GEORGIA DOT RESEARCH PROJECT 18-11

Final Report

PHASE III: TRANSPORTATION INVESTMENT ACT—BENCHMARK ASSESSMENT AND BENEFIT–COST ANALYSIS, 2013–2018

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16. Abstract:

The Transportation Investment Act (TIA) is a voter initiative in Georgia that adds 1 percent to local sales taxes over 10 years. Of additional revenue, 75 percent is devoted to approved transportation investment projects, and 25 percent is returned to local jurisdictions to spend on any transportation projects they choose. The taxing authority lasts 10 years. Three regions approved TIA in 2012: Central Savannah River Area (CSRA), Heart of Georgia Altamaha (HOGA), and River Valley. Southern Georgia (Southern) approved TIA in 2018. This research evaluates the impact of TIA. The main results are based on a survey of stakeholders and households in four TIA regions, and one comparison non-TIA region. Personal interviews of stakeholders supplemented the study. The results are compared to those of the 2018 survey (278 and 273 respondents were in 2020 and 2018, respectively). Respondents represented 72 of the 75 counties in the five regions surveyed. In 2020, about one-half of the respondents were women, and racial diversity was more representative of Georgia than in 2018. More importantly, the 2020 survey responses included a much more significant percentage of ordinary households as compared to previous surveys, which mainly reflected engaged stakeholders. The broader response allowed a better gauge of community sentiment.

TIA regions have a very favorable view of the program. Survey results indicate they would vote positively to approve it again. GDOT has implemented TIA very effectively and communicated well with local areas. Overall, the program has met voter expectations. The most important new finding is that TIA's favorability rating declined in the 2020 survey in comparison to 2018. The lower favorability was an outcome of the research team intentionally including more household respondents and fewer stakeholders. Stakeholders are elected officials; county, city, and local jurisdiction managers; governmental employees; and persons with some oversight management of TIA. Householders are all other individuals. Stakeholders have more knowledge and a more definite preference for TIA. Householders have much less understanding of TIA and are therefore, less favorable than stakeholders are.

The three most important expectations of TIA are: improving local roads and bridges, providing discretionary funds to local areas, and creating more jobs and faster economic growth. When asked to assess the way GDOT has implemented TIA, the percentages stating *excellent* or *good* by region were as follows in 2018 and 2020, respectively: CSRA 84.5 and 72.0 percent; HOGA 91.9 and 82.2 percent; River Valley, 85.3 and 63.8 percent; and Southern 51.8 percent in 2020. Southern was not a TIA Region in the first quarter 2018. In 2018, the percentages of respondents who felt their region's participation in TIA a was a good thing were CSRA (93.3 percent), HOGA (91.7 percent), River Valley (92.7 percent). In 2020, the percentages were CSRA (82.0 percent); HOGA (91.8 percent); River Valley (79.3 percent); and Southern (73.5 percent).

Statistical analysis found that differences in age, gender, race, education, and length of residency in Georgia did not significantly influence the likelihood of voting *yes* on TIA. What mattered most was whether the person was a government employee or stakeholder (because they were more likely to vote *yes*), and the importance an individual put on having more funding for local transportation projects. Residents who perceived this as very important were more likely to vote *yes*. Voters in regions with an existing transportation special purpose local option sales tax (TSPLOST) were less likely to approve TIA. The need to provide more information about TIA and its benefits to local households is the most important recommendation of the study. The overwhelming reason why residents voted *yes* on TIA is that it provides more funding for local roads and bridges (68 percent), which would not be available otherwise. GDOT must communicate more with stakeholders and households regarding how TIA has delivered this outcome.

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GDOT Research Project No. 18-11

Final Report

PHASE III: TRANSPORTATION INVESTMENT ACT – BENCHMARK ASSESSMENT AND BENEFIT-COST ANALYSIS, 2013-2018

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

EXECUTIVE SUMMARY

Background

In 2012, all 12 Georgia Commission Regions voted on the Transportation Investment Act (TIA). TIA added 1 percent to local sales taxes over ten years to fund approved investment projects for the region. From this additional tax revenue, 25 percent goes to local jurisdictions (i.e., local discretionary funds). A local area may use the discretionary funds on any transportation-related projects it chooses. Initially, three regions of Georgia approved the referendum: Central Savannah River Area (CSRA), Heart of Georgia Altamaha (HOGA), and River Valley. In 2018, Southern Georgia (Southern) also approved it. The tax authority for the CSRA, HOGA, and River Valley runs through 2022. Authorization for Southern is through 2028. Total additional taxes will generate $1.9 billion and deliver 1,022 voter-approved transportation projects.

Methodology

This research evaluates the impact of TIA on residents in four Georgia regions that approved the TIA referendum. The research team conducted a random survey of stakeholders and households in the four TIA regions, and one comparison (non-TIA) region to derive the main results. Personal interviews of stakeholders supplemented the random survey. The 2020 survey results were compared to those of 2018. There were 278 respondents and 273 respondents, respectively, in the 2020 and 2018 surveys. Some specific questions the research answered are as follows:

1. What are stakeholders' perceptions of TIA, and has the program lived up to voter expectations?
2. Has GDOT implemented the program effectively and communicated well with local stakeholders?
3. How vital are the local discretionary funds as a component of TIA?
4. If voters in the TIA regions had the opportunity to hold a new referendum, would it be approved?
5. What factors are most important in voters' decision to approve of TIA?

6. What are the socioeconomic characteristics of the TIA regions, and how have they changed over time?
7. What are stakeholders' perceptions of TIA (stakeholders include State Transportation Board members, local mayors, county managers, and state elected officials)?
8. What is the method by which one might conduct a benefit-cost analysis (BCA) of TIA (i.e., determine whether the financial and non-financial benefits of TIA exceed its costs)?

Survey respondents represented 72 of the 75 counties in the five regions surveyed. In 2020, about one-half of the respondents were women, and racial diversity was more representative of Georgia than was the case in the 2018 survey. More importantly, the 2020 survey responses included a much more significant percentage of ordinary households as compared to previous studies. The broader response allowed a better gauge of community sentiment.

Major Findings

Residents and stakeholders who live in TIA regions have a very favorable view of the program. Survey results indicate they would vote positively to approve it again. They feel that GDOT has implemented TIA very effectively and communicated well with local areas. Overall, the program has met voter expectations. The most important new finding is that TIA's favorability rating declined in the 2020 survey in comparison to 2018. The lower favorability was because of the research team's goal to include more household respondents and fewer stakeholders, which makes it more reflective of the general population. Stakeholders are elected officials; county, city, and local jurisdiction managers; governmental employees; and persons with some oversight management of TIA. Householders are all other individuals. Stakeholders have more knowledge about TIA and therefore have a more definite preference for the program. Householders have much less understanding of TIA than do stakeholders, which affects their perception of the program. The three most critical expected outcomes of TIA are: improving local roads and bridges, providing discretionary funds to regional areas, and creating more jobs and faster economic growth. When asked to assess the way GDOT has implemented TIA, the percentages stating excellent or good by region were as follows in 2018 and 2020, respectively: CSRA 84.5 and 72.0 percent; HOGA 91.9 and 82.2 percent; River Valley, 85.3 and 63.8 percent; and Southern

51.8 percent in 2020. Southern was not a TIA Region in the first quarter of 2018. In 2018, the percentages of respondents who felt their region's participation in TIA was a good thing were CSRA (93.3 percent), HOGA (91.7 percent), River Valley (92.7 percent). In 2020, the percentages were CSRA (82.0 percent), HOGA (91.8 percent), River Valley (79.3 percent), and Southern (73.5 percent).

Statistical analysis (i.e., logistic regression) was used to evaluate whether residents' perceptions of TIA were influenced by differences in age, gender, race, education, and length of residency in Georgia. Results indicated those factors had no statistically significant influence on the likelihood of voting yes on a TIA referendum. What mattered most was whether the person was a government employee – because the latter was more likely to vote yes on a TIA referendum than was a stakeholder or householder. The importance that an individual put on having more funding for local transportation projects also mattered. Residents who perceived more local funding as very important were more likely to vote yes. In contrast, voters in regions with an existing transportation special purpose local option sales tax (TSPLOST) were less likely to approve TIA.

Recommendation

To improve the likelihood that residents support future TIA referenda, GDOT must provide more information to local households about the accomplishments of the program. The main reason residents voted yes on TIA is because it allows for discretionary funding for local roads and bridges and other discretionary transportation projects that would not be funded absent TIA. The program has delivered on this expected outcome. Stakeholders and government employees know this, but households are not as aware.

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INTRODUCTION

In 2012, all 12 Georgia Commission Regions voted on the Transportation Investment Act (TIA). TIA added 1 percent to local sales taxes over 10 years to fund approved investment projects for the region. From this additional tax revenue, 25 percent is given to local jurisdictions (i.e., local discretionary funds). A local area may use the discretionary funds on any transportation-related projects it chooses.

Initially, three regions of Georgia approved the referendum: Central Savannah River Area (CSRA), Heart of Georgia Altamaha (HOGA), and River Valley. In 2018, Southern Georgia (Southern) and Middle Georgia (Middle) held a new referendum on TIA, and Southern approved it, but Middle did not.

The tax authority for the CSRA, HOGA, and River Valley runs through 2022. Authorization for Southern is through 2028. In total, the additional taxes will generate $1.9 billion for transportation expenditures that would not have been available otherwise.[1]

Before the voting on TIA, a regional roundtable was organized from a cross section of key stakeholders of each region. The roundtables identified transportation projects to include on the approved investment list. In 2018, when Southern joined the original three regions, the approved lists contained 1,022 transportation projects valued at $1.58 billion. The Georgia Department of Transportation (GDOT) is responsible for delivering the approved TIA projects. Typically, the plans include road resurfacing and paving, bridge repair and construction, safety operations improvements, widening passing lanes, improving interchanges, airport improvements, and constructing sidewalks and bike paths.

Perhaps the most unique feature of TIA is the 25 percent local discretionary fund. This portion of the regions' projected tax revenues is returned to local governments. The governments are free to spend the proceeds on any transportation-related projects of their choosing, including

[1] The $1.9 billion reflects real (i.e., inflation adjusted) dollars that are indexed to a base year of 2011.

roadway improvements, road and equipment maintenance, sidewalks, parks, green space, and other local enhancements.

Purpose

This research evaluates the impact of TIA on local stakeholders and beneficiaries. This study offers the third report of a multi-phased series. It examines TIA-related activity to date and focuses primarily on impacts that occurred through 2018 when the TIA program reached the midway point for revenue collection and project delivery.

Some specific questions the research answers are as follows:

9. What are stakeholders' perceptions of TIA, and has the program lived up to voter expectations?
10. Has GDOT implemented the program effectively and communicated well with local stakeholders?
11. How vital are the local discretionary funds as a component of TIA?
12. If voters in the TIA regions had the opportunity to hold a new referendum, would it be approved?
13. What factors are most important in voters' decision to approve of TIA?
14. What are the socioeconomic characteristics of the TIA regions, and how have they changed over time?
15. What are stakeholders' perceptions of TIA, that is, State Transportation Board members, local mayors, county managers, and state elected officials?
16. What is the method by which one might conduct a benefit–cost analysis (BCA) of TIA (i.e., determine whether the financial and non-financial benefits of TIA exceed its costs)?

This research provides answers to those questions.

GDOT selected a team of Georgia Institute of Technology (Georgia Tech) faculty and graduate students to conduct the research. The team includes an economist, city and regional planner, and transportation planners.

Current and Planned Status of TIA

TIA will deliver 1,022 regional transportation projects when the program is fully funded and executed (see table 1). CSRA will receive a total value of $713.0 million in approved investments and discretionary funds. The approved list has 84 projects, of which 52 (or 61.9 percent) were completed by the first quarter of 2020. An additional 12 projects are in construction. Projects in development and completed projects make up 76.2 percent of the approved investment list for CSRA. Total CSRA revenue collections to-date of $490.2 million is 68.8 percent of the program planned amount. The following counties make up CSRA (see table 1 and figure 1).

> **Central Savannah River Area**: Burke, Columbia, Glascock, Hancock, Jefferson, Jenkins, Lincoln, McDuffie, Richmond, Taliaferro, Warren, Washington, and Wilkes

River Valley will receive a total value of $410.8 million in approved investments and discretionary funds. The region's approved list contains 23 projects, of which 12 (or 52.2 percent) were delivered by the end of the 1st Quarter 2020. Four projects are in construction; when added to those completed, they compose 69.6 percent of the planned total. River Valley revenue collections as of the first quarter 2020 total $338.6 million, or 82.4 percent of the program expected amount. The following counties make up River Valley (see table 1 and figure 1).

> **River Valley**: Chattahoochee, Clay, Crisp, Dooly, Harris, Macon, Marion, Muscogee, Quitman, Randolph, Schley, Stewart, Sumter, Talbot, Taylor, and Webster

HOGA will receive a total value of $366.6 million in approved investments and discretionary funds. The approved list has 764 projects, of which 494 have been delivered (or 64.7 percent). Sixty-seven (67) projects are currently in development. Those in progress and completed

projects compose 73.4 percent of the total approved investments. Revenue collections to-date of $217.1 million is 59.2 percent of the program planned amount. The following counties make up HOGA (see table 1 and figure 1).

> **Heart of Georgia Altamaha**: Appling, Bleckley, Candler, Dodge, Emanuel, Evans, Jeff Davis, Johnson, Laurens, Montgomery, Tattnall, Telfair, Toombs, Treutlen, Wayne, Wheeler, and Wilcox

Southern is the newest region to join the TIA program. Voters approved the referendum in May 2018. The region will receive a total value of $408.8 million in approved investments and local discretionary funds. The region's approved list contains 151 projects, of which 10 are completed (or 6.6 percent). There are 18 projects in construction, and along with those completed they compose 18.5 percent of the planned total. Revenue collections of $10.6 million represent 2.6 percent of the program's expected amount. The following counties make up the Southern region (see table 1 and figure 1).

> **Southern Georgia**: Atkinson, Bacon, Ben Hill, Berrien, Brantley, Brooks, Charlton, Clinch, Coffee, Cook, Echols, Irwin, Lanier, Lowndes, Pierce, Tift, Turner, and Ware

Finally, the report identified a non-TIA region for comparison. The non-TIA region helps the evaluation by approximating what might have happened in the TIA regions if the referendum had not been approved. When conducting impact evaluation research, comparisons allow one to determine the "do nothing scenario," sometimes referred to as the "control group." After evaluating several alternative regions, Middle Georgia was selected as the comparison region. Regions evaluated but not selected included Southwest Georgia, Three Rivers, and Northeast Georgia. The final selection was made in consultation with the State TIA Administrator and the factors considered included differences in regional economic, social, demographic, and geographic characteristics. Additionally, some regions, such as Southeast, had existing TSPLOSTs, which would have made comparisons to TIA more complicated. The following counties make up Middle Georgia (see figure 1).

Middle Georgia: Baldwin, Bibb, Crawford, Houston, Jones, Monroe, Peach, Pulaski, Putnam, Twiggs, and Wilkinson

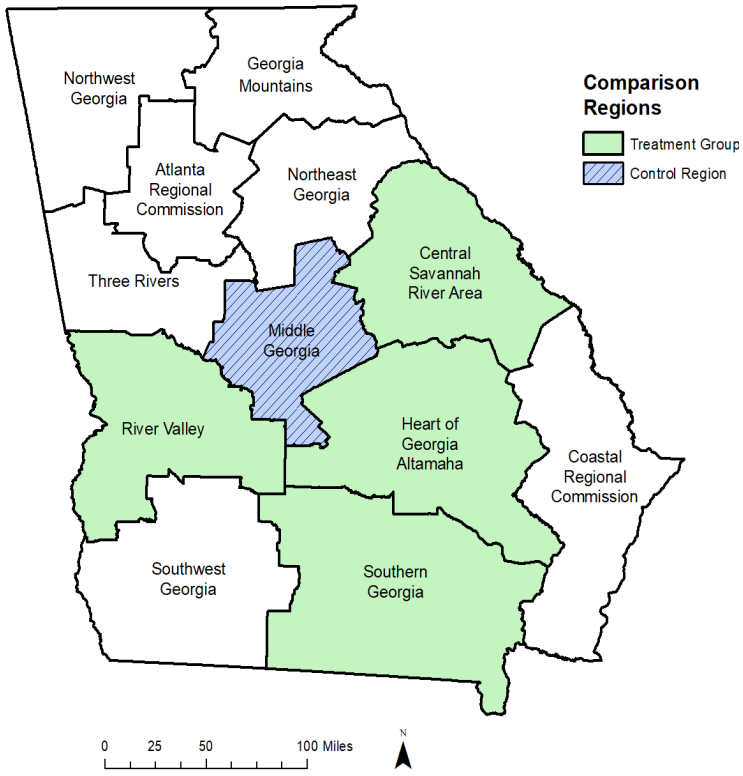

Figure 1. Illustration of the TIA regions and comparison region.

Table 1. TIA revenue collection and project delivery through 1st quarter 2020.

	REGION	CSRA	RIVER VALLEY	HOGA	SUBTOTAL	*SOUTHERN	GRAND TOTAL
A	Planned Expenditures or Revenues	$ 713.0	$ 410.8	$ 366.6	$ 1,490.4	$ 408.8	$ 1,899.2
B	Revenue Collected to Date	$ 490.2	$ 338.6	$ 217.1	$ 1,045.9	$ 10.60	$ 1,056.5
C	Planned Projects	84	23	764	871	151	1,022
D	Projects Delivered	52	12	494	558	10	568
E	Projects in Construction	12	4	67	83	18	101
F	% Revenue Collected (B/A)	68.8%	82.4%	59.2%	70.2%	2.6%	55.6%
G	% Projects Delivered (D/C)	61.9%	52.2%	64.7%	64.1%	6.6%	55.6%
H	% Delivered & in Construction (D+E)/C	76.2%	69.6%	73.4%	73.6%	18.5%	65.5%

*The Southern region joined the TIA program in the summer of 2018.
Source: http://www.ga-tia.com/ (accessed May 5, 2020).

TIA LITERATURE REVIEW

Transportation projects in Georgia and throughout the United States have been funded traditionally through motor-fuel taxes. However, fuel efficiency has increased significantly over the last few decades, which caused revenue from this source to decline (The Pew Charitable Trusts, 2015). As a result, local governments have increasingly turned to alternative funding mechanisms, such as sales taxes, property taxes, bonds, and other financing vehicles (Crabbe, Hiatt, Poliwka, & Org, 2002). These funding schemes usually require voter approval via ballot measures.

In Georgia, the history of voter-approved transportation financing began with the passage of the Local Options Sales Tax (LOST) enacted in 1975. It allowed counties to issue a 1 percent general-purpose sales tax to support operational expenditures and capital projects. The legislation was followed by a Special Purpose Local Option Sales Tax (SPLOST) in 1985. It provided a 1 percent sales tax that could be levied by any county for funding capital outlay projects. The revenue could be used by counties or qualified municipal governments to fund capital outlays for roads, streets, bridges, drainage, jails, courthouses, or other public facilities. SPLOST differs from LOST in that the latter is used to support operations and capital projects. Finally, Educational Special Purpose Local Options Sales Tax (ESPLOST) is used for educational-related capital projects (Ross, Woo, & Boston, 2011).

The SPLOST is levied at the county level, which means it is often challenging to address regional transportation needs. Because of these limitations, the Georgia General Assembly passed legislation in 2010. It allowed counties to establish 12 special tax districts throughout the state and create regional transportation SPLOSTs (TSPLOSTs). The tax district boundaries were based on existing regional commission boundaries, which included all 159 counties in the state (Ross, Woo, & Boston, 2011). This action paved the way for the 2012 TIA referendum.

The TIA referendum involved every county of the state, each organized into one of 12 regions. Each region created a select group of stakeholders that identified a list of approved investment projects to be implemented within the area. Additionally, 25 percent of the tax revenues are

disbursed to local governments to be used at their discretion to fund transportation projects of their choosing. In 2012, three regions approved TIA: CSRA, HOGA, and River Valley. The other nine regions voted against it. GDOT estimated that $1.5 billion in new revenue would be generated over the 10 years. Seventy-five percent of the revenue would go toward funding the construction of 871 projects on approved lists, while the remaining 25 percent would go to local jurisdictions (Georgia Department of Transportation, 2018). In 2018, a new TIA referendum was held in the Southern Georgia and Middle Georgia regions. Southern Georgia approved TIA. The additional region brought TIA expected tax revenue to $1.9 billion, and the approved list of projects to 1,022.

Some Regions Approved TIA, Others Did Not

Four of the 12 Georgia regions approved TIA. Why did the remaining eight regions reject it? Alternately, why did the four regions support it? This is a topic of continuing debate. Across the state, there is a reasonably strong anti-tax sentiment. As a result, the passage of the referendum in four regions is significant. Does it reflect a strong desire for local and regional transportation projects? Or, did other less apparent reasons factor into the decision?

TIA survey research conducted by Georgia Tech over six years established that residents strongly approve of TIA. For example, this report found that the percentages of residents in each region who would vote again to approve TIA if they had the opportunity is as follows: CSRA 74.0 percent, HOGA, 97.3 percent; River Valley, 89.8 percent; and Southern, 80.6 percent (see table 35. The percentages for the survey conducted in 2018 are similar. Additionally, the *Atlanta Journal-Constitution* confirmed that residents in regions where TIA passed are mostly satisfied with the program because it has raised significant funds and allowed increased local control over dollars (Bowling, 2016).

The debate continues over why other regions of the state defeated the TIA referendum while those four approved it. Insight into this debate can be gained by examining Southern Georgia more closely. In 2012, the region defeated the referendum, while in 2018, a new TIA referendum was approved in the region.

A small but growing body of literature is exploring the case of the Atlanta region. Specifically, why was the referendum rejected by voters, given the strong consensus that transportation issues in the region are severe? The referendum was rejected by 63 percent of voters, despite a combined $8.5 million campaign to generate support for the measure (Paget-Seekins, 2013).

Opposition to the referendum in Atlanta came from groups across the political spectrum. Strong opposition came from members of the Tea Party and property rights activists who oppose increased taxes and politics of regionalism. The opposition also emerged from environmentalists such as the Sierra Club, whose members rejected the referendum on the grounds that it did not provide enough funding for transit. The organization argued the approved investments of road projects would have adverse environmental consequences. In addition, the National Association for the Advancement of Colored People (NAACP) rejected the referendum on the basis of equity, arguing that the proposed projects did not adequately serve the needs of low-income and minority populations (Paget-Seekins, 2013).

The differing interests coalesced to form a strong oppositional force. The Sierra Club developed a critique of the sales tax and submitted an alternative plan called Plan B. That club later worked with the Tea Party to issue a joint statement opposing the tax and supporting Plan B. The NAACP loosely joined the opposition group. The result was an "unanticipated tactical coalition of strange bedfellows" (Trapenberg Frick, 2013). The pro-TIA sentiment had scant funding in comparison to the $8 million campaign of opposition. This high-profile and controversial coalition aided the demise of the referendum.

Paget-Seekins argues the coalition-building and failure of the referendum can be explained by the competing discourses that framed the transportation issues in Atlanta—congestion, choice, and equity. While everyone generally agrees that a transportation problem exists, there were competing definitions and solutions to the problem. "No single discourse was dominant enough to control the process, and the result was a referendum that did not satisfy any single group entirely" (Paget-Seekins, 2013). She argues that in order for a future campaign to be successful, the design and messaging of the campaign must be carefully considered. Discourse analysis is

proposed as a tool for understanding competing narratives on transportation problems and solutions. In addition, one must create narratives with a broader appeal (Paget-Seekins, 2013).

