude en contactarnos por correo electrónico o por teléfono. Al final de la página también encontrará el sitio web del CTR como referencia.

Muchas gracias por su participación.

Dr. Zhe Han, doctor en filosofía, ingeniero profesional
Ingeniero de investigación
Contacto: (512) 232-2626 (Inglés)

Dr. Michael Murphy, doctor en filosofía, ingeniero profesional
Subdirector
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Asistente de ingeniero/científico de investigación, abogado
Contacto: (512) 232-3143 (inglés y español)
Centro de Investigación del Transporte de la Universidad de Texas (CTR) 3925 West Braker Lane Austin, Texas 78759

Sitio web de CTR: https://ctr.utexas.edu/

Q1 ¿Cuál es tu grupo de edad?

menores de 11 años (1)

11 - 13 (2)

14 - 17 (3)

Q2 ¿Cuál es tu género?

Masculino (1)

Femenino (2)

Prefiero no responder (3)

Q3 ¿Cuál es tu raza?

Indígena americano/a o nativo/a de Alaska (1)

Asiático/a (2)

Negro/a o afroamericano/a (3)

Nativo/a de Hawái u otra isla del Pacífico (4)

Blanco/a (5)

Prefiero no responder (6)

Q4 ¿Eres de origen hispano o latino?

Sí (1)

No (2)

Prefiero no responder (3)

Q5 Su lugar de residencia en Texas:

CIUDAD (1) _____

CONDADO (2) _____

CÓDIGO POSTAL (3)

_____

Q6 ¿En qué grado estás?

Preescolar (1)

Escuela primaria (2)

Escuela secundaria/ Middle school (3)

Escuela Preparatoria/ High school (4)

Q7 ¿Sabes lo que es tirar basura?

Sí (1)

No (2)

No estoy seguro (3)

Display this question:

If Do you know what littering is? = Yes

Q8 ¿Quién te enseñó a tirar basura y a no tirarla?

Padres, abuelos y/u otros miembros de la familia (1)

Un amigo (2)

Profesores en la escuela (3)

Ver vídeos (7)

Eventos comunitarios y/o actividades voluntarias (4)

Nadie me ha enseñado a no tirar basura. (5)

Otros no listados: (6) _____

Display this question:

If Do you know what littering is? = No

Or Do you know what littering is? = I'm not sure

¿Qué es tirar basura? Tirar basura es el acto de dejar o desechar basura en lugares públicos de forma inadecuada, en vez de usar los botes de basura o las instalaciones de reciclaje designadas. Por favor, pase a la siguiente pregunta.

Q9 ¿Has oído el lema "No te metas con Texas"?

Sí (1)

No (2)

No estoy seguro (3)

Display this question:

If Have you heard of the "Don't mess with Texas" slogan? = Yes

Q10 ¿Con qué frecuencia ves o escuchas el lema "No te metas con Texas"?

Frecuentemente (1)

Ocasionalmente (2)

Casi nunca (3)

Display this question:

If Have you heard of the "Don't mess with Texas" slogan? = Yes

Q11 ¿Cómo se enteró del lema "No te metas con Texas"? Seleccione todas las opciones que correspondan.

Eventos o programas escolares (1)

Familiares o amigos (2)

anuncios de televisión o radio (3)

Redes sociales (por ejemplo, Facebook, X, Instagram, etc.) (4)

Cartelera a lo largo de la carretera (5)

Calcomanía / pegatina (6)

Ropa (gorras, camisetas, etc.) (7)

Parche para coser (8)

Recuerdos (9)

En Buc-ee's (10)

Otros no listados. Por favor, especifique: (11)

_____

Q12 ¿Qué crees que significa el lema "No te metas con Texas"? Selecciona todas las opciones que correspondan.

Los tejanos somos duros, no te metas con nosotros (1)

Los tejanos están orgullosos de su estado (2)

Los tejanos tienen un sentido de comunidad: se mantienen unidos. (3)

No tires basura (4)

No sé (5)

Otros significados no mencionados. Por favor, especifique: (6)

_____

A continuación se presenta una breve introducción al lema "No te metas con Texas": «¡No te metas con Texas!» es el lema de la campaña contra la basura del Departamento de Transporte de Texas (TxDOT), lanzada en 1986 para combatir el problema generalizado de la basura en las carreteras del estado. El lema, ahora una marca registrada federal, se ha convertido en un símbolo del orgullo y la identidad cultural de Texas. Su propósito original y vigente es fomentar que la gente no tire basura. Por favor, continúe con la siguiente pregunta.