In addition to making TIA referenda campaigns more consistent and cohesive, some proponents argue the design of the referendum must be reconsidered. Specifically, broad, all-encompassing referenda may be less successful than ones that specify particular types of transportation projects (e.g., transit versus road-work). How the referendum is structured must be carefully considered to ensure majority support. However, this must be balanced against the need to address a diverse set of transportation needs. This balance will continue to be a challenge for planners and decision-makers who increasingly depend on transportation funding through ballot initiatives.

Tax-related referenda are gaining in popularity, especially for supporting transit initiatives. A review of such ballot measures by the Center for Transportation Excellence (CFTE) indicates that in 2016, voters nationwide considered nearly $200 billion in local investment for public transportation initiatives. The average success rate for transit measures between 2000 and 2016 was 71 percent (Center for Transportation Excellence, 2016). In 2017, the success rate for transit measures was 88 percent (Center for Transportation Excellence, 2018). As transportation dollars become increasingly scarce, local governments continue to turn to ballot initiatives to fund projects.

The Benefits and Challenges of Ballot-box Planning

Referenda like TIA are appealing for many reasons: they provide a much-needed source of funding for transportation projects, they are project-specific, they allow local control over dollars, and they are responsive to pressing needs. However, such referenda also move "transportation problems out of the technical planning process and into the sphere of public opinion" (Paget-Seekins, 2013). A review of the literature suggests that several challenges may arise in this regard.

A study by Fang and Thigpen examined 148 local transportation-related ballot measures in California between 1995 and 2005 (Fang & Thigpen, 2017). The study analyzed the extent to which the actions supported or restricted alternative-car measures, otherwise referred to as contemporary planning strategies. Their study found "numerous examples of voters constraining the options of transportation planners by restricting or even prohibiting contemporary planning strategies" (Fang & Thigpen, 2017). For example, the authors found that voters revolted against tools such as high-occupancy toll lanes, transit-only lanes, targeted priced parking, red light cameras, roundabouts, and traffic-calming measures. The argument was that the policies slowed car traffic and made driving more expensive, or they reduced infrastructure for vehicles.

Given the tendency to reject contemporary planning strategies, Fang and Thigpen agree with the other authors who argue that ballot box planning can have unintended adverse consequences on the planning field. For example, some have argued that "planning issues are too complex for citizens to have sufficient time or contextual knowledge to make good decisions." Goldman maintains that "ballot box planning represents a shift away from expertise-led planning toward general public opinion and, more cynically, the special interests that have been organized to mold public opinion." Cain and Miller argue, "the winner-take-all nature of ballot measures misses opportunities for refinement of proposals, consensus building, and compromise that occur when decision-makers deliberate." Schrag explained the "majority-rules nature of ballot measures could be problematic for minority interests." (Fang & Thigpen, 2017).

The concerns of these authors are reflected somewhat in the failure of the referendum in the Atlanta region in 2012. Specifically, the coalition-building capacity of the Tea Party is an example of special interests' ability to mold public opinion. Frick argues that planners and decision-makers in the region must be more attuned to the messaging of these opposition groups, especially given their potential to "catalyze new coalitions of opponents if planners do not attend to the substantive and procedural concerns of participants" (Trapenberg Frick, 2013). His study compares the actions in San Francisco and Atlanta. Recommendations include

incorporating property rights impact statements in the plans, being more explicit about how public involvement shapes policies, and continuing to research alternative civic engagement processes through using social media and internet-based communication (Trapenberg Frick, 2013).

In conclusion, funding for transportation from traditional sources is decreasing. Therefore, local jurisdictions are increasingly looking to ballot box initiatives focused on raising sales taxes to fund transportation projects. In Georgia, regional tax initiatives were voted on for the first time with the TIA referendum in 2012. The referendum was adopted in three regions but rejected in the remaining nine regions. In 2018, one additional region approved TIA.

Different theories have emerged to explain why ballot box referenda passed or failed. The dynamics of ballot box planning raise questions about how to manage competing discourses and unexpected coalitions. In preparing for future polls, planners and decision-makers must understand and plan for these dynamics better. At the same time, it may be essential to consider that unanticipated adverse consequences may arise from such initiatives. While emerging trends show that transit initiatives have gained popularity nationally, more information is needed to determine the specific factors that drive success. One objective of this study is to use empirical methods to understand better the factors that contributed to the success of TIA initiatives in four regions of Georgia.

METHODOLOGY

The goal of this research is to conduct an impact evaluation of TIA. This means measuring the effect of the program and determining whether it has met the specific goals, objectives, and expectations of stakeholders and beneficiaries in the regions that approved it. Also, the evaluation seeks to determine not only what outcomes have been achieved, but more specifically, factors that are responsible for the results.

In total, 1,022 transportation-related projects were planned as a result of the TIA referendum. Those projects would account for 75 percent of TIA funds and would be implemented by GDOT. The projects include activities such as the following: roadway and bridge construction, highway widening, road maintenance and resurfacing interchange improvements, and enhancing operational safety.

Also, local areas receive 25 percent of TIA revenue in the form of discretionary funds. The funds can be used on any transportation-related project the local area chooses. Most often, they are used to perform road and bridge maintenance; acquire new transportation equipment; maintain existing equipment; improve traffic safety; and build sidewalks, bike trails, and green space.

Delivering the approved investment projects and discretionary fund projects will improve local infrastructure, enhance economic growth, and improve the quality-of-life of residents. The TIA assessment seeks to determine the extent to which stakeholders have derived the expected benefits. It also attempts to assess their overall evaluation of the program relative to their initial expectations.

The report uses survey analysis and personal interviews to evaluate stakeholders' perceptions. Some specific assessed issues include determining the following:

- whether the program lived up to voter expectations, and
- whether GDOT has implemented the program effectively and communicated well with local stakeholders.

A vital component of the TIA program is the local discretionary funds. As such, the research seeks to determine how necessary those funds are to local jurisdictions and whether they have allowed them to achieve their objectives.

The research attempted to empirically identify variables that are positively associated with a stakeholder's decision to vote *yes* regarding TIA. Logistic regression was used to accomplish this. The researchers examined the socioeconomic characteristics of each region (and county within the region) to determine whether they have changed since TIA was approved. Table 2 lists the socioeconomic variables examined. Finally, interviews were conducted with key stakeholders to assess their perception of TIA. Results of the current analysis (conducted in 2020) were compared to those conducted in 2018.

The research provides a framework for conducting a benefit–cost analysis. This is an evaluation of the net social gain that stakeholders and beneficiaries receive from TIA. Net social gain is the difference between the benefits of TIA (both financial and non-financial) and the costs of TIA. When benefits exceed costs, the net social gain is positive. Evaluating the benefits requires establishing a do-nothing scenario, i.e. what would have happened in the region had TIA not been approved. Since this can never be known, the best approximation is to evaluate a non-TIA area whose characteristics are similar to those of the TIA regions.

A BCA aims to monetize transportation-related components (e.g., travel time, safety, maintenance), and it estimates all costs and benefits associated with a specific project. Some projects, such as constructing a new interchange, may cause significant reductions in travel time and crash frequency (benefits), but at the same time, maintenance costs may increase. Therefore, a well-designed BCA should be able to indicate whether the benefits from reduced travel time and crash reduction exceed the cost of design, construction, and increased maintenance. The BCA in this report provides the methodology and baseline conditions. The framework makes it possible to implement the BCA when sufficient TIA projects are fully delivered.

Data used in the analyses were taken from the following sources:

- Stakeholder and homeowner surveys
- Phone and in-person interviews
- TIA program administrative documents
- Program data and information available at the TIA website
- Information provided by TIA program administrators
- U.S. Census data on county socioeconomic characteristics
- County-level crash and accident data provided by GDOT
- GDOT prime contracting data

Table 2. Socioeconomic variables defined for each county.

Variable	Source
Total Population	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Land Area (square miles)	U.S. Census Bureau, 2010 Census Summary File 1
Median Age	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Race (white alone)	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Nativity by Citizenship Status (foreign-born)	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Population Density (per square mile)	Calculated from total population and land area
Median Household Income	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Employment Status for Civilian Population 16 years and Over, Total Civilian Labor Force Size	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Occupancy Status	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Educational Attainment for Population 25 Years and Over	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
The Average Commute to Work (minutes)	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Median Home Value	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Building Permit Estimates	U.S. Census Bureau, 2010–2017 Building Permits by County
Obese Population	2010–2017 County Health Rankings; Georgia
Crash Data (crash/injury/severity of injury/fatality)	Georgia Department of Transportation. Obtained via communication with the Crash Reporting Office, May 2019
Vehicle Miles Traveled	Georgia Department of Transportation Mileage by Route and Road System Report 445, 2010–2017
Road Mileage	Georgia Department of Transportation Mileage by Route and Road System Report 445, 2010–2017
TIA Discretionary Disbursement (25% to local jurisdictions)	Georgia Department of Transportation

SURVEY RESULTS

The 2020 survey was the third of its kind. Surveys were conducted in 2016, 2018, and 2020. The survey questionnaires for each of the three years were identical, which allowed the research team to compare responses over time. The questions focused on residents' expectations regarding the impact of TIA, assessment of local transportation needs, evaluation of the effectiveness of TIA and the way it is implemented by GDOT, and how residents voted on TIA and would vote in the future to reauthorize it. In this report, the 2020 survey results are compared to those of the 2018 survey. The 2016 survey results are not included because the survey was issued to stakeholders exclusively. That is, ordinary citizens and households were not included in the 2016 survey sample, but they were included in the 2018 and 2020 surveys. As such, 2016 results are not compatible with 2018 and 2020.

In 2020, a total of 2,000 persons were included in the survey population. Each household was selected randomly from among residents residing in the four TIA regions and the Middle Georgia comparison regions. The survey subjects also included persons identified as key stakeholders in the area. The stakeholders consisted of local government administrators and elected officials.

Two survey instruments were used:

1. One was issued to residents of TIA regions. It had additional questions that were specific to the TIA program.
2. The second instrument was identical to the first, except it excluded questions relevant to residents of TIA regions.

Past experience indicates that over one-half of the survey population prefers to be surveyed by mail rather than electronically. For example, in 2016 and 2018, Phase I and Phase II research, respectively, the majority of respondents indicated they preferred to be surveyed via postal service (e.g., see table 3). As a result, each subject received two surveys, one by postal service and one electronically. The subjects were asked to complete the type of survey that was most convenient and disregard the alternative format. The survey was issued during the first two

weeks of March 2020. In total, 2,000 surveys were issued by postal service and 1,545 surveys electronically. An electronic survey was issued to every person in the survey population for whom an email address was available.

Survey Response Rate and Geographic Distribution

Table 3 provides information on the number of responses from both the TIA and non-TIA regions in 2018 and 2020. The results indicate that in 2020, there were 278 respondents to the survey; 64.0 percent of the responses were by postal service and 36.0 percent by electronic survey. A similar breakdown occurred in 2018. Of the 273 surveys received in Phase II, 69.2 percent were by postal service, and 30.8 percent were electronic.

Table 3. Survey distribution channel and number of respondents, by survey year.

		Survey Year			
		2018		2020	
		Number	Percent	Number	Percent
Survey Distribution Method	Email	84	30.8	100	36.0
	Postal	189	69.2	178	64.0
	Total	273	100.0	278	100.0

Source: TIA Survey administered by Georgia Tech researchers on behalf of GDOT.

The overall response rate in 2020 was 14 percent. This was higher than the response rate in 2018, which was 11.5 percent. Responses are influenced in part by the length of time required to complete the survey. This time was recorded in 2018 and 2020. In 2018 the mean time required to complete the survey in minutes was 10.7, and the median time was 6.3 minutes. The median indicates that one-half of the respondents took longer than 6.3 minutes, and the other one-half completed the survey in less time. In 2020, a more careful design of the survey allowed respondents to complete it in a shorter length of time. The mean time required to complete the survey was 7.1 minutes, while the median time was 4.1 minutes (see table 4).

Table 4. Mean and median time required to complete electronic survey, in minutes.

		Survey Length in Minutes		
		Mean	Median	Number
Survey Year	2018	10.72	6.27	84
	2020	7.14	4.13	100

Source: TIA Survey administered by Georgia Tech researchers on behalf of GDOT.

The survey research methodology evolved over time. Specifically, the Phase I survey (conducted in 2014) was based on a sample of 96 subjects. All the subjects resided exclusively in TIA regions. The Phase II survey (conducted in March of 2018) included 333 respondents total. Respondents were located in six regions, three of which were TIA regions, and three were non-TIA regions.

Observations in Phase II research led to a redesign of the survey methodology for Phase III. Specifically, whereas the Northeast Georgia region was included in the Phase II survey, it was omitted in Phase III. Also, Southern Georgia was not a TIA region when the Phase II survey was conducted in 2018; however, it was a TIA region in 2020.

Phase II survey responses (2018) were generated from six regions. The TIA regions were as follows: Central Savannah River Area – 47 respondents; Heart of Georgia Altamaha – 75 respondents; and River Valley – 42 respondents. Survey responses from the non-TIA regions were as follows: Northeast Georgia – 60 respondents; Southern Georgia – 49 respondents; and Middle Georgia – 43. During Phase III, Northeast Georgia was dropped from the survey framework, and Southern Georgia was treated as a TIA region.

The survey results were reorganized to account for Southern Georgia as a non-TIA region in March 2018 and a TIA region in March 2020, when the Phase III survey was conducted. While Northeast Georgia was deleted from the survey population, Middle Georgia served as the single comparison region. Table 5 records Phase III survey respondents by region and year. In 2020, 51 respondents were from CSRA (18.3 percent); 74 from HOGA (26.6 percent); 59 from River

Valley (21.2 percent); and 37 from Southern (13.3 percent). Middle Georgia served as the comparison region with 47 responses (16.9 percent). Ten respondents to the survey lived in one of the five regions at some point before the 2020 survey. However, by the time they responded to the survey, they had relocated outside of the five research regions. Therefore, they were excluded from further analysis (see table 5).

Table 5. Number of survey respondents, by region and survey year.

		Survey Year			
		2018		2020	
		Number	Percent	Number	Percent
Survey Respondents' Detailed Region	CSRA	47	17.2	51	18.3
	HOGA	75	27.5	74	26.6
	RIVER VALLEY	42	15.4	59	21.2
	SOUTHERN	49	17.9	37	13.3
	MIDDLE	43	15.8	47	16.9
	RELOCATED FROM STUDY REGIONS*	17	6.2	10	3.6
	Total	273	100.0	278	100.0

*This category is omitted from subsequent analyses. It represents individuals who initially lived in the study region but subsequently relocated to a county outside the region.

Table 6 lists the survey respondents by region and year, and individuals who relocated from the five regions have been excluded. This results in a total of 268 respondents for 2020, in comparison to 256 in 2018. The table indicates that a slightly higher percentage of River Valley residents responded in 2020 versus 2018 (22.0 versus 16.4 percent, respectively). Similarly, a smaller percentage of Southern residents responded in 2020 (13.8 percent) in comparison to 2018 (19.1 percent). This raises the question of whether the two survey sample distributions are different and whether the difference is statistically significant. To determine this, the research team performed a Pearson chi-square test. The chi-square value was 4.611 with 4 degrees of freedom. The level of statistical significance was 0.330. In simple terms, the difference between the two survey sample distributions is not statistically significant.

Table 6. Number of survey respondents by region and survey year.

		Survey Year			
		2018		2020	
		Number*	Percent	Number*	Percent
TIA Region Status	CSRA	47	18.4	51	19.0
	HOGA	75	29.3	74	27.6
	RIVER VALLEY	42	16.4	59	22.0
	SOUTHERN	49	19.1	37	13.8
	MIDDLE	43	16.8	47	17.5
	Total	256	100.0	268	100.0

*Residents who relocated are excluded.

Each of the five regions included in the research framework covers 11 to 18 counties. CSRA has 13, HOGA has 17, River Valley has 16, Southern has 18, and Middle has 11. In total, there are 75 counties in the five regions being researched. In 2018, survey responses were received from 69 of the 75 counties, which represented 92 percent. In 2020, 72 of the 75 counties had respondents to the survey, or 95 percent (see table 7).

Table 7. Number of different counties represented among survey respondents, by region and survey year.

		Survey Year	
		2018 Sum	2020 Sum
TIA Region Status	CSRA	13	14
	HOGA	16	18
	RIVER VALLEY	14	15
	SOUTHERN	15	14
	MIDDLE	11	11
	Total Counties	69	72

Social and Demographic Characteristics of Survey Respondents

Respondents were asked to indicate the number of years they resided in Georgia as of 2020. Ninety-five percent (95.1 percent) had lived in Georgia for 15 or more years (see table 8). Respondents were also asked to indicate the length of time they resided in their current county. The results were more varied, but still, 82.8 percent of respondents resided in their county for 15 or more years in the 2020 survey, while 87.5 percent did so in the 2018 survey. In 2020, 7.1 percent of respondents resided in their current county 10 to 14 years, and 6.0 percent resided in their current county between 5 to 10 years (see table 9).

Table 8. Length of residency in the state of Georgia, as of 2020.

		Number	Percent
Classification by Years	Less than 5 Years	1	0.4
	5 to 10 Years	7	2.6
	10 to 14 Years	5	1.9
	15 or More Years	255	95.1
	No Answer	0	0.0
	Total	268	100.0

Table 9. Length of residency in current county, by survey year.

		Survey Year			
		2018		2020	
		Number	Percent	Number	Percent
Classification by Years	Less than 5 Years	10	3.9	7	2.6
	5 to 10 Years	11	4.3	16	6.0
	10 to 14 Years	10	3.9	19	7.1
	15 or More Years	224	87.5	222	82.8
	No Answer	1	0.4	4	1.5
	Total	256	100.0	268	100.0

Table 10 records the age categories of survey respondents, where results are broken down further by region and by the 2018 and 2020 surveys. The findings indicate that most survey respondents were older than 45 years of age. However, there are significant variations among the regions and notable differences by year. For example, in 2020, 38.0 percent of CSRA respondents were 45 to 64 years of age, while a similar percentage was 65 years and older. The demographic distribution for CSRA differed significantly in 2018. During that survey, 58.7 percent of survey respondents were 45 to 64 years of age, while 21.7 percent were older.

In 2020, the age distribution of HOGA respondents was similar to that of River Valley, but both differed from the other three regions. For example, in 2020, 54.8 percent of HOGA respondents were 45 to 64 years of age, while the percentage in this age category for River Valley was 51.7 percent. In contrast, in the Southern region, 25.7 percent of respondents were age 45 to 64 years old, and in Middle Georgia, 38.3 percent were in that age category. The percentage of Middle Georgia respondents in this age category in 2020 was similar to the age distribution in 2018 (38.3 and 37.2 percent, respectively). However, the age distribution across the two years differed significantly from that of Southern. In 2020 the percentage of respondents in the Southern region in the age category 45 to 64 years was 25.7 percent, while it was 53.1 percent in 2018. In short, there were significant age differences among the respondents by region and year.

There were significant gender differences among the survey population by region and year (see table 11). For example, 51.0 percent of the survey respondents in CSRA in 2020 were female. The respective figure for HOGA was 45.2 percent. For River Valley, it was 55.2 percent. For Southern, it was 36.4 percent, and for Middle, it was 29.8 percent. In 2018, each of the five regions had a smaller percentage of women respondents in comparison to 2020.

Table 10. Age distribution of respondents, by region and survey year.

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Under 25 Years	0.0	0.0	0.0	0.0	0.0
	25 to 44 Years	17.4	10.8	17.1	14.3	9.3
	45 to 64 Years	58.7	44.6	56.1	53.1	37.2
	65 Years and Over	21.7	43.2	26.8	32.7	53.5
	No Answer	2.2	1.4	0.0	0.0	0.0
	Total	100.0	100.0	100.0	100.0	100.0
2020	Under 25 Years	4.0	0.0	0.0	0.0	2.1
	25 to 44 Years	16.0	16.4	12.1	11.4	10.6
	45 to 64 Years	38.0	54.8	51.7	25.7	38.3
	65 Years and Over	38.0	28.8	36.2	60.0	48.9
	No Answer	4.0	0.0	0.0	2.9	0.0
	Total	100.0	100.0	100.0	100.0	100.0

Table 11. Gender distribution of respondents, by region and survey year.

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Male	51.1	61.6	52.5	67.3	81.0
	Female	46.7	37.0	47.5	32.7	16.7
	No Answer	2.2	1.4	0.0	0.0	2.4
	Total	100.0	100.0	100.0	100.0	100.0
2020	Male	44.9	53.4	44.8	63.6	70.2
	Female	51.0	45.2	55.2	36.4	29.8
	No Answer	4.1	1.4	0.0	0.0	0.0
	Total	100.0	100.0	100.0	100.0	100.0

A larger percentage of African-Americans participated in the survey in 2020 in comparison to 2018. Specifically, black participation in CSRA in 2020 and 2018, respectively, was 16.0 and

13.6 percent. Percentages for HOGA were 6.8 and 4.2 percent, respectively. Rates for River Valley were 11.9 and 7.5 percent, respectively. Southern is the only region for which there was smaller participation of African-Americans in 2020 in comparison to 2018, at 13.9 and 18.4 percent, respectively. Finally, the percentages for Middle were 34.0 and 16.7 percent, respectively (see table 12).

Table 12. Distribution of survey respondents by race and region.

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	White/Caucasian	79.5	94.4	92.5	75.5	69.0
	African-American/Black	13.6	4.2	7.5	18.4	16.7
	Other	0.0	0.0	0.0	4.1	2.4
	No Answer	6.8	1.4	0.0	2.0	11.9
	Total	100.0	100.0	100.0	100.0	100.0
2020	White/Caucasian	76.0	93.2	84.7	72.2	61.7
	African-American/Black	16.0	6.8	11.9	13.9	34.0
	Other	2.0	0.0	0.0	0.0	0.0
	No Answer	6.0	0.0	3.4	13.9	4.3
	Total	100.0	100.0	100.0	100.0	100.0

Two final socioeconomic attributes examined respondents' educational attainment and their work status. The results indicated that a majority of respondents had some college or a college degree. For example, 32.7 percent of CSRA respondents had some college or an associate degree, while 34.7 percent had a bachelor's degree or better. The respective figures for HOGA were 32.9 and 30.1 percent. In River Valley, 39.7 percent of respondents had some college or an associate degree, while 37.9 percent had a bachelor's degree or better. The respective figures for Southern were 37.1 and 28.6 percent, while for Middle, the percentages were 21.3 and 44.7 percent (see table 13).

Table 14 records the work status classification of survey respondents for persons living in the TIA regions. The representation varies across regions, but in most cases, the most significant percentage is government employees. In the 2020 survey, there was a concerted effort to increase responses from individual households, and the attempt was successful. For example, in CSRA in 2018 only 12.8 percent of the respondents were nongovernmental employees or non-elected officials, while in 2020, 35.3 percent were in this category. Each region had a higher percentage of persons falling into this category in 2020 than in 2018. For example, the respective percentages for HOGA increased from 8.0 to 16.2 percent; for River Valley the percentage increased from 9.5 to 20.3 percent; and for Southern the percentage increased from 16.3 to 43.2 percent. The larger percentage of ordinary household respondents reflects more beneficiaries, outside of stakeholders. It also gives a broader perception of how residents feel about TIA in the region.

Table 13. The highest level of educational attainment, as of 2020.

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2020	High School Graduate or Less	24.5	23.3	6.9	14.3	29.8
	Trade/Technical/Vocational Training	2.0	12.3	13.8	14.3	4.3
	Some College or Associate Degree	32.7	32.9	39.7	37.1	21.3
	Bachelor's Degree or Advanced Degree	34.7	30.1	37.9	28.6	44.7
	No Answer	6.1	1.4	1.7	5.7	0.0
	Total	100.0	100.0	100.0	100.0	100.0

Table 14. Work status classification, by region and survey year.

		TIA Region Status			
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)
2018	Elected Official	27.7	38.7	23.8	67.3
	Government Employee	59.6	53.3	66.7	16.3
	Other	12.8	8.0	9.5	16.3
	Total	100.0	100.0	100.0	100.0
2020	Elected Official	29.4	33.8	22.0	45.9
	Government Employee	35.3	50.0	57.6	10.8
	Other	35.3	16.2	20.3	43.2
	Total	100.0	100.0	100.0	100.0

Respondents' Familiarity with the TIA Program

Respondents were asked to indicate their familiarity with TIA and the way it is funded. The question was asked in the 2018 and 2020 surveys. Overall, a much more significant percentage of respondents indicated they were *very familiar* or *somewhat familiar* with TIA in 2018 than was the case in 2020. Expressly, 59.8 percent indicated they were *very familiar* with TIA in 2018, while the percentage saying they were *somewhat familiar* was 32.0 percent; 5.9 percent of respondents said they were not at all familiar with TIA. In contrast, results of the 2020 survey indicate less familiarity; expressly, 52.4 percent reported they were very familiar, while 28.1 percent indicated they were somewhat familiar.

Additionally, 19.1 percent said they were not familiar at all with the TIA program. This last percentage contrasted significantly with 2018, when only 5.9 percent responded that way. A Pearson chi-square test was performed to determine whether the difference between the two years was statistically significant. The chi-square value was 23.876, with 3 degrees of freedom and the level of statistical significance of 0.001. The results indicate that the responses for the two years differed significantly and suggest that respondents in 2020 were less familiar with the program than was the case in 2018 (see table 15). One apparent reason for this is the fact that

the 2020 survey respondents represented almost 2.5 times more household respondents (therefore, fewer government respondents) than was true in 2018. Stakeholders have more knowledge of the program because they are more directly engaged with it.

Table 15. Familiarity with TIA and the way It is funded.

	Survey Year	
	2018 (%)	2020 (%)
Very Familiar	59.8	52.4
Somewhat Familiar	32.0	28.1
Not Familiar	5.9	19.1
No Answer	2.3	0.4
Total	100.0	100.0

This result has important policy implications for GDOT. As a result, the response was broken down further by region and by survey year (see table 16a). The results suggest that in 2020, respondents in Southern and Middle were much less familiar with the program; only 35.1 and 25.5 percent of the respective regions said they were very familiar with TIA. At the same time, 44.7 percent in Middle indicated they were not familiar with the program. This is understandable in that voters in that particular region did not approve of the TIA program. In Southern, 18.9 percent said they were not familiar with the program, and in CSRA, 16.0 percent registered the same response. A much smaller percentage of respondents were not familiar with the TIA program in 2018. For example, in CSRA, only 2.1 percent indicated they were not familiar; in HOGA, 0 percent responded this way; in River Valley, the percentage was 4.8 percent, and in Southern and Middle, the respective rates were 16.3 and 9.3 percent.

The lower familiarity could be the result of the survey having a more significant percentage of household respondents in 2020 in comparison to 2018. Table 16b was constructed to test this hypothesis. It organizes responses to the same question by professional or work status and year. The results confirm this hypothesis. Specifically, in 2020, 54.3 percent of “Other” respondents (mainly households) were not familiar with TIA and the way it is funded. In

contrast, only 3.2 percent of elected officials were not familiar, and 8.2 percent of government employees were unfamiliar. This finding has important policy implications.

Table 16. Familiarity with TIA and the way It is funded: (a) by region and survey year, (b) by professional or work status and survey year.

(a)

		TIA Region Status and Year				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Very Familiar	61.7	68.0	81.0	38.8	46.5
	Somewhat Familiar	29.8	29.3	11.9	44.9	44.2
	Not Familiar	2.1	0.0	4.8	16.3	9.3
	No Answer	6.4	2.7	2.4	0.0	0.0
	Total	100.0	100.0	100.0	100.0	100.0
2020	Very Familiar	62.0	71.6	52.5	35.1	25.5
	Somewhat Familiar	22.0	18.9	33.9	43.2	29.8
	Not Familiar	16.0	9.5	13.6	18.9	44.7
	No Answer	0.0	0.0	0.0	2.7	0.0
	Total	100.0	100.0	100.0	100.0	100.0

(b)

		Professional or Work Status		
		Elected Official Column %	Government Employee Column %	Other Column %
2018	Very Familiar	58.7	66.1	34.2
	Somewhat Familiar	36.5	27.5	28.9
	Not Familiar	4.0	5.5	26.3
	No Answer	0.8	0.9	10.5
2020	Very Familiar	64.9	69.1	16.0
	Somewhat Familiar	31.9	22.7	28.4
	Not Familiar	3.2	8.2	54.3
	No Answer	0.0	0.0	1.2

The 25 percent discretionary funds disbursed to local areas are one of the most important attributes of the TIA program. Questions were asked in the 2018 and 2020 surveys about the relative importance of this attribute to voters in the regions. Table 17 records the extent to which respondents were aware of this attribute when they voted on TIA. The 2020 survey responses indicated that a majority of residents in the TIA regions were aware of this attribute. However, that was not the case for Middle Georgia, which voted against joining the TIA program. Specifically, the results are as follows: CSRA 64.7 percent indicated *yes*; HOGA, 59.5 percent; River Valley, 67.8 percent; Southern, 54.1 percent. In comparison, 42.6 percent in Middle Georgia indicated they were aware of this feature of the program. In 2018, a significantly larger percentage of residents were aware of this feature than in 2020. For example, in CSRA 84.8 percent were aware; HOGA, 89.2 percent; River Valley, 90.2 percent; Southern, 55.1 percent; and Middle, 67.4 percent. Overall, the awareness of the 25 percent discretionary funds was lower in 2020 than in 2018, and in both years, Southern and Middle Georgia respondents were less knowledgeable about this feature of TIA than were respondents of the other three regions (see table 17). Again, the difference is caused by the inclusion of a larger number of household respondents in the survey.

Two questions were designed to assess whether residents were familiar with GDOT's TIA website and whether they had visited the site. Specifically, they were asked if they were aware that GDOT has a website that updates users on the status of TIA projects (see table 18). Additionally, respondents who answered *yes* were asked if they had ever visited the website (see table 19).

Table 17. When you voted on TIA, were you aware that 25% of revenues go to local areas as discretionary funds?

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Yes	84.8	89.2	90.2	55.1	67.4
	No	6.5	6.8	7.3	26.5	20.9
	Don't Remember	6.5	2.7	2.4	16.3	11.6
	No Answer	2.2	1.4	0.0	2.0	0.0
	Total	100.0	100.0	100.0	100.0	100.0
2020	Yes	64.7	59.5	67.8	54.1	42.6
	No	13.7	20.3	15.3	24.3	27.7
	Don't Remember	15.7	16.2	13.6	21.6	23.4
	No Answer	5.9	4.1	3.4	0.0	6.4
	Total	100.0	100.0	100.0	100.0	100.0

The results indicated that a smaller percentage of respondents were aware of the TIA website in 2020 than in 2018. This was especially true for CSRA and River Valley. For example, in CSRA for 2018, 73.9 percent were aware of the TIA website, while in the year 2020, 66.7 percent were aware. The respective percentages for River Valley are 82.9 percent in 2018 and 66.1 percent in 2020. Results for HOGA differed in that a more significant proportion were aware in 2020 (78.4 percent) than was the case in 2018 (73.0 percent). The awareness in the Southern region was nearly identical in 2018 and 2020, 36.2 and 36.1 percent, respectively. Middle Georgia showed a significant reduction in recognition of the TIA website over the two years; 41.9 percent were aware in 2018, but only 26.1 percent in 2020.

Among residents who were aware of the website, a significantly larger percentage of the 2020 respondents indicated they had visited the site in comparison to the 2018 respondents. For example, the percentage of CSRA respondents that visited the site in 2018 was 57.6 percent, while in 2020 it was 76.5 percent; for HOGA the percentages were 64.2 percent in 2018 and 77.6 percent in 2020; for River Valley, the percentages were 69.7 percent in 2018 and

71.8 percent in 2020; and in Middle Georgia, the percentages were 44.4 percent in 2018 and 58.3 percent in 2020. Only in the Southern region did the percentage of visitors to the website decrease, from 56.3 percent in 2018 to 38.5 percent in 2020.

Table 18. Are you aware that GDOT has a TIA website that provides project updates?

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Yes	73.9	73.0	82.9	36.2	41.9
	No	26.1	24.3	17.1	63.8	58.1
	No Answer	0.0	2.7	0.0	0.0	0.0
	Total	100.0	100.0	100.0	100.0	100.0
2020	Yes	66.7	78.4	66.1	36.1	26.1
	No	31.4	21.6	32.2	63.9	63.0
	No Answer	2.0	0.0	1.7	0.0	10.9
	Total	100.0	100.0	100.0	100.0	100.0

Table 19. If you are aware of the TIA website, have you ever visited it?

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Yes	57.6	64.2	69.7	56.3	44.4
	No	42.4	34.0	30.3	43.8	55.6
	Don't Know	0.0	1.9	0.0	0.0	0.0
2020	Yes	76.5	77.6	71.8	38.5	58.3
	No	17.6	15.5	28.2	61.5	41.7
	Don't Know	5.9	6.9	0.0	0.0	0.0

TIA Outcomes That Are Important to Respondents

Respondents were asked to identify outcomes relative to the TIA program that are the most important to them. Questions were asked about the importance of outcomes in numerous categories, such as the following: the 25 percent discretionary funds provided to local areas, reductions in traffic congestion, greater control over local transportation expenditures, reduction in traffic accidents, providing improvements to roads and bridges, increasing the connectivity to other regions, creating more jobs and faster economic growth, and having more funds available for local transportation projects. Table 20 through table 27 record respondents' answers to these issues.

In summarizing these responses, the focus is specifically on the percentage of individuals who said the particular item was *very important* to them. Furthermore, the responses are summarized for 2020, even though similar information on the 2018 survey responses is provided in most cases.

The most important item across all regions is improving roads and bridges in local areas. Specifically, in CSRA, 92.0 percent indicated this outcome is *very important*; HOGA 90.3 percent; River Valley 96.6 percent; Southern 85.3 percent; and Middle 91.1 percent. Again, improving local roads and bridges was the most important outcome across all five regions (see table 20).

The ranking in importance of major TIA outcomes based on the 2020 survey response is as follows:

1. Improving local roads and bridges (table 20)
2. Providing 25 percent discretionary funds to local areas (table 21)
3. Creating more jobs and faster economic growth (table 22)
4. Providing more considerable funds for local transportation needs (table 23)
5. Reducing the number of traffic accidents (table 24)
6. Having local control over transportation expenditures (table 25)
7. Having better connectivity among regions (table 26)
8. Reducing traffic congestion (table 27)

Table 20. How important is improving local roads and bridges?

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2020	Not Important	4.0	4.2	0.0	0.0	2.2
	Somewhat Important	4.0	5.6	3.4	14.7	6.7
	Very Important	92.0	90.3	96.6	85.3	91.1
	Total	100.0	100.0	100.0	100.0	100.0

Table 21 indicates that the second most important outcome for TIA is providing the 25 percent discretionary funds to local areas. More than 90 percent of respondents in each region indicated this attribute is either *very important* or *somewhat important* to them in 2018 and in 2020. In 2018, 100 percent of the residents in CSRA and Middle Georgia said this was either *very important* or *somewhat important*. In HOGA, 96 percent of the residents stated this; and in River Valley, 98 percent of the residents indicated so, and in Southern, 96 percent of the residents responded the same. In 2020, 95 percent of residents in CSRA indicated this attribute was either *very important* or *somewhat important*; 100 percent of the residents in HOGA stated so; 95 percent of residents in River Valley indicated this; 95 percent of the residents in Southern stated the same thing; and 85 percent of the residents in Middle Georgia.

Table 21. How important to you is the 25% discretionary funds returned to local areas?

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Very Important	89.1	81.1	87.8	73.5	93.0
	Somewhat Important	10.9	14.9	9.8	22.4	7.0
	Not at All Important	0.0	2.7	2.4	2.0	0.0
	No Answer	0.0	1.4	0.0	2.0	0.0
	Total	100.0	100.0	100.0	100.0	100.0
2020	Very Important	84.3	95.9	83.1	89.2	72.3
	Somewhat Important	9.8	4.1	11.9	5.4	12.8
	Not at All Important	2.0	0.0	1.7	5.4	10.6
	No Answer	3.9	0.0	3.4	0.0	4.3
	Total	100.0	100.0	100.0	100.0	100.0

The third most important outcome of the TIA program is generating more jobs and faster economic growth. Over 80 percent of respondents in each region indicated this is the most important outcome. On this particular question, there was not much variation among the regions in 2020. Specifically, 86.0 percent of the residents of CSRA indicated this is *very important* to them and 14.0 percent stated it is *somewhat important*; 80.6 percent of residents of HOGA indicated it is *very important* while 18.1 percent stated it is *somewhat important*; among River Valley respondents, 86.2 percent indicated it is *very important* and 13.8 percent stated it is *somewhat important*; the respective percentages for Southern were 85.3 and 14.7 percent; Middle also registered a high percentage response on this question, 84.8 and 13.0 percent, respectively (see table 22).

Table 22. How important are more jobs and faster economic growth?

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Not Important	8.7	1.4	0.0	4.1	7.3
	Somewhat Important	6.5	17.6	13.5	8.2	22.0
	Very Important	84.8	81.1	86.5	87.8	70.7
	Total	100.0	100.0	100.0	100.0	100.0
2020	Not Important	0.0	1.4	0.0	0.0	2.2
	Somewhat Important	14.0	18.1	13.8	14.7	13.0
	Very Important	86.0	80.6	86.2	85.3	84.8
	Total	100.0	100.0	100.0	100.0	100.0

The fourth item of importance to respondents is to have more money for local transportation needs. Again, over 80 percent of respondents in each region said this is *very important* to them. Middle registered the highest percentage of respondents selecting this is *very important* (86.7 percent), followed by HOGA (86.1 percent), River Valley (84.7 percent); Southern (82.4 percent), and CSRA (82.0 percent); see table 23.

Table 23. How important is having more money for local transportation needs?

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Not Important	8.7	1.4	2.6	2.0	9.3
	Somewhat Important	17.4	16.2	7.9	16.3	20.9
	Very Important	73.9	82.4	89.5	81.6	69.8
	Total	100.0	100.0	100.0	100.0	100.0
2020	Not Important	2.0	5.6	3.4	0.0	4.4
	Somewhat Important	16.0	8.3	11.9	17.6	8.9
	Very Important	82.0	86.1	84.7	82.4	86.7
	Total	100.0	100.0	100.0	100.0	100.0

Reducing the number of traffic accidents is the fifth most expected outcome of the TIA program. Slightly more than 80 percent of respondents in each region selected this is *very important*, with the exception of Southern for which only 73.5 percent of respondents indicated it is *very important* (see table 24).

Having local control over transportation expenditures is the sixth most important outcome of the TIA program. In 2020, the importance of this outcome was lower than it was in 2018 for every region. For example, in CSRA, 76.0 percent of respondents indicated this outcome is *very important* in 2020, while the comparable percentage in 2018 was 84.8 percent. The same trend occurred in HOGA, 80.0 percent in 2020 as compared to 82.4 percent in 2018; in River Valley, the respective percentages were 72.9 percent in 2020 in comparison to 86.8 percent in 2018; in Southern, the respective percentages were 67.6 percent in 2020, which was down significantly from 85.7 percent in 2018. Only in Middle did the percentages in each year not change significantly, 58.7 percent in 2020 and 58.1 percent in 2018 (see table 25).

Table 24. How important is having fewer traffic accidents?

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Not Important	8.7	2.7	2.7	8.2	7.1
	Somewhat Important	21.7	13.5	24.3	10.2	21.4
	Very Important	69.6	83.8	73.0	81.6	71.4
	Total	100.0	100.0	100.0	100.0	100.0
2020	Not Important	2.0	7.1	0.0	5.9	2.2
	Somewhat Important	14.3	8.6	17.2	20.6	17.4
	Very Important	83.7	84.3	82.8	73.5	80.4
	Total	100.0	100.0	100.0	100.0	100.0

Table 25. How important is having local control over transportation expenditures?

		TIA Region Status				
		CSRA	HOGA	RIVER VALLEY	SOUTHERN	MIDDLE
		(%)	(%)	(%)	(%)	(%)
2018	Not Important	8.7	0.0	2.6	4.1	11.6
	Somewhat Important	6.5	17.6	10.5	10.2	30.2
	Very Important	84.8	82.4	86.8	85.7	58.1
	Total	100.0	100.0	100.0	100.0	100.0
2020	Not Important	0.0	7.1	6.8	2.9	4.3
	Somewhat Important	24.0	12.9	20.3	29.4	37.0
	Very Important	76.0	80.0	72.9	67.6	58.7
	Total	100.0	100.0	100.0	100.0	100.0

The seventh most important outcome is better connectivity to other regions. In 2020, the percentage of respondents indicating this is *very important* ranged from 61.1 percent in HOGA to 73.9 percent in the Middle. Overall, there was an increase in the importance of this outcome between 2018 and 2020 (see table 26).

Less traffic congestion ranked as the least important outcome of the TIA program. The significance of this outcome increased between 2018 and 2020; however, in 2020, only 47.8 percent of HOGA respondents indicated this outcome was *very important*; the largest percentage was registered by Middle, 73.3 percent (see table 27).

The results suggest that, for Middle Georgia, better connection to other regions and less traffic congestion were significantly more important than they were in the TIA regions. In contrast, in Middle Georgia, having local control over transportation expenditures, and the 25 percent local discretionary funds were much less important than for the TIA regions.

Table 26. How important is having better connections to other regions?

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Not Important	13.0	4.1	10.8	12.5	7.1
	Somewhat Important	30.4	35.1	29.7	22.9	40.5
	Very Important	56.5	60.8	59.5	64.6	52.4
	Total	100.0	100.0	100.0	100.0	100.0
2020	Not Important	4.0	5.6	1.8	11.8	2.2
	Somewhat Important	34.0	33.3	28.1	20.6	23.9
	Very Important	62.0	61.1	70.2	67.6	73.9
	Total	100.0	100.0	100.0	100.0	100.0

Table 27. How important is having less traffic congestion?

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Not Important	20.0	6.8	18.9	20.4	9.8
	Somewhat Important	35.6	47.3	29.7	28.6	56.1
	Very Important	44.4	45.9	51.4	51.0	34.1
	Total	100.0	100.0	100.0	100.0	100.0
2020	Not Important	6.0	15.9	12.1	8.8	4.4
	Somewhat Important	26.0	36.2	36.2	32.4	22.2
	Very Important	68.0	47.8	51.7	58.8	73.3
	Total	100.0	100.0	100.0	100.0	100.0

How Respondents Evaluated the TIA Program

When evaluating residents' perceptions of TIA, it is important to re-emphasize that the 2020 survey had more household respondents than did the 2018 survey. Overall, this means that there is less familiarity with the TIA program and less favorability about it. The survey first

asked whether respondents noticed any TIA-funded projects in their region. The responses indicated respondents were less aware of projects in 2020 than in 2018. Expressly, in CSRA, 90.9 percent of respondents reported they had observed TIA a project in 2018, while the percentage in 2020 was 76.0 percent; the respective rates for HOGA were 94.5 percent in 2018, and 84.9 percent in 2020; and for River Valley 100.0 percent of respondents noticed TIA projects in 2018, and 74.6 percent in 2020. Finally, since Southern joined the TIA program in 2018, this question was not asked of residents that year. However, in 2020, 38.9 percent had observed TIA funded projects (see table 29).

Table 28. Have you noticed any TIA funded projects in your region?

		TIA Region Status			
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)
2018	Yes	90.9	94.5	100.0	0.0*
	No	0.0	2.7	0.0	0.0
	Don't Know	9.1	2.7	0.0	0.0
	No Answer	0.0	0.0	0.0	0.0
	Total	100.0	100.0	100.0	0.0
2020	Yes	76.0	84.9	74.6	38.9
	No	6.0	6.8	11.9	27.8
	Don't Know	18.0	8.2	11.9	27.8
	No Answer	0.0	0.0	1.7	5.6
	Total	100.0	100.0	100.0	100.0

*Note: Southern was not a TIA region in 2018.

Survey responses indicated that residents' satisfaction with the TIA program is still primarily positive but it has decreased over the last two years. Table 29 records opinions regarding how residents feel about TIA in their local area. In 2018, 86.4 percent of the respondents in CSRA indicated they were either *extremely satisfied* (45.5 percent) or *somewhat satisfied* (40.9 percent) with the program. In 2020, 60.8 percent of CSRA residents were either *extremely satisfied* (33.3 percent) or *somewhat satisfied* (27.5 percent) with the TIA program. This was a decline of 25.6 percentage points. HOGA also recorded a decline in satisfaction, though not as

drastic. For example, in 2018, 88.9 percent of respondents indicated that residents of their local area were either *extremely satisfied* (47.2 percent) or *somewhat satisfied* (41.7 percent) with the TIA program. In comparison, in 2020, for the same region, 77.1 percent indicated that they were *extremely satisfied* (51.4 percent) or *somewhat satisfied* (25.7 percent) with the program. Overall, this was a decline of 11.8 percentage points.

River Valley recorded a decrease in satisfaction, as well, though not as large as CSRA. In 2018, 78.0 percent of residents were either *extremely satisfied* (39.0 percent) or *somewhat satisfied* (39.0 percent) with the TIA program. In 2020, 61.0 percent of respondents indicated that they were either *extremely satisfied* (35.6 percent) or *satisfied* (25.4 percent) with the program. Overall, this was a 17-percentage-point decrease in the perception of resident satisfaction. Finally, in Southern, the program was just underway; one would expect a more substantial percentage of respondents would not be able to assess the impact. Overall, in 2020, 29.7 percent indicated they were either *extremely satisfied* (8.1 percent) or *satisfied* (21.6 percent) with the program. In contrast, in Southern, 37.8 percent provided *no answer* to this question. It should also be recognized that in the other three areas, the percentage of respondents not answering the question increased significantly. In 2018, all respondents in the three regions provided an answer to the question, and a very small percentage was dissatisfied. In 2020, the percentage not answering the question increased; for example, 23.5 percent in CSRA, 12.2 percent in HOGA, and 22.0 percent in River Valley (see table 29).

Table 29. In your opinion, how satisfied with TIA are residents of your local area?

		REGION			
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)
2018	Extremely Satisfied	45.5	47.2	39.0	0.0
	Somewhat Satisfied	40.9	41.7	39.0	0.0
	Neither Satisfied nor Dissatisfied	13.6	9.7	17.1	0.0
	Dissatisfied	0.0	1.4	4.9	0.0
	No Answer	0.0	0.0	0.0	0.0
	Total	100.0	100.0	100.0	0.0
2020	Extremely Satisfied	33.3	51.4	35.6	8.1
	Somewhat Satisfied	27.5	25.7	25.4	21.6
	Neither Satisfied nor Dissatisfied	11.8	6.8	11.9	29.7
	Dissatisfied	3.9	4.1	5.1	2.7
	No Answer	23.5	12.2	22.0	37.8
	Total	100.0	100.0	100.0	100.0

Respondents were asked to assess the way that GDOT has implemented TIA thus far. The responses were greatly influenced by whether the respondent was an elected official, government employee, or other household respondent. First, consider the overall reactions. A majority of residents are positive about GDOT's implementation of the program, but the favorability has decreased significantly from the 2018 survey. In particular, 84.5 percent of residents in CSRA felt that its application was either *excellent* or *good* in 2018. The comparable percentage in 2020 was 72.0 percent. In HOGA, 91.9 percent of respondents felt GDOT's implementation of the program was either *excellent* or *good* in 2018, and the comparable percentage was 82.2 percent in 2020. In River Valley, 85.3 percent felt GDOT's implementation of the program was either *excellent* or *good* in 2018, while in 2020, the comparable percentage was 63.8 percent; finally, in Southern, 51.4 percent felt that GDOT's implementation of the program was either *excellent* or *good* in 2020 (see table 30).