Display this question:

If Have you heard of the "Don't mess with Texas" slogan? = Yes

Q13 ¿Cómo crees que el lema “No te metas con Texas” ha afectado tu comportamiento respecto a tirar basura?

Muy efectivo. Hago un esfuerzo consciente para no tirar basura. (1)

Algo efectivo. Lo pienso más. (2)

Aunque no tiraba basura antes de escuchar el eslogan, este vuelve a enfatizar la importancia de no tirar basura. (3)

Sin impacto - Sigo tirando basura (4)

Display this question:

If Have you heard of the "Don't mess with Texas" slogan? = No

Or Have you heard of the "Don't mess with Texas" slogan? = I'm not sure

Q14 ¿Cómo crees que el lema “No te metas con Texas” afectará tu comportamiento respecto a tirar basura?

Muy efectivo. Haré un esfuerzo consciente para no tirar basura. (1)

Algo efectivo. Lo pensaré más. (2)

Aunque no tiraba basura antes de escuchar el eslogan, este vuelve a enfatizar la importancia de no tirar basura. (3)

Sin impacto - Seguiré tirando basura (4)

Q15 ¿Te gusta y apoyas el lema “No te metas con Texas”?

Sí, me gusta mucho. (1)

Sí. Me gusta un poco. (2)

Ni me gusta ni me molesta (3)

No, me gusta mucho. (4)

No, me gusta mucho. (5)

Q16 ¿Con qué frecuencia ves gente tirando basura?

Frecuente (1)

A veces (2)

Casi nunca (3)

Nunca (4)

Q17 ¿Qué tipos de basura ha visto en las carreteras de Texas? Seleccione todas las opciones que correspondan.

Basura grande (de dos pulgadas o más) (1)

Basura pequeña (microbasura, menor de dos pulgadas) (2)

Residuos plásticos (por ejemplo, botellas, latas de six-pack, envases de alimentos, etc.) (3)

Papel y cartón (4)

Vidrio (5)

Metal (6)

Colillas de cigarros (7)

Escombros de construcción (por ejemplo, tablas viejas, paneles de yeso, bolsas de papel y cemento, etc.) (8)

Residuos del vehículo (por ejemplo, neumáticos, baterías, etc.) (9)

Residuos domésticos (10)

Otros tipos de arena no enumerados: (11)
_____

Q18 ¿Por qué crees que la gente tira basura en la carretera? Marca todas las opciones que correspondan.

Ya hay basura en la carretera. La gente simplemente la sigue. (1)

Por accidente (por ejemplo, el viento arrojó la basura por la ventanilla del coche) (2)

Solo basura pequeña (por ejemplo, colillas de cigarrillos): nadie puede verla (3)

Alguien recogerá la basura: es su trabajo. (4)

El papel y otros tipos de basura se descompondrán naturalmente. (5)

No pude encontrar un bote de basura para colocar la arena. (6)

A la gente simplemente no le importa el medio ambiente. (7)

Las sanciones por tirar basura son demasiado leves (8)

No es muy probable que te pillen tirando basura. (9)

Otras razones no enumeradas: (10)

_____

Q19 Después de ver y aprender el lema "No te metas con Texas", ¿qué probabilidades hay de que te enfrentes a alguien de tu edad que tira basura?

Muy probable (1)

Algo probable (2)

Ni probable ni improbable (3)

Algo improbable (4)

Muy improbable (5)

Q20 ¿Crees que el lema “No te metas con Texas” ayudó a reducir la basura en tu comunidad?

Sí (1)

No (2)

No estoy seguro (3)

Q21 En tu opinión, ¿qué tan efectivo es el lema “No te metas con Texas”?

Muy eficaz (1)

Algo efectivo (2)

Ni eficaz ni ineficaz (3)

Algo ineficaz (4)

No es efectivo en absoluto (5)

Q22 ¿Qué crees que sería eficaz para evitar que la gente tire basura? Selecciona todas las opciones que correspondan.

Más programas educativos escolares o comunitarios (1)

Más contenedores de basura y reciclaje en áreas públicas (2)

Multas o sanciones por tirar basura (3)

Más campañas/lemas de concienciación pública (4)

Más eventos y actividades de limpieza voluntaria (5)

Otros no listados: (6) _____

Q23 ¿Te gustaría que el lema "No te metas con Texas" continúe?

Sí (1)

No (2)

No estoy seguro (3)

Q24 ¿Te gustaría ver el lema "No te metas con Texas" ampliado?

Sí (1)

No (2)

No estoy seguro (3)

Q25 Por favor, proporcione cualquier comentario o mejora futura para el lema "No te metas con Texas":

_____

_____

_____

_____

_____