Table 30. How would you rate the way that GDOT has implemented TIA?

		TIA Region Status			
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)
2018	Excellent	37.8	36.5	51.2	0.0
	Good	46.7	55.4	34.1	0.0
	Average	8.9	5.4	7.3	0.0
	Poor	6.7	2.7	7.3	0.0
	Don't Know	0.0	0.0	0.0	0.0
	Total	100.0	100.0	100.0	0.0
2020	Excellent	34.0	45.2	34.5	17.1
	Good	38.0	37.0	29.3	34.3
	Average	16.0	9.6	17.2	20.0
	Poor	0.0	1.4	6.9	8.6
	Don't Know	12.0	6.8	12.1	20.0
	Total	100.0	100.0	100.0	100.0

The overall results are broken down further by professional and work status in table 31. The results indicate that in 2020, 40.8 percent of elected officials rated GDOT's implementation of TIA as *excellent*; 45.7 percent of government officials did so, and 9.1 percent of households did so. Note that in the 2018 survey, 37.5 percent of households rated TIA implementation as *excellent*. However, the 2020 study included a more significant number of households.

Table 31. Thus far, how would you rate how GDOT has implemented TIA? (How would you classify your professional or work status?)

		Elected Official Column %	Government Employee Column %	Other Column %
2018	Excellent	45.1	38.3	37.5
	Good	51.0	50.0	25.0
	Average	2.0	7.4	18.8
	Poor	2.0	4.3	18.8
	Don't Know	0.0	0.0	0.0
2020	Excellent	40.8	45.7	9.1
	Good	40.8	36.2	23.6
	Average	11.3	10.6	29.1
	Poor	2.8	0.0	10.9
	Don't Know	4.2	7.4	27.3

Table 32 records respondents' perception of how GDOT has communicated about TIA. The summary focuses on the percentage indicating communications have been *excellent* or *good*. A majority of respondents feel very positive about the way GDOT has communicated about TIA. However, there has been a decline between the 2018 survey and the 2020 study. Specifically, in CSRA, 70.4 percent of 2018 respondents said GDOT's communication has been either *excellent* or *good*. The comparable figure in 2020 was 64.0 percent. In HOGA, 78.4 percent of respondents felt GDOT's communication had been *excellent* or *good* in 2018. The comparable percentage for 2020 was 72.6 percent. River Valley recorded the largest percentage decrease regarding how GDOT has communicated. In 2018, 80.5 percent of respondents indicated the organization's communication had been *excellent* or *good*, while in 2020, 55.9 percent of the respondents indicated so. Finally, 36.1 percent of respondents in Southern in 2020 indicated they felt GDOT's communication had been *excellent* or *good* (see table 32).

Table 32. Overall, how would you rate the way GDOT has communicated about TIA?

		TIA Region Status			
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)
2018	Excellent	29.5	27.0	41.5	0.0
	Good	40.9	51.4	39.0	0.0
	Average	18.2	16.2	12.2	0.0
	Poor	11.4	5.4	7.3	0.0
	Don't Know	0.0	0.0	0.0	0.0
	Total	100.0	100.0	100.0	0.0
2020	Excellent	22.0	35.6	28.8	13.9
	Good	42.0	37.0	27.1	22.2
	Average	18.0	16.4	22.0	36.1
	Poor	6.0	8.2	10.2	13.9
	Don't Know	12.0	2.7	11.9	13.9
	Total	100.0	100.0	100.0	100.0

Respondents were asked to evaluate whether they felt their region's participation in TIA was a good thing, given all that they currently know about the program. In 2018, the responses were as follows: CSRA, 93.3 percent; HOGA, 91.7 percent; and River Valley, 92.7 percent. In 2020, the comparable percentages were as follows: CSRA, 82.0 percent; HOGA, 91.8 percent; River Valley, 79.3 percent; and Southern, 73.5 percent. The perception in HOGA remained constant over the two years, while in CSRA, it declined about 10 percentage points, and slightly more in River Valley (see table 33).

Table 33. Given all that you know, was your region's participation in TIA a good thing?

		TIA Region Status			
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)
2018	Yes	93.3	91.7	92.7	0.0
	No	0.0	1.4	4.9	0.0
	Undecided	4.4	4.2	2.4	0.0
	Don't Know/No Answer	2.2	2.8	0.0	0.0
	Total	100.0	100.0	100.0	0.0
2020	Yes	82.0	91.8	79.3	73.5
	No	2.0	5.5	5.2	2.9
	Undecided	16.0	2.7	15.5	23.5
	Don't Know/No Answer	0.0	0.0	0.0	0.0
	Total	100.0	100.0	100.0	100.0

TIA Voting Outcome

How residents voted on TIA is one of the most consequential outcomes of the survey. Respondents were asked how they voted regarding TIA in the past and how they would vote today. Table 34 records how respondents indicated they voted in the past. For example, the researchers know that prior to 2018, respondents in Southern and Middle voted against the TIA referendum. Survey results support this outcome because in 2018, 40.8 percent of Southern Georgia respondents indicated they voted *yes*, and 48.8 percent of Middle Georgia respondents indicated they voted *yes*. In contrast, the *yes* votes for the other three regions were as follows: CSRA 83.0 percent; HOGA 81.3 percent; and River Valley 88.1 percent.

In 2020, responses to this question reflected the actual outcome of the referendum. Specifically, a majority of residents in Southern Georgia voted *yes* on the referendum in the summer of 2019, while it was rejected in Middle Georgia in 2018. All respondents were asked how they voted in 2020. The outcome was 64.9 percent voted *yes* in Southern Georgia and 44.7 percent voted *yes* in Middle Georgia. This response helps to validate the survey because it corresponds with the actual voting outcome. For the other regions, the responses in 2020 were as follows: 68.6 percent stated they voted *yes* in CSRA, 78.4 percent in HOGA, and 72.9 percent in River Valley (see table 34.)

Table 34. How did you vote regarding TIA?

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Yes	83.0	81.3	88.1	40.8	48.8
	No	4.3	8.0	4.8	22.4	25.6
	Don't Remember	10.6	5.3	4.8	30.6	25.6
	Did Not Vote	0.0	4.0	2.4	2.0	0.0
	No Answer	2.1	1.3	0.0	4.1	0.0
	Total	100.0	100.0	100.0	100.0	100.0
2020	Yes	68.6	78.4	72.9	64.9	44.7
	No	9.8	2.7	6.8	5.4	10.6
	Don't Remember	11.8	6.8	13.6	18.9	21.3
	Did Not Vote	5.9	9.5	5.1	5.4	19.1
	No Answer	3.9	2.7	1.7	5.4	4.3
	Total	100.0	100.0	100.0	100.0	100.0

Respondents were also asked how they would vote if they were voting on TIA today. The results from the 2018 survey were compared to those of the 2020 survey. In both cases, respondents indicated strong favorability toward TIA. The results were as follows in 2018: the percentage indicating they would vote *yes* was 87.2 percent in CSRA; 92.0 percent in HOGA; 92.9 percent in River Valley; 65.3 percent in Southern; and 79.1 percent in Middle. Comparable percentages for 2020 were as follows: 74.0 percent in CSRA; 97.3 percent in HOGA; 89.8 percent in River Valley; 80.6 percent in Southern; and 61.7 percent in Middle.

Table 35. If you were voting on TIA today, how would you vote?

		TIA Region Status				
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)	MIDDLE (%)
2018	Yes	87.2	92.0	92.9	65.3	79.1
	No	2.1	5.3	4.8	6.1	7.0
	Undecided	8.5	1.3	0.0	28.6	14.0
	Refuse to Answer	2.1	1.3	2.4	0.0	0.0
	Total	100.0	100.0	100.0	100.0	100.0
2020	Yes	74.0	97.3	89.8	80.6	61.7
	No	4.0	2.7	6.8	5.6	17.0
	Undecided	18.0	0.0	3.4	8.3	21.3
	Refuse to Answer	4.0	0.0	0.0	5.6	0.0
	Total	100.0	100.0	100.0	100.0	100.0

The results indicate that a large majority of residents would vote positively on TIA if they had the opportunity to do so again. This is true for every region except Middle Georgia. The survey probed this question further by asking respondents to list the major reason they voted *yes*. A content analysis was performed of the outcome. It indicated that 68 percent voted *yes* as a way of getting improvements to local roads and bridges. They felt this was the best way to do so. Some of the comments are as follows:

- Roads are infrastructure and need constant maintenance.
- Road/bridge improvements.
- Road issues.
- Our roads are in terrible shape. The holes will tear front end up.
- Needed funds for transportation repairs.
- Need to keep infrastructure sound.
- Need road improvement in county. All pay with 1¢.
- It is beneficial to the region (cities and counties).
- It helped with all the new highways.

- Infrastructure is important to our area of travel.

The second most-often cited reason for supporting TIA was that it generates more revenue for local governments. Roughly 20 percent of the responses cited that reason. Other less critical reasons were that it promotes equity across counties, and the tax structure is perceived as fair. The most-often cited reason for why people voted *no* was because they had a TSPLOST. Several residents of Houston County indicated this. The general concern was that TIA would add a new tax burden to the additional charge that already exists.

Finally, the research team used empirical analysis to determine if other factors were responsible for individuals' decisions to vote *yes*. Logistic regression was used. This technique predicts the odds that an individual will vote *yes* when other factors are considered. Survey results for 2018 and 2020 were combined. The dependent variable was the odds of a person voting *yes*. Numerous independent variables were included in the equation to determine whether they made a statistically significant difference in the odds of voting *yes*. The variables analyzed in the equation included the following: years of residency in the county; age of respondent; gender; race; education; familiarity with the TIA program; the professional or work status of the respondent i.e. whether the person is an elected officials, government employee, or other household respondents; and the importance placed on having more funding for local transportation projects. In the final analysis, only two variables mattered significantly: (1) the professional or work status of the person, i.e. elected officials, government employee, or other household respondents; and (2) the importance individuals put on having more local funding for transportation projects. Specifically, the odds of a government employee voting yes for TIA were 17.5 times greater than were the odds of other household persons. Stated in terms of probabilities, there was a 95 percent greater probability of a government employee voting for TIA. Also, the difference in the odds of an elected official voting for TIA was not statistically different from the odds of a household person.

Secondly, individuals who felt that it was "extremely important" to have more funding for local transportation needs had 2.7 higher odds of voting *yes* than those who felt this was "somewhat

important." Stated in terms of probabilities, there was a 73 percent greater probability that an individual would vote *yes* if that individual thought that having more funding for local transportation needs was extremely important.

Many other variables were examined but determined to be insignificant, including racial status, age, gender, length of residency in the county, residency in the state, whether the respondent was surveyed in 2018 or 2020, etc. None of these factors was significant, after accounting for the person's work or professional status and view about the importance of funds for local road improvement. Detailed logistic regression results are available at Appendix C.

Finally, respondents were asked the likelihood of them recommending TIA to other regions that have not passed the program. Overall, the responses indicated that residents are likely to recommend the program across all regions. The 2020 responses were as follows: in CSRA, 86 percent indicated they would be *extremely likely* or *somewhat likely* to recommend the program to another region, and the respective responses in the other regions were HOGA, 93.2 percent; River Valley, 88 percent; and Southern, 82.4 percent (see table 36).

Table 36. How likely are you to recommend approving TIA to regions that have not passed it?

		TIA Region Status			
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)
2018	Extremely Likely	82.2	79.4	82.5	0.0
	Somewhat Likely	13.3	14.7	10.0	0.0
	Neither Likely nor Unlikely	4.4	2.9	2.5	0.0
	Somewhat Unlikely	0.0	1.5	0.0	0.0
	Extremely Unlikely	0.0	1.5	5.0	0.0
	Total	100.0	100.0	100.0	0.0
2020	Extremely Likely	68.0	83.6	62.1	47.1
	Somewhat Likely	18.0	9.6	25.9	35.3
	Neither Likely nor Unlikely	10.0	4.1	8.6	11.8
	Somewhat Unlikely	4.0	1.4	1.7	2.9
	Extremely Unlikely	0.0	1.4	1.7	2.9
	Total	100.0	100.0	100.0	100.0

When individuals were asked about the channel that is most convenient for them to be surveyed in the future, the results were consistent and suggested that residents are split between mail and email as a format. For this reason, during the 2018 and 2020 surveys residents received surveys in both formats, if that person's email address was available. The 2020 survey results suggested the following: in CSRA, 42.0 percent preferred mail and 38.0 percent email; in HOGA, 35.6 percent preferred mail and 43.8 percent email; in River Valley, 35.1 percent preferred mail and 52.6 percent preferred email; and in Southern, 44.4 percent preferred mail and 25.0 percent email (see table 37).

Table 37. How would you prefer to be surveyed in the future?

		TIA Region Status			
		CSRA (%)	HOGA (%)	RIVER VALLEY (%)	SOUTHERN (%)
2018	Mail	37.0	40.0	31.7	53.1
	Email	41.3	46.7	53.7	20.4
	Phone	0.0	0.0	0.0	0.0
	No Preference	15.2	10.7	14.6	20.4
	Prefer Not to be Surveyed in Future	6.5	2.7	0.0	6.1
	Total	100.0	100.0	100.0	100.0
2020	Mail	42.0	35.6	35.1	44.4
	Email	38.0	43.8	52.6	25.0
	Phone	2.0	0.0	1.8	2.8
	No Preference	6.0	15.1	8.8	11.1
	Prefer Not to be Surveyed in Future	12.0	5.5	1.8	16.7
	Total	100.0	100.0	100.0	100.0

PERSONAL INTERVIEWS WITH KEY STAKEHOLDERS

Twenty-one stakeholders were interviewed by telephone between April 8 and April 23, 2020. Stakeholders interviewed were either decision-makers within local government or GDOT officials, some with responsibilities involving TIA oversight. Highlights from the phone interviews are summarized below, followed by a thematic analysis of responses.

Summary of Findings

- All respondents reported overwhelmingly positive sentiments regarding TIA overall.
- Most respondents were extremely familiar with the TIA program and the way it is funded.
- Respondents emphasized that the ability for local governments to have some control over funding local projects was the key selling point in enabling a positive outcome for TIA. TIA was seen as a key resource in bringing critical local projects to fruition, which would have been impossible otherwise due to funding constraints.
- Repairing and maintaining local roads and bridges was unanimously cited as the most important transportation-related need in local areas. TIA was seen as a critical resource for maintenance activities, such as resurfacing and paving roadways, particularly in rural counties. Respondents also commented on how these improvements were key to local economic development. Visible improvements in road infrastructure was also seen as an important way to demonstrate program benefits to local residents.
- All respondents were very satisfied with GDOT communication strategies regarding TIA, but there were some additional suggestions for improved marketing and publicity of projects funded by TIA.
- All respondents were very satisfied with TIA implementation, particularly around reimbursement processes and project management.
- All except one respondent had voted for TIA and would support a vote to renew TIA. However, a few respondents reported that they were unsure of how local residents

would vote, especially in areas where other single-county tax referenda had been approved.

General Characteristics of Interviewees

Table 38 summarizes the characteristics of stakeholders interviewed in Phase III. Of the 21 persons interviewed, 16 were from TIA-approved regions, and 5 were from the non-TIA areas. City/government officials (4) and elected officials and district engineers (5 each) represented the largest share of interviewees.

Table 38. Number and type of stakeholder by region.

	TIA REGION				NON-TIA REGION		
Targeted Stakeholder	**RV**	**CSRA**	**HOGA**	**SG**	**MID**	**Other**	**Total**
City/County Government Officials		3		1			4
DOT Board Members	1	1				1	3
Other Elected Officials/Staff*	1	1	1	1	1		5
Citizen Review Panels	1		1	1			3
Area Residents and Public							0
Business and Special Interest Groups (SIGs)							0
GDOT-appointed TIA Official			1				1
GDOT District Engineers		1	1			3	5
Total	**3**	**6**	**4**	**3**	**1**	**4**	**21**

*Category includes chairman of boards of commissioners, mayors, and staff

Transportation-specific Responsibilities

Most respondents reported that they were long-time residents of their representative counties (over 10 years) with a few even reporting extended tenures (i.e., 50 years or more). Representatives were evenly split between rural and urban counties (based on Census OMB classifications), which provides insights on TIA's impact across both types of geographies. Major urban areas represented include Columbus, Macon, Augusta, and Valdosta. Whether they were from rural or urban areas, repair and maintenance of transportation infrastructure

(resurfacing/repaving roads) was the essential local transportation need identified during the interviews. Interviewees in the roles of city/county administration reported having direct oversight of transportation projects in the local area. Typical responsibilities included the overall supervision of maintenance projects, as well as oversight of engineering and construction. Respondents in this category reported spending 50–60 percent of their time on transportation projects. County commissioners (categorized as elected officials) said they spend about 25 percent of their time on indirect supervision of projects, and they received regular updates from city/county administrators. Typical oversight activities were on contract bidding and construction, as well as facilitating maintenance efforts. Collectively, both city/county administrative representatives and elected representatives reported playing an integral role in the passage of TIA at the initial stages. Most respondents reported participating in regional roundtables and other discussion forums and playing a pivotal role in bridging multiple perspectives about TIA and enabling its passage. They also reported playing a pivotal role in working toward consensus on project lists that were advanced for public voting.

Factors Influencing Receptivity of TIA

Overall Satisfaction with TIA Outcomes (Is there a general feeling that they are better off because of TIA?)

Respondents unanimously agreed that TIA has been a tremendous asset to local communities and governments overall. This perception was shared by respondents from both TIA and non-TIA regions. A more nuanced explanation of how benefits were realized and perceived is discussed in the following sections. TIA funds were seen as an extremely beneficial instrument for local governments to implement locally critical transportation infrastructure projects that were otherwise outside the reach of local budgets or did not qualify for state/federal funds. It was very beneficial to rural communities to have a designated amount of money come back to them without having to compete with all other counties and communities across the state. Respondents noted that TIA had contributed to economic development by improving rural transportation infrastructure. One respondent also expressed that TIA had improved quality of life for local residents.

There was also overwhelming agreement that TIA had lived up to the expectations of local government administrators and had delivered on its objectives. Satisfaction with TIA was cross-cutting across all categories, including facilitating project prioritization, dialog among counties, communication, and project implementation and administration (more details below). However, some respondents observed that TIA might not be living up to local residents' perceptions. That sentiment was potentially a mix of unrealistic expectations on how fast projects needed to be delivered (expected faster turnaround), insufficient publicity around projects, a TIA process that could be more streamlined, as well as a trade-off of benefits realized from local SPLOSTs versus regional TIA. There was also a mention that local groups that voted against TIA will never be satisfied, so a regional consensus strategy would be best to getting the referendum passed. One respondent mentioned that while their county of residence voted against TIA, there is now an awareness that local roads would not have been paved without TIA and suggested there will be a positive vote to renew TIA. All but one respondent emphatically stated support for the renewal of TIA. One respondent also felt so strongly about TIA's benefits that they would lobby others to vote for it.

Familiarity with TIA

All interview respondents were either "extremely" or "very" familiar with TIA and the way it is funded. In particular, they were very aware of the fact that local government would receive a share of new funds collected and local governments had autonomy on how these funds could be spent. Respondents also reported that the local governments receiving a share of the new funds collected and the ability to spend it on projects of their choice was one of the main selling points for residents to support TIA. Familiarity with how TIA is funded was repeatedly characterized as "extremely" important and appeared to have a positive impact on a successful TIA referendum. It appears that this familiarity had been developed through two primary processes: (1) tenure in the county of residence, and (2) involvement in the TIA referendum process and TIA project supervision. As long-time residents of their respective counties, respondents expressed deep familiarity with the TIA process and benefits to local government, and knowledge of how the local community collectively felt about it. Some respondents had

professional roles that involved direct interaction with the TIA referendum process and subsequent supervision of TIA projects. Some respondents had played an active role in the TIA referendum process from the very beginning. They had served on roundtables and other executive meetings/discussion forums, served as advocates for the program, and played a consensus building role in selecting and finalizing regional project lists that were put to public vote. This consensus building role seemed particularly important where counties within a region had differing preferences for single-county TSPLOSTs or a larger regional effort. After TIA had been voted on, most respondents were directly or indirectly involved in the supervision and management of TIA projects after the legislation had passed.

Sentiments on Local Benefits

Respondents were unanimous that TIA played a critical role in improving transportation infrastructure in local communities. It was seen as a critical source of revenue that supplemented state and local funding. One respondent characterized it as a "blessing for rural communities" that were unable to meet many transportations needs due to their limited budget. Many local projects that were included in long-range transportation plans or were otherwise considered to be critical for local infrastructure and economic development would never have materialized ("remain on the books") if not for TIA funding. Oftentimes, state funds and other traditional revenue streams are not designed for or are insufficient to meet local needs. TIA, thus, fills in a critical gap. One respondent reported that TIA frees up funds to do other projects rather than just focus on the highest priority projects that get state funds. In rural counties, TIA has served the need for basic infrastructure improvements, such as paving and resurfacing dirt roads. In urban, more populated counties, TIA has extended existing funds to resurface extra miles of roads, repair/build new sidewalks and ensure that they are ADA compliant, and accelerate projects. In the CSRA region, TIA funds have been used for information technology service (ITS) projects (i.e., digital message boards, enhanced adaptive traffic controls), suggesting an additional role for TIA in upgrading transportation infrastructure.

Sentiments on Local Government Autonomy

The way that TIA funds were allocated also had several perceived benefits. The fact that a share of new funds collected went back to local governments and their ability to control how to spend it was seen as extremely important. One respondent in Southern Georgia reported that if not for TIA, they would be competing with the entire state for funds. TIA gives regions a designated pot of funds to complete projects. A respondent from the River Valley region noted that it is very empowering to let localities spend funds as they see fit and have the ability to select their own projects. Respondents also exhibited a clear understanding that projects funded from the 75 percent had to be part of the original project list that is voted upon by local residents and that the 25 percent discretionary funds go back to local governments which have some leverage on how those funds are used (on projects they think are important).

In addition to providing a critical revenue stream to implement important projects that could not be funded or were not otherwise affordable, TIA provided flexibility to local governments to fund transportation projects that they think are important locally. Respondents reported that there are many capital road expenditures that are unseen during the annual budgeting process. Furthermore, while states have only aggregate data, only local governments have insights on which transportation projects have potential for the future (such as greenspace, sidewalks, transit, etc.). TIA discretionary funds allow local governments to change direction midway, as they see fit, to implement projects that fulfill long-term outcomes. TIA frees up funds to do other locally strategic projects that might not get funded through regular state and federal channels. There are also many capital road expenditures that are unseen during the annual budgeting process, and TIA helps cover these unforeseen capital expenses.

Sentiments on Regional Equity

Two generally divergent themes emerged from the interviews with regard to TIA's role in facilitating regional equity. Respondents personally all supported TIA and its ability to promote regional equity between urban (richer) and small/rural (poorer) counties. Various comments such as "it's the right thing to do" and "all counties should be given their fair share, money

distribution is a huge factor" are indicative of this sentiment. Respondents from two of the larger urban counties represented in the TIA regions noted that while they were the economic hub in their regions, it was important to share their prosperity with their neighbors. A respondent from the Southern Georgia region reported that 51–52 percent of sales tax revenues in the urban county were generated by residents from surrounding rural counties who shop there. Folks from smaller, neighboring counties contributed to their revenue, so it was only fair to share the collections with them. This information was also shared with the public to raise awareness for TIA. Another respondent cited an example where small rural counties in the vicinity of a larger county could do more together when they share collective resources. When resources are shared, it is the equivalent of creating a "brain trust" where leaders come together to create best practices to share funds more efficiently.

While some local administrators felt positively about TIA's role in promoting regional equity, they did report differing viewpoints among residents. One administrator mentioned that while it failed in their county of residence, they were able to improve the margins and get it passed regionally. This particular county had a large conservative group that campaigned heavily against regional TIA. They didn't want to become a "donor" county or share their collections with other rural counties and that "they would collect more than they could keep." On the other hand, a rural county administrator reported that their county did not get a fair share in the regional TIA. This county already had a local SPLOST in place. Both regional and local sales taxes had raised the total sales taxes to 9 percent and this was perceived as a heavy burden on local residents. County administrators from another region specifically noted that other sales tax efforts must be considered when deciding on the optimal timing for a TIA renewal vote. One respondent from this region mentioned that the TIA vote "can be very contentious" and it would not be advisable to put TIA on the ballot at the same time as other tax-related ballots. TIA renewal was characterized as a "juggling act" and predictions for success were tentative. There are too many competing SPLOSTs (the city and the school district are also bringing up ballots for renewing their SPLOST efforts) and administrators were unsure if people would be interested in voting for multiple taxing efforts. Several cities and counties in this region wanted to do it this year, but the renewal vote was tabled for a later date. However, the respondent

was complimentary toward GDOT's efforts in facilitating dialogue by not "playing favorites" and that they have shared information but have not forced a decision. The respondent also pointed to the importance of building consensus between large urban counties and smaller rural counties since the urban counties were dependent on the rural counties for revenue generation.

One respondent (GDOT administrator) added further insight on the varying importance of the discretionary funds for each county. Counties with lower population get limited Local Maintenance and Improvement Grant (LMIG) funds. Larger counties that receive more LMIG funds can do more. Therefore, discretionary TIA funds are very beneficial for smaller counties, and residents should pay more attention to that structure for receiving funds. The TIA funding mechanism gives GDOT more opportunities to partner with counties with the discretionary funds. This mechanism is under-advertised and should be the main selling point for smaller counties. However, in regions where TIA did not pass, this can be a two-edged sword. Individual county SPLOSTs are more popular politically as they recapture more revenue locally.

Communication and Resident Engagement (Is the local population generally aware of the TIA program?)

Overall Communication Around Projects (Has it been effective?)

All administrators and local government officials interviewed reported high levels of satisfaction with communications from GDOT and TIA administrators. Respondents characterized GDOT communication as honest, frequent, and timely, and that it had gone very well. They were appreciative of the fact that GDOT was very prompt in responding to queries and always came back with an agreeable solution. GDOT also worked well in a coordination role to set up regular meetings with Regional Commissions and facilitate dialogue and coordination of activities. There was also a notion that GDOT has played by the rules and been consistent with their messaging. One region noted that TIA administrators communicated very well with the Citizen's Review Panel and the local engineers. GDOT even helped manage projects for smaller, rural

counties that did not have the staff capacity. Another respondent was very appreciative of the fact that GDOT has been constantly trying to improve its communication over time.

With regard to residents' awareness of TIA and benefits at the local level, the comments presented mixed perspectives. While local administrators generally agree that residents were aware of TIA, they were unsure of the degree to which they understood TIA's benefits. To that extent, there were some suggestions on how this could be improved. At a high level, the major theme was making the benefits of TIA very visible to the public at the local scale.

Other Methods to Publicize Local Benefits

Respondents from the River Valley region reported the importance of marketing to promote local impacts and benefits of TIA. One respondent suggested the development of a standardized marketing approach that a local entity could build on. GDOT could highlight projects funded through local collections relevant to each region. Currently, many citizens are at home and on the internet. This presents a great opportunity to link GDOT and TIA and showcase what was funded at the local level (e.g., city scale). Also, sharing before and after photos and similar visuals would help make it real for residents. Another respondent commented that most residents are aware since they see signs by projects that were funded by TIA. However, the general public may not fully understand how the 25 percent discretionary funds were used and more communication was needed around that. The use of common communication channels (e.g., news media, websites, etc.) to improve visibility and funneling information through governmental entities such as the Chamber of Commerce Regional Commissions was recommended.

Respondents from the HOGA and Southern Georgia regions reinforced the importance of signs showcasing projects funded by TIA. One respondent said that GDOT had been proactive in marketing by placing signs on TIA-funded projects. It communicated to residents where money for projects came from and is critical to success of renewal efforts. Another set of comments related to the fact that TIA benefits become real for local residents only when construction begins and that the "local residents only start paying attention when it becomes real to them,

when the asphalt hits the road." Along that same theme, a couple of respondents suggested a potentially more streamlined process in getting projects implemented faster as the perception was that local SPLOSTs delivered benefits sooner. There was also a recommendation for GDOT to allow local governments to expand project publicity and information-sharing efforts by increasing advertising funds.

Effectiveness of Website

Most of the interview respondents in the role of local government administrators had frequently visited the website and, thus, were very familiar with it. All respondents agreed that the website was effective and no significant enhancements were necessary. The website was characterized as functional and provided all the required information. One respondent commented that GDOT had done a good job of documenting all the projects. There was also the notion that individuals who work for/with local government or GDOT may be more aware of the website than local residents. There was also a suggestion to include more information about projects and local collections at a smaller scale (i.e., more local levels, such as county or city) so that local residents could see exactly how the funds were being allocated and used.

TIA Implementation and Program Administration

Overall Satisfaction with TIA Implementation and Program Administration

Overall, there was agreement that TIA implementation has worked well and GDOT had delivered on what was promised. One respondent pointed out that while the regular GDOT processes are lengthy and time-consuming, TIA has been streamlined and project timelines had been shortened. Respondents were very complimentary on the support they had received from both TIA and GDOT administrators and their efforts to work together to figure out implementation challenges. Specifically, the respondent stated, "GDOT did an incredible job, considering it was a brand-new program. They chose the right team and they had the support of the entire GDOT organization. They were very good at fielding questions from city government and residents and always figured it out." Another respondent said that "everything

has worked exactly as promised." One area of improvement suggested was in project prioritization to improve visibility for TIA and increase buy-in for the program. The respondent recommended more work to be done by counties to get a more detailed project list at the local (micro) level where residents can directly see improvements (e.g., neighborhood roads rather than large bridge/bypass projects where benefits are not readily evident). More projects that provided local visibility were needed where citizens can see direct benefit. The following subsections discuss more specific aspects of implementation that were described in the interviews, particularly around examples of success and areas for improvement.

Flexibility in Project Prioritization (They have complete control over local projects, the 25 percent, but they cannot change the voter-approved projects, the 75 percent.)

Respondents from the Southern Georgia region were very appreciative of the fact that when projects in later bands had to be reprioritized, TIA administration helped them move the projects up to earlier based on local needs. For example, they were able to move Band 3 projects (last 3 years) to earlier bands when needed. This helped projects that were important to the community get done sooner than expected.

Assistance in Project Implementation (It is important to distinguish between voter-approved projects [the 75 percent] and local projects [the 25 percent]. GDOT implements all voter-approved projects. If you collected any information on whether local businesses are used on the two types of projects, that is good and worth mentioning, especially small, minority, or veteran businesses.)

There was overall consensus that GDOT managed project implementation very well through constant communication, helping local governments bring projects to fruition and tracking dollars. Every region reported using local contractors, small businesses, and disadvantaged business enterprises (DBEs) wherever feasible. For smaller, rural counties where qualified contractors were unavailable, contractors from neighboring counties within the region were allowed to bid for projects. A respondent from the CSRA region mentioned that projects funded through a discretionary pool ensured that local contractors were involved. For projects funded from the 75 percent bucket, local contractors who had the qualifications were definitely given an opportunity to participate on bids. HOGA respondents reported that local contractors have

participated across the region. It has also been a real asset for the paving industry. TIA came in right after 2008, so it has been a real boom for the contractors. Similarly, in the Southern Georgia region, several local firms have participated. Two major local paving contractors have won projects, and bridge contractors in the region have also benefited.

BENEFIT–COST ANALYSIS

Benefit–Cost Analysis (BCA) is the economic evaluation of the financial and non-financial benefits of a given project, evaluated against the costs of the project. To determine the benefits of a particular project, one must be able to determine what would happen in its absence. Since this is seldom known, researchers typically establish a "do-nothing scenario" to compare the benefits and costs of alternatives. The do-nothing scenario in this research is a region that is similar to TIA regions but did not pass the referendum.

BCA aims to monetize transportation-related components (e.g., travel time, safety, maintenance) and estimates all costs and benefits associated with a specific project. For some projects, such as constructing a new interchange, there may be a significant reduction in travel time and crash frequency, but maintenance costs may increase simultaneously. Therefore, a well-designed BCA should quantify whether savings from travel time and crash reduction exceed the cost of design, construction, and increased maintenance cost.

The first step in establishing a robust BCA framework is to define the purpose (e.g., select the best alternative, the feasibility of assessing a specific project) and level of detail for the study. The level of detail is dependent on the availability of data. BCA tries to consider all possible costs and benefits associated with a specific project, but in practice, data availability dictates the level of detail at which BCA can be conducted. The second step is to monetize the components of the projects, either directly or indirectly. Afterward, it is possible to determine the difference between the costs of implementing a project and its benefits. It should be noted that all monetary values should be converted to the same base year.

With respect to cost, some components, such as the initial cost of design and construction, are already in monetary units and are considered as one-time costs that occur in the initial year. However, other costs, such as those involved in the maintenance and operating, are recurring and should be discounted to the current year.

The benefits of a transportation project are typically estimated by comparing transportation-related components—such as travel time, vehicle miles traveled, and crash frequency—after project implementation to the do-nothing scenario, and assigning monetary values to the differences. Typically, some type of predictive modeling or engineering analysis is involved.

The current study does not implement full BCA. Instead, it establishes the methodology and baseline conditions for doing so, as more TIA projects are completed.

Methodology

The components of conducting BCA are as follows: delay cost (DC), fuel cost (FC), total crash cost (TCC), walkability benefits (WB), social impact cost (SIC), and environmental cost (EC). Therefore, the total transportation costs for region R and year Y can be estimated as a summation of all costs associated with the transportation-related components as:

$$TC_{R,Y} = DC_{R,Y} + FC_{R,Y} + TCC_{R,Y} - WB_{R,Y} + SIC_{R,Y} + EC_{R,Y}$$

To determine the benefits of implementing TIA in each region, the researchers must first establish a do-nothing scenario. The control region (i.e., Middle Georgia) is considered as the do-nothing scenario and the baseline for BCA. Therefore, the benefits of implementing TIA are estimated by comparing transportation costs of TIA regions to the transportation costs of the control region. However, it must also be recognized that the base year conditions were different across regions. To normalize the effects of the base year conditions, the study first estimates increase/decrease in the region's transportation costs from 2010 to 2017. This is followed by calculating the benefits of TIA as the difference between changes in transportation costs from 2010 to 2017 of the TIA regions, and changes in transportation costs from 2010 to 2017 of the control region. Figure 2 presents the overall framework of the BCA. It illustrates that net benefits are derived by comparing the change that occurred in the TIA region against the change that occurred in the control region. To estimate these values, the research relies on well-established methodologies, some of which have been used in previous GDOT-funded studies.

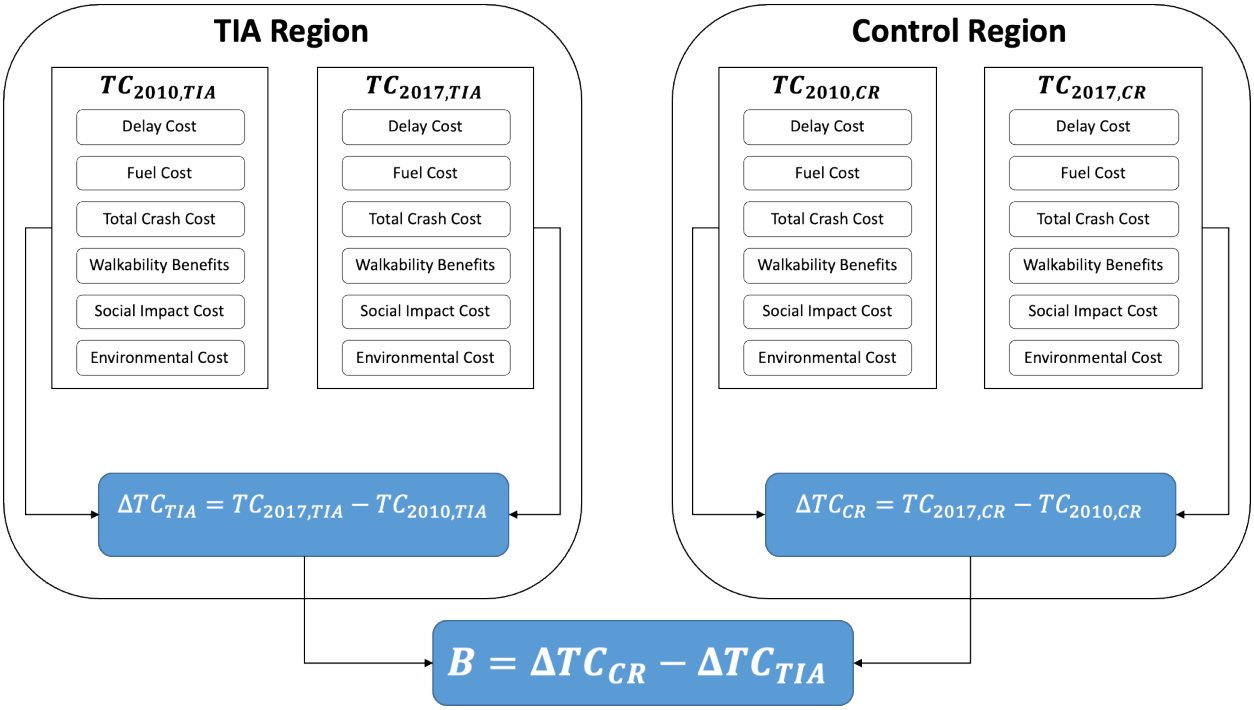

Figure 2. Framework for benefit–cost analysis.

BCA Components

Delay Cost

GDOT developed a methodology for estimating benefit-to-cost ratios (B/C) for transportation-related projects in which benefits are measured by assigning monetary values to reduction in delay. The monetary values are estimated by considering savings in time and fuel cost as a result of implementing a project. As an important determinant of estimating delay costs in GDOT's methodology, value of time (VOT) is considered to have different values for work and non-work trips. For work trips, VOT can be derived from the wages and labor market in Georgia, whereas the willingness to pay (WTP) approach is used to derive the VOT for non-work trips. Past studies usually use the marginal rate of substitution (MRS) for travel time and travel cost (e.g., toll, fuel consumption, etc.) in mode or route choice models to evaluate WTP at the individual level (see, for example, de Dios Ortúzar et al., 2000). In this case, the MRS can be defined as the rate at which an individual gives up travel cost in exchange for acquiring travel

time while maintaining the same level of utility, which can be determined as the relative magnitude of the two estimated parameters in the models.

In a more recent study, GDOT (2010) presents a distribution of VOT for multiple corridors in Atlanta for both private and commercial vehicles. The analysis employs a mode choice model by utilizing a stated preference survey that was conducted in May and June 2007. Based on the results of this report, the mean VOT for private vehicles varies between $7 and $15 per hour (the variation is based on trip purpose and time of day), while mean VOT for commercial vehicles varies between $9 and $28 per hour, depending on the number of axles. The United States Department of Transportation (USDOT) uses the following VOT (presented in table 39) for transportation projects, which are typically assumed to be 30–60 percent of average wages for local travel.

(USDOT, 2011)

Category		Surface Modes	Air and High-speed Rail
Local	Personal	$12.00 per hour	-
	Business	$22.90 per hour	-
Intercity	Personal	$16.70 per hour	$31.90 per hour
	Business	$22.90 per hour	$57.20 per hour

The main factor for estimating delay costs/benefits in GDOT's methodology is vehicle hours traveled (VHT). However, it is practically impossible to estimate the exact value of VHT for regions because they contain a large number of highways, each with its own traffic composition and VHT. Therefore, the researchers first assume that all trips within a region are work-related

travels and estimate the total VHT of the region by multiplying annual traffic[2] with average travel time to work. The monetary value derived by USDOT is $22.90.

Using this approach, it was found that River Valley experienced the highest reduction in delay cost from 2010 to 2017 with about $300 per capita,[3] followed by a reduction of approximately $204 per capita in CSRA. The control region (i.e., Middle Georgia) also experienced a reduction of $1.8 per capita. On the other hand, HOGA and Southern experienced increased delay cost by about $13.87 and $24.43 per capita, respectively.

Fuel Cost

The study estimates fuel cost as a direct result of vehicle miles traveled (VMT), fuel price, and average fuel economy of vehicles. The researchers assumed a fuel price of $2.47 per gallon (based on the average daily price of fuel in December 2019) and the average fuel economy of 20 miles per gallon. From GDOT's methodology, they estimated fuel cost as:

$$FC_{i,Y} = VMT_{i,Y} \times \frac{FP}{FE}$$

where $FC_{i,Y}$ and $VMT_{i,Y}$ are fuel cost and VMT of region i in year Y, FP is fuel price, and FE is fuel economy. Based on the values for VMT in the regions, the research team found that fuel cost increased in all regions from 2010 to 2017. CSRA experienced the highest increased fuel cost with about $223 per capita, followed by an increase of approximately $216 per capita in Southern Georgia. River Valley also experienced increased fuel costs by about $189 per capita. The control region (i.e., Middle Georgia) also experienced increased fuel cost of $143 per capita. HOGA experienced the lowest fuel cost increase of about $133 per capita.

[2] Traffic-related values for the regions including annual average daily traffic (AADT), VMT, and road length are derived from Georgia Department of Transportation, Office of Transportation Data at: http://www.dot.ga.gov/DS/Data#tab-2

[3] All cost values are normalized to cost per capita to provide a better comparison basis.

Total Crash Cost

GDOT assigns a monetary value of $5,8 million to fatal crashes, $333,500 to crashes resulting in injury, and $4,400 to property damage crashes (Tsai, Wu, & Wang, 2011). These values are used to estimate the benefit of projects for safety improvement. In its 2013 *Revised Departmental Guidance on Treatment of the Economic Value of a Statistical Life*, USDOT sets the value of a statistical life (VSL) at $9.1 million in 2013 dollars, and recommends sensitivity analysis using "low and high alternative values of $5.2 million and $12.9 million" (USDOT, 2013). This guidance also includes rates for calculating the cost of injuries at different severity levels (using a 3- or 7-percent discount rate) as illustrated in table 40.

(USDOT, 2013)

Abbreviated Injury Scale (AIS) Level	Severity	Fraction of VSL
AIS 1	Minor	0.003
AIS 2	Moderate	0.047
AIS 3	Serious	0.105
AIS 4	Severe	0.266
AIS 5	Critical	0.593
AIS 6	Unsurvivable	1.000

Other studies use quality-adjusted life years (QALY) to identify crash costs. For example, Council et al. (2005) rely on a QALY value of $91,572 each, with a 3-percent discount rate, and explore additional methods for lost productivity costs, and legal and insurance administration costs associated with crashes.

There are four types of crashes identified in GDOT's data, including minor crashes (i.e., property damage only), injury, severe injury, and fatal crashes. The total crash cost of the region is the summation of the cost for all of these types of crashes. The study considers $9.1 million as the value of a statistical life according to USDOT (USDOT, 2013) along with the rates outlined in table 40 for crash cost. Rate of statistical life for minor crashes, injury, severe injury, and fatality are, respectively, 0.003, 0.047, 0.266, and 1.

Analysis of the crash data reveals crash-related costs increased from 2010 to 2017 in all regions except for HOGA, which experienced cost reduction corresponding to fatal crashes and injuries by $243 and $191 per capita, respectively. The research team found that Middle Georgia and CSRA experienced the highest increase of total crash costs per capita with $2,717 and $2,462, respectively. River Valley and HOGA also experienced increases in total crash cost per capita by $1,135 and $1,260, respectively.

Walkability Benefits and Social Impacts

Transportation projects that improve pedestrian infrastructure may provide significant health benefits. Boarnet et al. (2008) assessed the economic value of these benefits using age-adjusted mortality rates and VSL estimates in 2006 dollars, as summarized in table 39.

Table 39. Health benefits from increasing walkability.

Neighborhood Walkability Changes	Total Benefits		Per Capita Benefits	
	Lower	Higher	Lower	Higher
Increase number of intersections within ½ mile	$2,255,107	$23,205,007	$451	$4,641
Increased retail employment density	$466,576	$18,331,955	$93	$3,666
Increased employment density	$155,525	$19,494,206	$31	$3,898
Increased population density	$1,555,247	$8,353,802	$311	$1,671
Distance from central business district	$4,510,215	$61,725,318	$902	$12,345

Social impact assessment researchers such as Vanclay (2003) have pointed out that environmental impact assessments often consider a limited range of social issues "such as demographic changes, job issues, financial security, and impacts on family life." Though Vanclay goes on to argue that these topics represent a limited view of social impacts and do not go far enough, assigning economic value to these factors is already so challenging that they are not usually included in a benefit–cost analysis. Studies that incorporate a social return on investment (SROI) method are able to at least partially overcome this barrier. For example, Miller et al. (2015) used a stochastic sensitivity analysis based on SROI to help decision-makers in Iowa better understand the socioeconomic effects of rural bridge maintenance plans in

different areas. Similar to environmental cost of transportation systems, Victoria Transport Institute (2016) considers 3¢ (2007$) per vehicle miles traveled for social costs.

To estimate the walkability benefits, the research team considers a combination of benefits from increase in population density and employment density. According to table 39, a unit increase in population density results in minimum benefits of $311 per capita, and a unit increase in employment density results in minimum benefits of $31 per capita. With respect to the social impacts, the research team considers 3¢ (2007$) per VMT, in line with the recommendation from Victoria Transport Institute.

Based on the values for VMT, the researchers found that CSRA experienced the highest increase of social costs from 2010 to 2017 with about $54 per capita, followed by an increased social cost of approximately $53 per capita in Southern Georgia. The control region (i.e., Middle Georgia) also experienced an increased social cost of about $35 per capita. The lowest increased social cost is $32 per capita, which was experienced in HOGA.

CSRA experienced the highest increase in walkability benefits by about $90 per capita, whereas HOGA experienced the lowest increase in walkability benefits by less than a dollar per capita. River Valley and Southern Georgia experienced increased walkability benefits by about $10 and $15 per capita, respectively. The control region experienced a significant increase in walkability benefits by approximately $30 per capita.

Environmental Cost

The benefits of projects directed at reducing environmental pollution are generally estimated by calculating people's WTP for reduction in risks associated with pollution. Past studies identified a number of factors that significantly affect WTP, including the resulting health condition, demographic characteristics, and the proposed risk reduction policies. USEPA (2010) published a list of guidelines for monetizing the benefits of environmental policies and projects to be used in benefit to cost analysis. The risk reduction is multiplied by the affected population to derive the number of statistical lives saved, which then will be multiplied by the value of statistical life to calculate the total benefits of a project. VSL is affected by WTP and

demographic characteristics and follows a Weibull distribution with mean of $7.4 million and standard deviation of $4.7 million (both in 2006 dollars).

In addition to USEPA guidelines, scholars are identifying reference values for specific kinds of pollution. Tessum et al. (2014) use a “social cost of carbon of $180 MgC−1 ($49 MgCO2−1) (mean value, 1 percent discount rate, adjusted to 2012$)” in their research on air quality impacts of U.S. transportation, and perform a sensitivity analysis using $23 MgC−1 ($6.19 MgCO2−1) (2012$). Shindell (2015) builds on social cost of carbon studies to calculate a Social Cost of Atmospheric Release (SCAR), indicating environmental damages related to a wider range of pollutants released during fuel combustion: $3.80 (−1.80/+2.10) per gallon of gasoline, and $4.80 (−3.10/+3.50) per gallon of diesel. Victoria Transport Institute (2016) summarized cost estimates for pollution across seven studies, as shown in table 40.

Table 40. Cost of air pollution.

Study	Vehicle Type	Cost (2007$/vehicle mile)
Maibach et al. (2008)	Urban Car	0.003–0.004
	Urban Truck	0.189–0.417
Delucchi (2005)	Light Gasoline Vehicle	0.013–0.205
	Heavy Diesel Vehicle	0.086–1.960
Eyre et al. (1997)	Gasoline Urban	0.040
	Diesel Urban	0.098
FHWA (1997)	Automobile	0.015
	Pickups/Vans	0.034
	Diesel Trucks	0.051
	Pollutant	**Cost (2007$/ton)**
AEA Technology Environment (2005)	NH_3/ton Europe	26,061
	NOx	10,293
	PM2.5	63,339
	SO_2	13,624
	VOCs	2,392
RWDI (2006)	PM2.5/ton	277,359
	O_3 total	1,522
Wang et al. (1994)	NOx	8,059
	ROG	4,040
	PM10	10,868
	SOx	4,853

To estimate the environmental costs, the research team considers values recommended by FHWA (according to table 40) for pollution costs per VMT. The total cost is estimated by multiplying total VMT of the region in a year by these values. Based on the VMT values, results showed that the lowest increase in environmental costs was in HOGA by $16.20 per capita, and the highest increase of environmental costs was experienced in CSRA by about $27 per capita. River Valley and Southern Georgia experienced an increase of $23 and $26 per capita in environmental costs, respectively. The control region experienced a relatively low environmental cost increase by about $18 per capita.

BCA Results

The results of BCA can be shown in a benefit/cost ratio, or net benefit (i.e., difference between total benefits and total costs). The results of BCA for all regions except for Southern Georgia are summarized in table 41. Southern Georgia is excluded from the final results because it was only recently added to the TIA regions. Detailed calculations can be found in Appendix B.

Table 41. BCA results for cost and benefits per capita.

Region	Total Costs (TIA Expenditure)	Total Benefits	Cost per Capita	Benefits per Capita	B/C Ratio
River Valley	$131,495,832	$1,023,839,228	$352	$1,805	5.13
CSRA	$185,170,485	$257,752,005	$393	$1,685	1.03
HOGA	$96,557,493	$989,636,205	$322	$1,427	4.43

SOCIOECONOMIC ANALYSIS OF REGIONS

In this Phase III of the TIA beneficiary analysis, the socioeconomic study is again significantly expanded and updated. Since the Phase II study, the Southern Georgia region passed legislation to approve TIA via a referendum in 2018. This change necessitated a reconsideration of comparison regions, as Southern Georgia was previously used as a control region. As a result, the pairwise comparison model was abandoned and Phase III compares the four treatment regions to Middle Georgia, the single control region. This results in a total of five regions (four TIA and one non-TIA) examined in this phase of the study. Figure 1 provides an illustration of the new region classifications for the TIA Phase III beneficiary analysis.

In addition, the study examines data for all years between 2010 and 2017. New variables are added to the original 13 to expand the analysis. Specifically, this study includes crash data obtained from GDOT, such as number of crashes by county, and associated data, including the numbers of resulting injuries, severe injuries, and fatalities. Another additional variable included in this study is median home value, by county. Variables included in the socioeconomic analysis are given in table 42.

Table 42. Variables Included in the Phase III socioeconomic analysis.

Variable	Source
Total Population	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Land Area (in square miles)	U.S. Census Bureau, 2010 Census Summary File 1
Median Age	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Race (white alone)	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Nativity by Citizenship Status (foreign born)	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Population Density (per square mile)	Calculated from total population and land area
Median Household Income	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Employment Status (for civilian population 16 years and over, total civilian labor force size)	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Occupancy Status	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Educational Attainment (for population 25 years and over)	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Average Commute to Work (minutes)	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Median Home Value	U.S. Census Bureau, 2006–2010 ACS 5-year Estimates, 2013–2017 ACS 5-year Estimates
Building Permit Estimates	U.S. Census Bureau, 2010–2017 Building Permits by County
Obese Population	2010–2017 County Health Rankings; Georgia
Crash Data (crash/injury/severity of injury/fatality)	Georgia Department of Transportation, obtained via communication with the Crash Reporting Office, May 2019
Vehicle Miles Traveled	Georgia Department of Transportation, Mileage by Route and Road System, Report 445, 2010–2017
Road Mileage	Georgia Department of Transportation, Mileage by Route and Road System, Report 445, 2010–2017
TIA Discretionary Disbursement (25% to local jurisdictions)	Georgia Department of Transportation

In the following analysis, four regions that passed the Transportation Investment Act since 2012 are compared to one control region where TIA was not passed. The four regions that passed TIA are River Valley, CSRA, HOGA, and Southern Georgia; the region that did not pass TIA is Middle Georgia.

Summary by Region

Table 43 summarizes county data aggregated to the regional level in 2010 and 2017, followed by a discussion of key findings and a more detailed comparison of regions with county-level data. TIA treatment group regions are in green and the control region is in blue.

Notes on Variables and Graphs

- *Certain variables needed to be modified when used at the aggregate regional level, due to the nature of the raw data. Age, Household Income, and Housing Value are all provided by the U.S. Census as medians at the county level, limiting the ability for a regional report to use a "true" median. The research team elected to use the "median of medians," that is, the median of all counties' medians in the region. For the discussion in the following sections, the term "median" is used when discussing the "median of medians" at the regional scale.*
- *All variables reflecting region-wide means are "true" means, calculated from aggregate county-wide data.*
- *When discussing how indicators change over time, this report refers to the "percent change" to account for variations between regions and counties. In all these cases, the percent change is the difference divided by the original value.*
- *Graphs with an asterisk (*) in the caption indicate that there are missing data. GDOT accident data are missing for Chattahoochee County in 2014, so VMT and Mileage for Chattahoochee County are not included in 2014 to be consistent when discussing crash rates.*

Table 43. 2010 and 2017 regional summarized data.

2010 DATA																		
Region	Population	Area (sq. ml)	Population Density (pop/ sq. ml)	Median Age	Percent White	Percent Foreign Born	Median Household Income	Civilian Employment	Total Building Permit Units	Percent 25 and over with Bachelor's Degree	Percent Obese	Average Commute (minutes)	Median Housing Values	Million VMT	Road and Highway Mileage	Crash Rate	Injury Rate	Serious Injury Rate	Fatality Rate
Central Savannah	446,585	5,025	89	38.1	52.80%	3.70%	$ 31,382	180,810	1,815	20.90%	31.0%	22.2	$ 77,000	5,038	8,191	2.95	1.03	0.11	0.014
Heart of GA	298,255	6,801	44	37.6	66.30%	4.30%	$ 35,422	113,990	162	11.90%	30.5%	23.2	$ 76,700	3,882	12,589	1.38	0.79	0.18	0.022
River Valley	365,765	5,221	70	38.4	50.20%	3.80%	$ 30,996	141,214	578	18.80%	30.7%	20.3	$ 72,450	4,302	8,009	2.12	0.86	0.12	0.013
Southern GA	398,396	7,815	51	36.3	66.90%	4.10%	$ 35,360	163,452	1,273	14.00%	30.0%	20.5	$ 77,100	5,350	12,016	1.88	0.89	0.16	0.018
Middle GA	482,082	3,547	136	39.4	57.70%	3.60%	$ 38,798	200,719	1,204	20.70%	30.6%	22.0	$ 113,900	6,546	6,765	2.33	0.97	0.08	0.012

2017 DATA																		
Region	Population	Area (sq. ml)	Population Density (pop/ sq. ml)	Median Age	Percent White	Percent Foreign Born	Median Household Income	Civilian Employment	Total Building Permit Units	Percent 25 and over with Bachelor's Degree	Percent Obese	Average Commute (minutes)	Median Housing Values	Million VMT	Road and Highway Mileage	Crash Rate	Injury Rate	Serious Injury Rate	Fatality Rate
Central Savannah	471,434	5,025	94	40.6	52.4%	4.30%	$ 37,711	188,673	2,195	22.60%	32.5%	23.4	$ 82,400	5,892	8,531	2.94	1.14	0.12	0.016
Heart of GA	300,012	6,801	44	38.2	65.1%	3.80%	$ 36,355	106,380	183	13.20%	32.9%	23.7	$ 77,900	4,206	12,786	1.50	0.73	0.20	0.019
River Valley	373,606	5,221	72	43.3	48.8%	4.80%	$ 33,804	143,599	779	21.40%	30.2%	21.6	$ 81,450	4,874	8,356	2.29	0.79	0.12	0.014
Southern GA	410,921	7,815	53	38.5	67.1%	4.40%	$ 36,692	158,674	1,635	16.00%	32.8%	21.5	$ 81,700	6,070	12,455	1.68	0.75	0.18	0.014
Middle GA	494,834	3,547	139	42.5	55.8%	3.90%	$ 41,032	202,018	1,763	22.70%	32.0%	22.5	$ 117,300	7,120	7,016	2.61	1.05	0.10	0.015

Change 2010-2017																		
Region	Population	Area (sq. ml)	Population Density (pop/ sq. ml)	Median Age	Percent White	Percent Foreign Born	Median Household Income	Civilian Employment	Total Building Permit Units	Percent 25 and over with Bachelor's Degree	Percent Obese	Average Commute (minutes)	Median Housing Values	Million VMT	Road and Highway Mileage	Crash Rate	Injury Rate	Serious Injury Rate	Fatality Rate
Central Savannah	5.56%	0.00%	5.62%	6.56%	-0.40%	0.60%	20.17%	4.35%	20.94%	1.70%	1.50%	5.41%	7.01%	16.95%	4.15%	-0.34%	10.68%	9.09%	14.29%
Heart of GA	0.59%	0.00%	0.00%	1.60%	-1.20%	-0.50%	2.63%	-6.68%	12.96%	1.30%	2.40%	2.16%	1.56%	8.35%	1.56%	8.70%	-7.59%	11.11%	-13.64%
River Valley	2.14%	0.00%	2.86%	12.76%	-1.40%	1.00%	9.06%	1.69%	34.78%	2.60%	-0.50%	6.40%	12.42%	13.30%	4.33%	8.02%	-8.14%	0.00%	7.69%
Southern GA	3.14%	0.00%	3.92%	6.06%	0.20%	0.30%	3.77%	-2.92%	28.44%	2.00%	2.80%	4.88%	5.97%	13.46%	3.65%	-10.64%	-15.73%	12.50%	-22.22%
Middle GA	2.65%	0.00%	2.21%	7.87%	-1.90%	0.30%	5.76%	0.65%	46.43%	2.00%	1.40%	2.27%	2.99%	8.77%	3.71%	12.02%	8.25%	25.00%	25.00%

Notes: Housing permit data were not available for Glascock County and Wilcox County for any year. Housing permit data were not available for Webster County before 2016, and Taliaferro County for 2017 and 2018. GDOT accident data are missing Chattahoochee County in 2014.

Sociodemographic, Education, and Health Characteristics

Overall, between 2010 and 2017 all regions showed relatively stable or similar trends in sociodemographic characteristics such as population, population density, median age, percent white, percent foreign-born, as well as education statistics. All regions experienced growing populations, and health statistics, represented by adult obesity rate, are in flux throughout the study period, with all regions settling after 8 years within 10 percent of their original rates. The regional median age also grew over the years, showing an aging population overall. Most regions remain largely white despite small drops in most regions over the study period, with this demographic representing over 49 percent of the population in all regions.

The indicator for education, defined as percentage of the population 25 years and older with a bachelor's degree, is between 13 and 23 percent across all regions in 2017, up from a range of 11 to 21 percent in 2010. The health indicator is the percentage of the population that is obese, which increased across all regions by between 4 and 10 percent, except for River Valley, whose adult obese percentage decreased by 2 percent. Throughout the study period, the regional obese populations remained between 30 and 35 percent of the adult populations.

Select changes in sociodemographic, education, and health characteristics are represented in the graphs below (see figure 3 through figure 6).

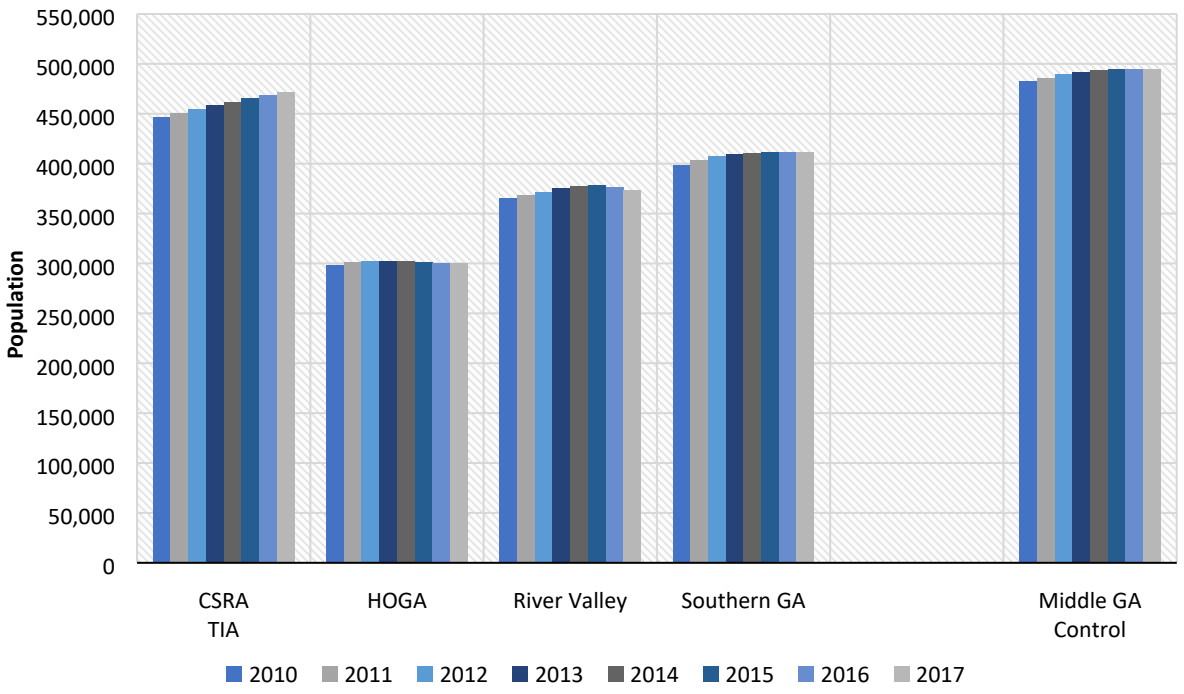

Figure 3. Population change, by region and year.

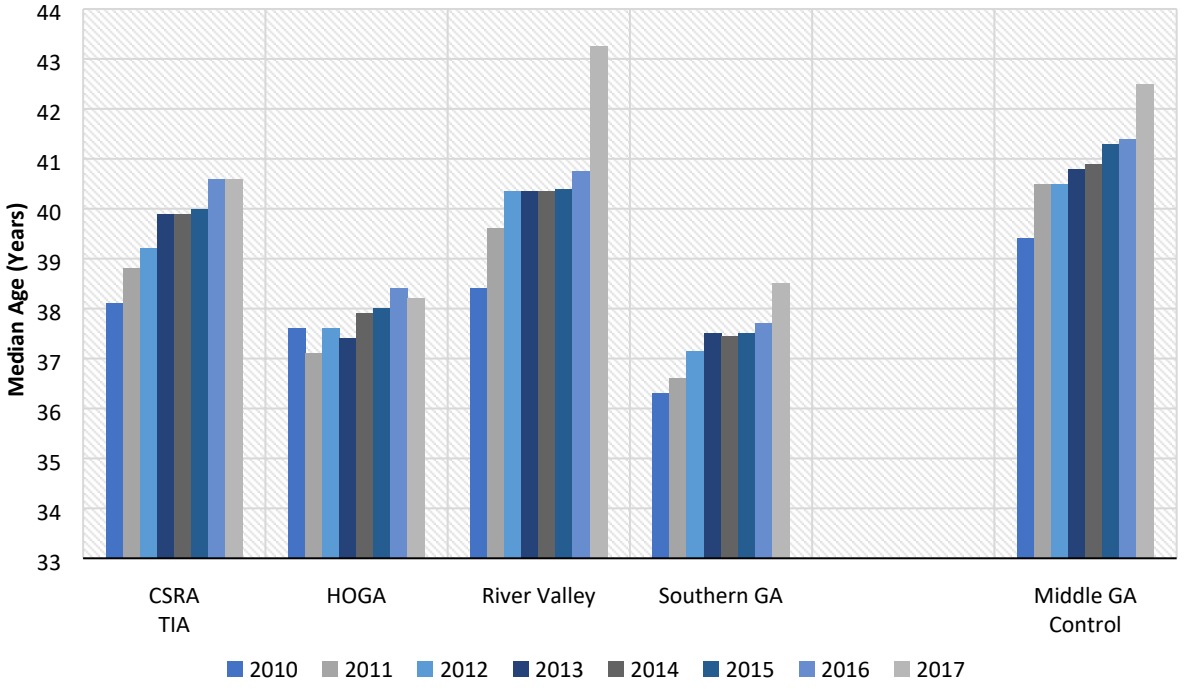

Figure 4. Median age of population, by region and year.

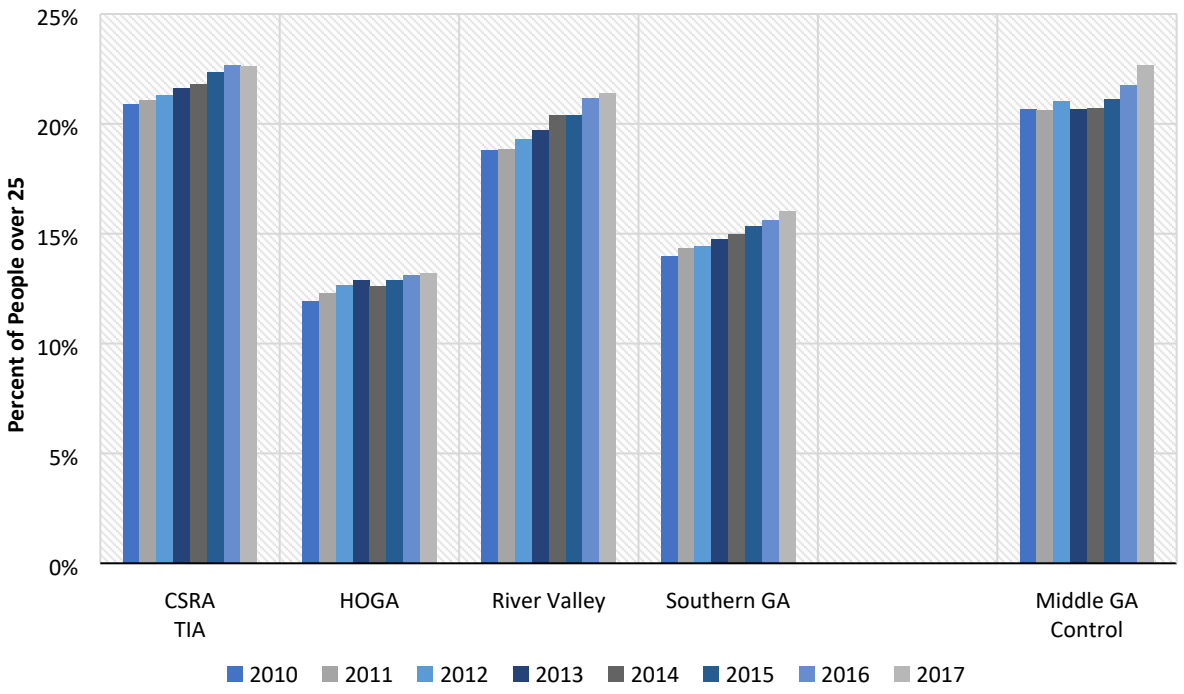

Figure 5. Population with bachelor's degree, by region and year.

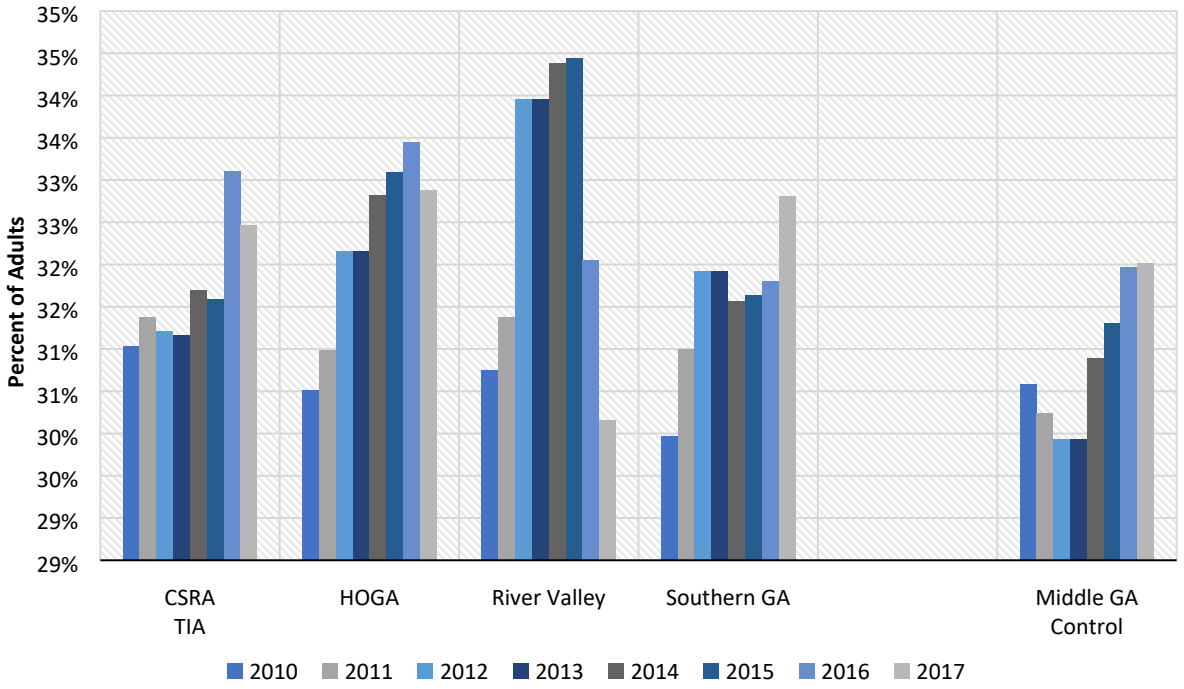

Figure 6. Adults with obesity, by region and year.

Socioeconomic Characteristics

The socioeconomic characteristics examined in this study include median household income, median home value, percentage of vacant housing units, civilian employment rate, and number of units from building permits issued. Median household income increased in all regions between 2010 and 2017, with the highest rate of 20 percent in CSRA. In 2017, median household income ranged between $36,000 to about $44,000. The median home values fluctuated, but all experienced a net increase. Home values showed greatest appreciation in River Valley, where they rose by about 12 percent. There is a narrow range of median home values across the regions studied, from around $78,000 in HOGA to just over $117,000 in Middle Georgia. Percentages of vacant housing units grew in almost all regions by between 1 and 23 percent, though they dropped by 1.31 percent in Middle Georgia. In 2017, the percent of the housing units that were vacant ranged from 15 to 19 percent across the regions.

The civilian employment rate in 2017 was within ±2 percent of the 2010 rate, though the rates in each region hit their lowest point in 2014 at between 87 and 91 percent. The number of new units authorized on building permits trend positive in all regions, with major fluctuations throughout the sample size. The total units authorized in 2017 are between 12 and 46 percent more than the units authorized in 2010.[4] Select changes in socioeconomic characteristics are represented in the graphs below (see figure 7 through figure 11). Numerical data are presented in the tables in Appendix A.

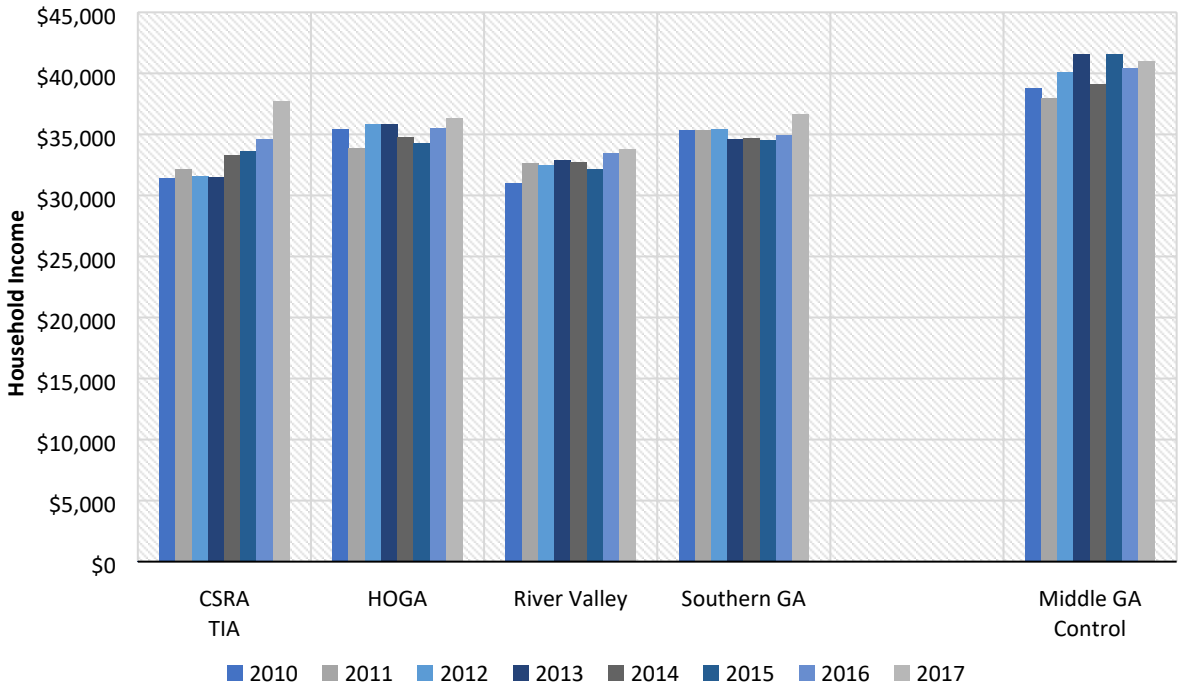

Figure 7. Median household income, by region and year.

[4] Permit data are not available for Glascock County or Wilcox County for any year, Webster County before 2016, or Taliaferro County for 2017 and 2018, so they were removed from the calculations for those respective years.

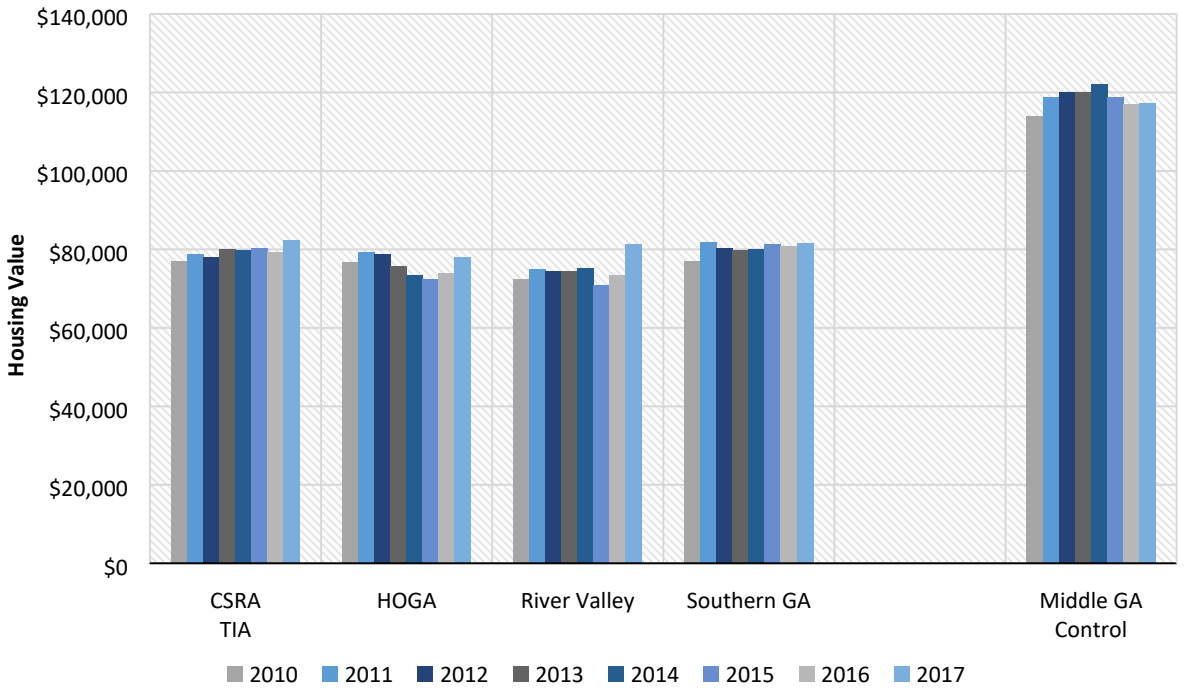

Figure 8. Median home value, by region and year.

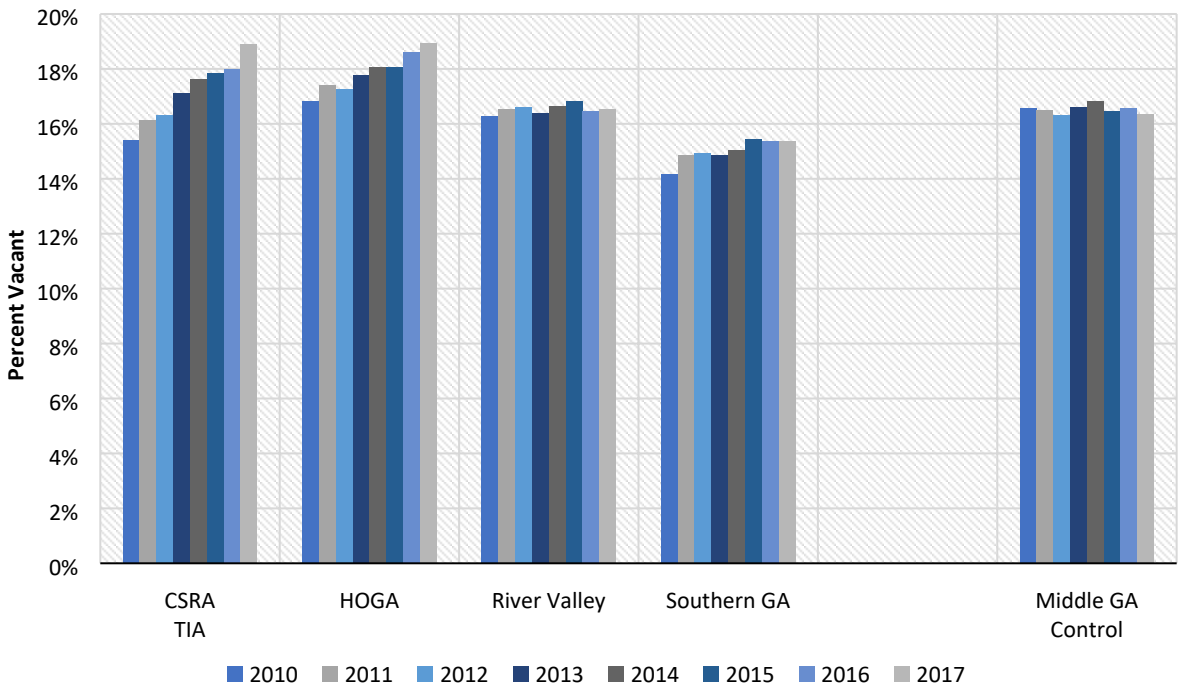

Figure 9. Percent of vacant housing units, by region and year.

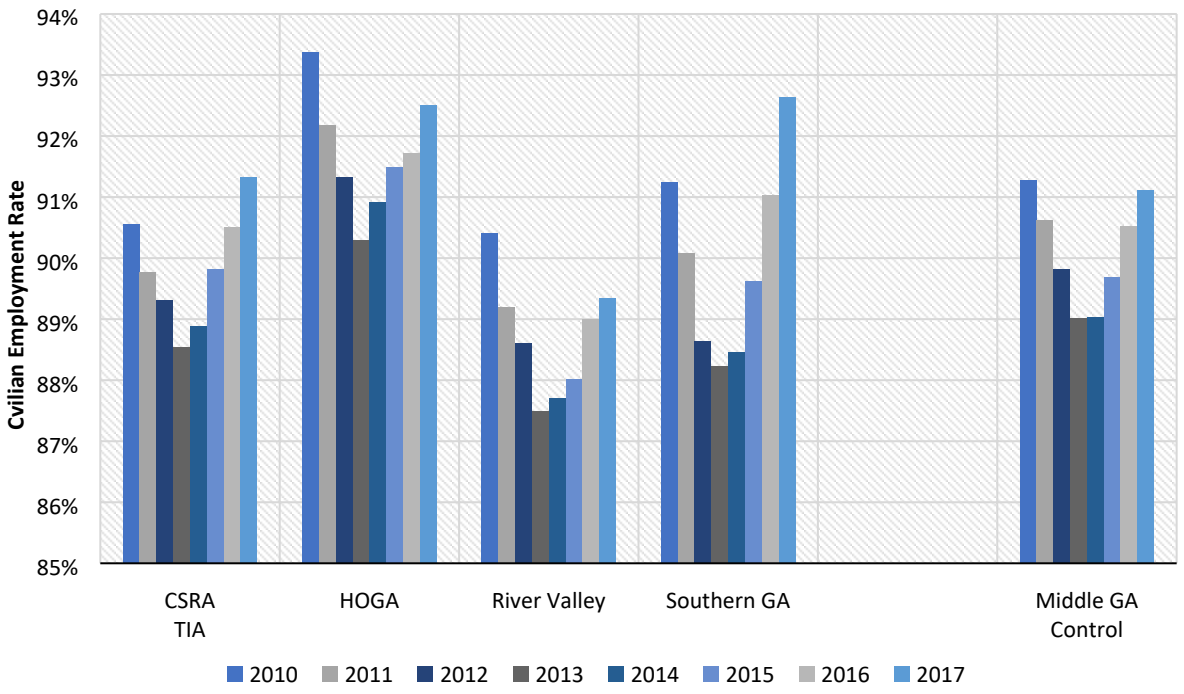

Figure 10. Civilian employment rate, by region and year.

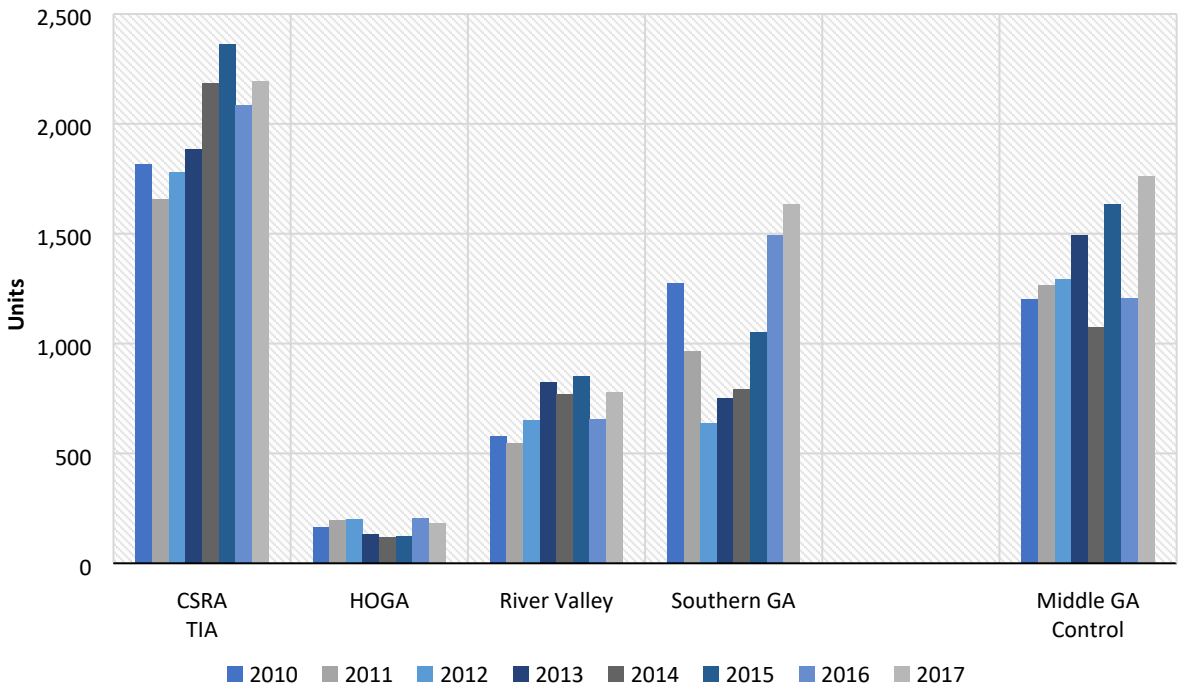

Figure 11. Units from issued building permits, by region and year.

Transportation Characteristics

Transportation characteristics examined in this study include mean commute time obtained from the Census, crash statistics, road mileage, and VMT obtained from GDOT. The average commute time increased throughout the sample period for all regions, generally increasing up to 30 seconds each year.

Crash data from GDOT were a new addition to the variables analyzed in this study. Accident, injury, serious injury, and fatality frequencies are adjusted to rates (events per million vehicle miles traveled) to allow for accurate comparison across regions and years. Motor vehicle crashes rose in all counties by between approximately 1,000 and 3,400 crashes, except in Southern Georgia where there were only 147 more crashes in 2017 than 2010. In 2017, the numbers of motor vehicle crashes ranged between about 6,300 in HOGA to about 19,000 in Middle Georgia. Crash injuries showed a decline in most regions sometime between 2011 and 2014, but then increased sharply in the latest couple of years. Severe crash injuries increased in all regions by between 14 and 47 percent. Like injuries, crash fatalities appear to dip for most regions between 2011 and 2012, but since then have been sharply on the rise.[5]

Select changes in transportation characteristics are represented in the graphs below (see figure 12 through figure 16). Numerical data are presented in the tables in Appendix A.

[5] Crash data were not available for Chattahoochee County in River Valley for year 2014, so it was eliminated from the sample.

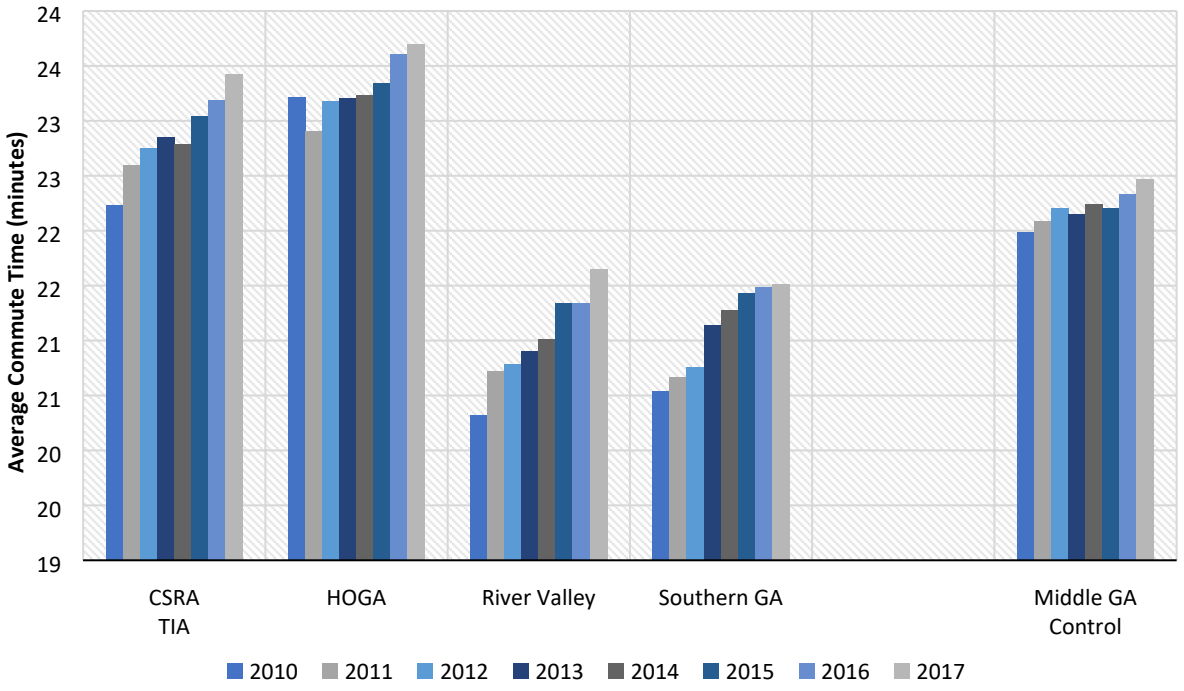

Figure 12. Average commute time, by region and year.

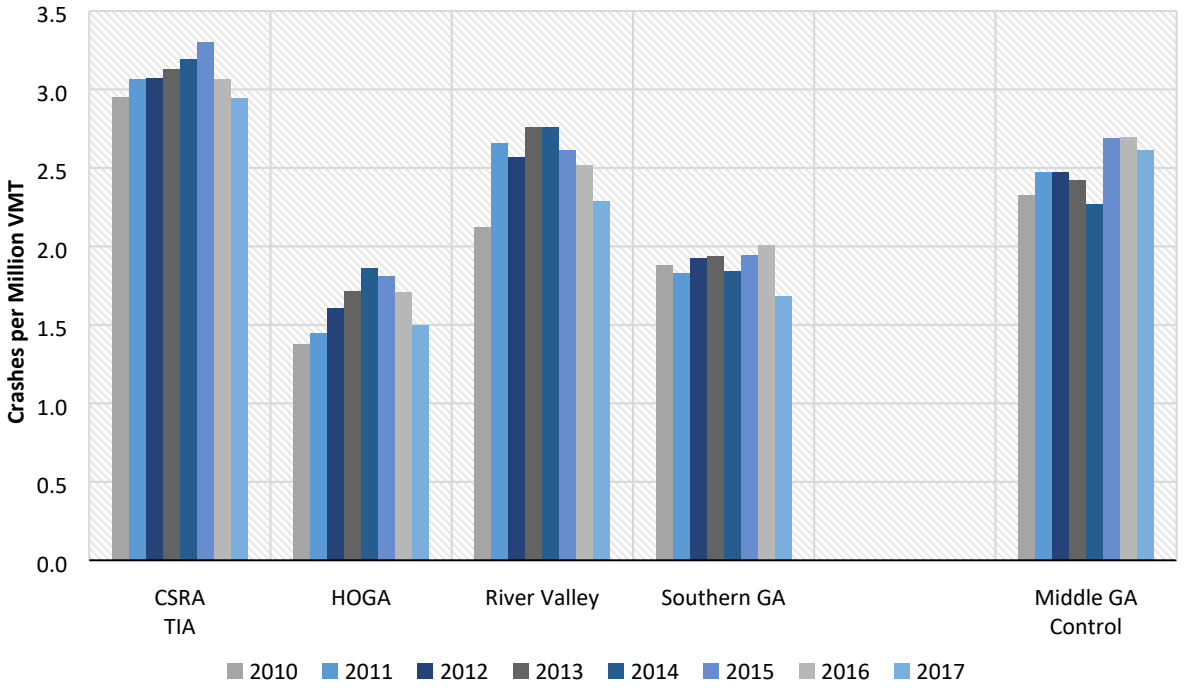

Figure 13. Crash rate, by region and year.

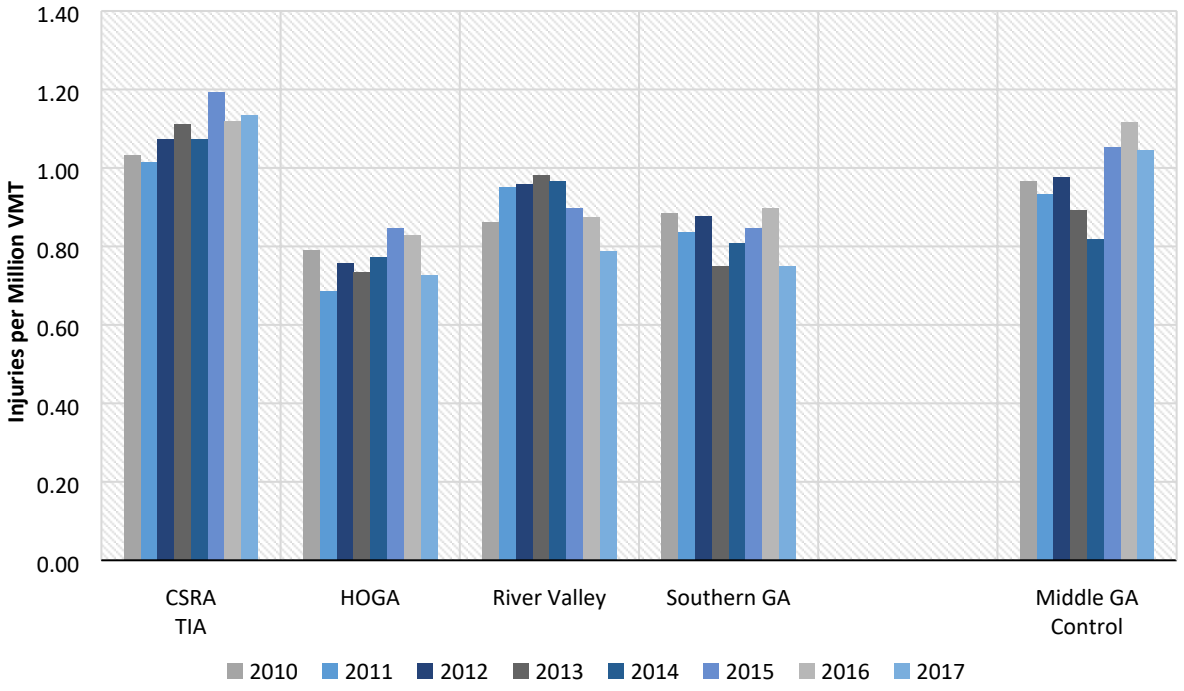

Figure 14. Injury rate, by region and year.

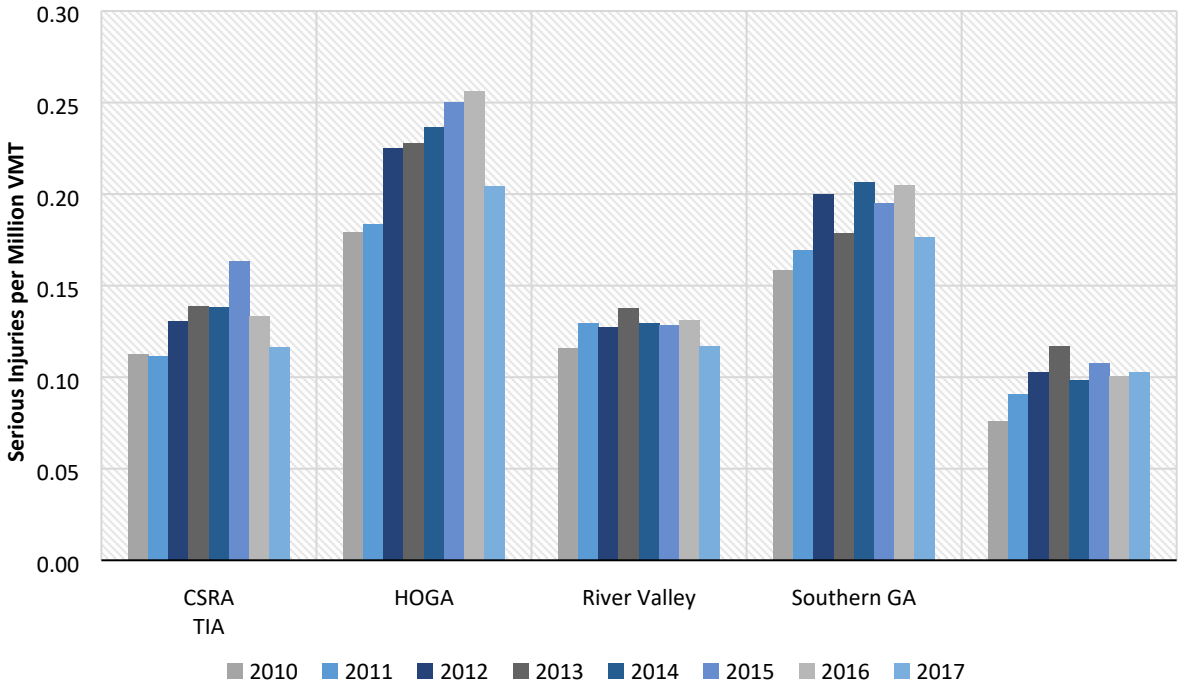

Figure 15. Serious injury rate, by region and year.

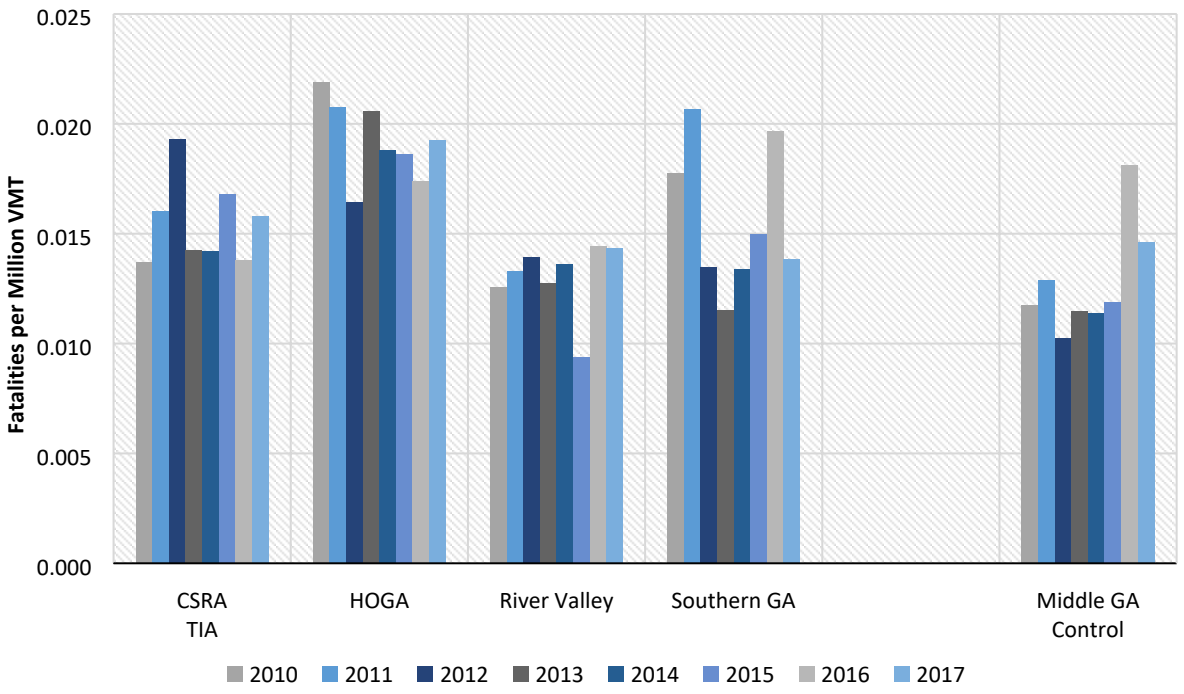

Figure 16. Fatality rate, by region and year.

CONCLUSIONS

The Transportation Investment Act is a voter initiative that adds 1 percent to local sales taxes over 10 years. Seventy-five percent of additional revenue goes to fund approved transportation investment projects, and 25 percent is returned to local jurisdictions to spend on any transportation projects they choose. Three regions approved TIA in 2012: Central Savannah River Area, Heart of Georgia Altamaha, and River Valley. A fourth, Southern Georgia, approved it in 2018.

TIA is expected to generate $1.9 billion, which will be devoted to funding 1,022 approved projects and the 25 percent local discretionary funds. To date (Q1, 2020), 55.6 percent of TIA tax revenue had been collected and 65.5 percent of investment projects had been either fully or partially completed.

This research evaluates the impact of TIA on local stakeholders and beneficiaries. It seeks to determine the following:

- whether TIA is meeting voters' expectations,
- whether GDOT has implemented and communicated effectively about the program,
- how local jurisdictions feel about the 25 percent discretionary funds, and
- whether the TIA regions would vote to approve TIA again.

The last issue has important policy implications; therefore, this research examined it in detail and attempted to isolate the factors that contribute to a positive vote. The research also examined changes in the socioeconomic characteristics of TIA regions and outlines a methodology to conduct a future benefit–cost analysis of TIA.

The main findings of the report are based on an extensive survey of stakeholders and households in the TIA regions and in a non-TIA comparison region (Middle Georgia). The survey is supplemented by personal interviews of stakeholders. The survey results of this Phase III examination are compared to those of the Phase II study, conducted in 2018. The purpose is to

determine whether residents' perceptions of TIA have changed over time. Logistic regression was used to identify specific factors that influenced the TIA voting decision.

Residents of the TIA regions have an extremely favorable view of the program. Most voted for it and would vote positively again to approve it. They feel that GDOT has implemented the program effectively, communicated well with local areas, and the TIA program has met their expectations. This outcome is true for the 2018 and 2020 surveys; however, the degree of favorability declined on the 2020 survey in comparison to 2018.

The lower favorability was an outcome of the fact that the research team intentionally sought to include more household respondents and fewer stakeholders on the 2020 survey. Stakeholders are defined as elected officials; county, city, and local jurisdiction managers; governmental employees; and persons who have some role in the governance and oversight of TIA. Householders are all other individuals. Stakeholders have a much stronger preference for TIA and are more knowledgeable about the TIA program and its benefits to local areas than householders are. The increase in the percentage of non-stakeholders in the survey is as follows: HOGA increased from 8.0 percent (in 2018) to 16.2 percent (in 2020); River Valley increased from 9.5 to 20.3 percent; and Southern increased from 16.3 to 43.2 percent. In 2020, only 3.2 percent of elected officials and 8.2 percent of government employees were not familiar with TIA. In comparison, 54.3 percent of household respondents were not familiar with TIA.

In 2020, there were 278 respondents to the survey, a response rate of 14 percent. In 2018 there were 273 respondents and the response rate was 11.5 percent. There were 75 counties in the regions surveyed. Responses were received from individuals who lived in 72 of those counties. Further, each TIA region was well represented, and the 2020 results better reflected the diversity of the state; about one-half of the respondents were women, and a much larger percentage was black., e.g., 34.0 percent of Middle respondents were black.

The 25 percent discretionary funds disbursed to local areas is one of the most important attributes of the TIA program. The majority of respondents in the TIA regions were aware of the discretionary funds: in CSRA, 64.7 percent indicated *yes*; in HOGA, 59.5 percent; in River Valley,

67.8 percent; and in Southern, 54.1 percent. In contrast, Middle voted against TIA and notably, only 42.6 percent of respondents in that region was aware of the discretionary funds.

Respondents were asked to identify the outcomes of the TIA program that are the most important to them. Ranked from most important to least, the response was as follows:

1. Improving local roads and bridges
2. Providing 25 percent discretionary funds to local areas
3. Creating more jobs and faster economic growth
4. Providing greater funds for local transportation needs
5. Reducing the number of traffic accidents
6. Having local control over transportation expenditures
7. Having better connectivity among regions
8. Reducing traffic congestion

Survey responses indicated the satisfaction with the TIA program is still very positive, but it decreased between 2018 and 2020. In 2018, 86.4 percent of the respondents in CSRA indicated they were either *extremely satisfied* or *somewhat satisfied* with the program. In 2020, 60.8 percent of CSRA residents gave this response. HOGA also recorded a decline in satisfaction, though not as drastic; 88.9 percent were *extremely satisfied* or *somewhat satisfied* in 2018 and 77.1 percent in 2020. The respective percentages for River Valley were 78.0 and 61.0 percent. Finally, in Southern the program was just underway and one would expect a larger percentage of respondents would not be able to assess the impact of it. Overall, in 2020, 29.7 percent indicated they were either *extremely satisfied* or *satisfied*. It is important to note that the inclusion of more household respondents in 2020 significantly reduced the satisfaction with the program. Householders have less knowledge about it and are therefore less satisfied. Nevertheless, this indicates how important it is for GDOT to disseminate more information about the program to households within all four TIA regions.

Respondents were asked to assess the way that GDOT has implemented TIA thus far; 84.5 percent of residents in CSRA felt that its implementation was either *excellent* or *good* in

2018. The comparable percentage in 2020 was 72.0 percent. In HOGA, 91.9 percent of respondents felt GDOT's implementation was either *excellent* or *good* in 2018, and the comparable percentage was 82.2 percent in 2020. In River Valley, the respective percentages were 85.3 and 63.8 percent. Finally, in Southern, the 2020 percentage was 51.8 percent. The decline was because more household respondents were included in 2020. To highlight this point, 81.5 percent of elected officials felt the program implementation was *excellent* or *good* in 2020, as did 81.9 percent of government employees. However, the response among householders was 32.7 percent.

Respondents felt their region's participation in TIA a was a good thing. In 2018, the responses were as follows: CSRA, 93.3 percent; HOGA, 91.7 percent; and River Valley, 92.7 percent. In 2020, the comparable percentages were as follows: CSRA, 82.0 percent; HOGA, 91.8 percent; River Valley, 79.3 percent; and Southern, 73.5 percent.

Respondents were asked how they would vote on TIA today. The *yes* percentages were as follows: 74.0 percent in CSRA; 97.3 percent in HOGA; 89.8 percent in River Valley; 80.6 percent in Southern; and 61.7 percent in Middle. When asked why they voted *yes* for TIA, 68 percent said it was a way of getting improvements to local roads and bridges.

Twenty-one stakeholders were interviewed by telephone. All respondents reported overwhelmingly positive sentiments regarding TIA. Discussions are summarized below:

- Respondents emphasized that the ability for local governments to have some control over funding local projects was the key selling point in enabling a positive outcome for TIA. TIA was seen as a key resource in bringing critical local projects to fruition, which would have been impossible otherwise due to funding constraints.
- Repairing and maintaining local roads and bridges was unanimously cited as the most important transportation-related need in local areas. TIA was seen as a critical resource for maintenance activities such as resurfacing and paving roadways, particularly in rural counties. Respondents also commented on how these improvements were key to local economic development. Visible improvements in

road infrastructure was also seen as an important way to demonstrate program benefits to local residents.

- All respondents were very satisfied with GDOT communication strategies regarding TIA, but there were some additional suggestions that GDOT should improve marketing and publicity of projects, especially to local residents.
- All respondents were very satisfied with TIA implementation, particularly around reimbursement processes and project management.
- All except one respondent had voted for TIA and would support a vote to renew TIA. However, a few respondents reported that they were unsure of how local residents would vote, especially in areas where other single-county tax referenda had been approved.

RECOMMENDATIONS

TIA has been an extremely beneficial instrument for governments to address local transportation infrastructure projects that would otherwise be outside the reach of local budgets. The overall agreement in each TIA region is that the program has lived up to its expectations. Yet, within the regions, the view is not uniform across stakeholders and non-stakeholders. The latter is much less familiar with TIA and its benefits to local areas. As a result, their assessment of the program is less favorable. GDOT should initiate a communications and outreach program to bridge the information gap among non-stakeholders. This is the most critical finding and recommendation of the study.

- Many residents who voted *no* on TIA were not familiar with the 25 percent discretionary funds and its benefits to local areas. This was especially true of residents in Middle Georgia. This knowledge gap must be addressed before future referenda are held.
- The research found that what matters most in whether a person votes positively on TIA or feels positive about it is the information he or she has on the program. Stakeholders are more knowledgeable about the program and, as such, felt more positively about it. It is critically important that GDOT engages in more outreach and communications to householders about TIA and its benefits to local areas.
- The overwhelming reason why residents voted *yes* on TIA is that they wanted more funding for local roads and bridges (68 percent). GDOT should make clear to stakeholders and households how TIA delivered this outcome.
- TIA surveys should always be issued both electronically and by mail to get the broadest possible participation. Survey results suggest one-half of the survey population prefers to be surveyed by mail and one-half electronically.
- The average time required to complete the survey should be as short as possible to get a survey response that is representative of the population (e.g., 7 minutes in 2020 vs. 11 minutes in 2018).

- When conducting surveys of TIA regions, greater insight can be gained if one repeats the survey periodically and also includes in the survey a non-TIA region that has similar characteristics to the TIA regions. This allows one to better gauge the impact of the TIA program.
- Personal interviews indicated that TIA plays a vital role in local economic development by improving local infrastructure. Documenting these impacts and communicating them to local households would enhance the perception of the program.
- Overall, GDOT has done an excellent job of administering the TIA program. It should maintain this current practice but increase local knowledge of program benefits.

APPENDIX A: Detailed Calculations for BCA

BCA Based on Total Costs and Benefits

	Change in Crash Frequency				Change in Crash Cost			
Region	Crash - minor	Crash -Injuries	Crash - Severe Injuries	Crash - Fatalities	Crash - minor	Crash -Injuries	Crash - Severe Injuries	Crash - Fatalities
River Valley	1811	128	72	16	$49,440,300	$54,745,600	$174,283,200	$145,600,000
Southern GA	118	-184	224	-11	$3,221,400	-$78,696,800	$542,214,400	-$100,100,000
Central Savannah	869	1485	117	24	$23,723,700	$635,134,500	$283,210,200	$218,400,000
Heart of GA	811	-11	164	-4	$22,140,300	-$4,704,700	$396,978,400	-$36,400,000
Middle GA	1974	1125	233	27	$53,890,200	$481,162,500	$563,999,800	$245,700,000

	2017		2010		Change in Normalized Crash Frequency			
Region	VMT	VMT_100M	VMT	VMT_100M	Crash - minor	Crash -Injuries	Crash - Severe Injuries	Crash - Fatalities
River Valley	4,874,330,085	48.743	4,301,525,000	43.015	23.874	-7.499	0.114	0.181
Southern GA	6,069,920,435	60.699	5,350,170,000	53.502	-7.777	-13.532	1.813	-0.392
Central Savannah	5,892,353,410	58.924	5,037,730,000	50.377	-11.190	10.220	0.350	0.209
Heart of GA	4,206,072,755	42.061	3,882,140,000	38.821	16.320	-6.342	2.520	-0.264
Middle GA	7,120,355,395	71.204	6,545,545,000	65.455	17.437	8.000	2.658	0.284

				2017		2010		
Region	Change in VMT	Change in Pollution Cost	Change in Fuel Cost	AADT	VHT	AADT	VHT	Change in Delay Cost
River Valley	572,805,085	$8,592,076	$70,741,428	21,393	2,817,399	63,183	7,810,354	-$114,338,667
Southern GA	719,750,435	$10,796,257	$88,889,179	25,030	3,275,102	22,698	2,836,661	$10,040,289
Central Savannah	854,623,410	$12,819,351	$105,545,991	20,576	2,932,587	52,839	7,146,251	-$96,492,920
Heart of GA	323,932,755	$4,858,991	$40,005,695	16,517	2,381,485	15,578	2,199,781	$4,161,031
Middle GA	574,810,395	$8,622,156	$70,989,084	31,708	4,334,822	32,701	4,373,808	-$892,775

			Social Gain		
Region	Population Density	Emloyment Density	Population Density	Emloyment Density	Change in Social Cost
River Valley	1.502	0.457	$3,662,585	$111,047	$17,184,153
Southern GA	1.603	-0.611	$6,242,694	-$237,379	$21,592,513
Central Savannah	4.945	1.565	$38,212,567	$1,205,277	$25,638,702
Heart of GA	0.258	-1.119	$141,166	-$60,946	$9,717,983
Middle GA	3.595	0.366	$14,256,829	$144,762	$17,244,312

	Comparison to *Middle GA*			
Region	Net Benefit	Benefit per Capita	Cost (expenditure)	Benefit to Cost Ratio
River Valley	$1,023,839,228	$2,740	$131,495,832	7.79
Southern GA	$934,361,764	$2,274	$5,790	
Central Savannah	$257,752,005	$547	$185,170,485	1.39
Heart of GA	$989,636,205	$3,299	$96,557,493	10.25

BCA Based on Costs and Benefits per Million VMT

	Change in Crash Cost				Change in Crash Cost per Million VMT			
Region	Crash - minor	Crash -Injuries	Crash - Severe Injuries	Crash - Fatalities	Crash - minor	Crash -Injuries	Crash - Severe Injuries	Crash - Fatalities
River Valley	$49,440,300	$54,745,600	$174,283,200	$145,600,000	$10,143	$11,231	$35,755	$29,871
Southern GA	$3,221,400	-$78,696,800	$542,214,400	-$100,100,000	$531	-$12,965	$89,328	-$16,491
Central Savannah	$23,723,700	$635,134,500	$283,210,200	$218,400,000	$4,026	$107,790	$48,064	$37,065
Heart of GA	$22,140,300	-$4,704,700	$396,978,400	-$36,400,000	$5,264	-$1,119	$94,382	-$8,654
Middle GA	$53,890,200	$481,162,500	$563,999,800	$245,700,000	$7,568	$67,576	$79,210	$34,507

				Change in Cost per Million VMT		
Region	Change in Pollution Cost	Change in Fuel Cost	Change in Delay Cost	Change in Pollution Cost	Change in Fuel Cost	Change in Delay Cost
River Valley	$8,592,076	$70,741,428	-$114,338,667	$1,763	$14,513	-$23,457
Southern GA	$10,796,257	$88,889,179	$10,040,289	$1,779	$14,644	$1,654
Central Savannah	$12,819,351	$105,545,991	-$96,492,920	$2,176	$17,912	-$16,376
Heart of GA	$4,858,991	$40,005,695	$4,161,031	$1,155	$9,511	$989
Middle GA	$8,622,156	$70,989,084	-$892,775	$1,211	$9,970	-$125

				Change per Million VMT		
Region	Population Density	Emloyment Density	Change in Social Cost	Population Density	Emloyment Density	Change in Social Cost
River Valley	$3,662,585	$111,047	$17,184,153	$751	$23	$3,525
Southern GA	$6,242,694	-$237,379	$21,592,513	$1,028	-$39	$3,557
Central Savannah	$38,212,567	$1,205,277	$25,638,702	$6,485	$205	$4,351
Heart of GA	$141,166	-$60,946	$9,717,983	$34	-$14	$2,310
Middle GA	$14,256,829	$144,762	$17,244,312	$2,002	$20	$2,422

	Comparison to *Middle GA*			
Region	Net Benefit per Million VMT	Cost per Million VMT	Cost (expenditure)	Benefit to Cost Ratio
River Valley	$117,745	$26,977	$131,495,832	4.36
Southern GA	$119,267	$1	$5,790	
Central Savannah	$1,997	$31,426	$185,170,485	0.06
Heart of GA	$96,494	$22,957	$96,557,493	4.20

BCA Based on Costs and Benefits per Capita

	Change in Crash Cost				Change in Crash Cost per Capita			
Region	Crash - minor	Crash -Injuries	Crash - Severe Injuries	Crash - Fatalities	Crash - minor	Crash -Injuries	Crash - Severe Injuries	Crash - Fatalities
River Valley	$49,440,300	$54,745,600	$174,283,200	$145,600,000	$132.33	$146.53	$466.49	$389.72
Southern GA	$3,221,400	-$78,696,800	$542,214,400	-$100,100,000	$7.84	-$191.51	$1,319.51	-$243.60
Central Savannah	$23,723,700	$635,134,500	$283,210,200	$218,400,000	$50.32	$1,347.24	$600.74	$463.27
Heart of GA	$22,140,300	-$4,704,700	$396,978,400	-$36,400,000	$73.80	-$15.68	$1,323.21	-$121.33
Middle GA	$53,890,200	$481,162,500	$563,999,800	$245,700,000	$108.91	$972.37	$1,139.78	$496.53

				Change in Cost per Capita		
Region	Change in Pollution Cost	Change in Fuel Cost	Change in Delay Cost	Change in Pollution Cost	Change in Fuel Cost	Change in Delay Cost
River Valley	$8,592,076	$70,741,428	-$114,338,667	$23.00	$189.35	-$306.04
Southern GA	$10,796,257	$88,889,179	$10,040,289	$26.27	$216.32	$24.43
Central Savannah	$12,819,351	$105,545,991	-$96,492,920	$27.19	$223.88	-$204.68
Heart of GA	$4,858,991	$40,005,695	$4,161,031	$16.20	$133.35	$13.87
Middle GA	$8,622,156	$70,989,084	-$892,775	$17.42	$143.46	-$1.80

				Change per Capita		
Region	Population Density	Emloyment Density	Change in Social Cost	Population Density	Emloyment Density	Change in Social Cost
River Valley	$3,662,585	$111,047	$17,184,153	$9.80	$0.30	$46.00
Southern GA	$6,242,694	-$237,379	$21,592,513	$15.19	-$0.58	$52.55
Central Savannah	$38,212,567	$1,205,277	$25,638,702	$81.06	$2.56	$54.38
Heart of GA	$141,166	-$60,946	$9,717,983	$0.47	-$0.20	$32.39
Middle GA	$14,256,829	$144,762	$17,244,312	$28.81	$0.29	$34.85

	Comparison to *Middle GA*			
Region	Net Benefit per Capita	Cost per Capita	Cost (expenditure)	Benefit to Cost Ratio
River Valley	$1,805	$351.96	$131,495,832	5.13
Southern GA	$1,685	$0.01	$5,790	
Central Savannah	$404	$392.78	$185,170,485	1.03
Heart of GA	$1,427	$321.85	$96,557,493	4.43

APPENDIX B: Detailed Data Tables

Table 44. Population.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	446,585	450,614	454,718	458,492	461,892	465,126	468,498	471,434
Heart of Georgia Altamaha	298,255	300,812	301,937	302,454	302,324	301,221	300,470	300,012
Middle Georgia	482,082	485,886	489,429	491,442	493,143	494,191	494,668	494,834
River Valley	365,765	367,955	371,156	374,815	376,990	378,093	376,555	373,606
Southern Georgia	398,396	403,453	407,420	409,452	410,601	410,902	411,098	410,921

Table 45. Population density.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	89	90	90	91	92	93	93	94
Heart of Georgia Altamaha	44	44	44	44	44	44	44	44
Middle Georgia	136	137	138	139	139	139	139	139
River Valley	70	70	71	72	72	72	72	72
Southern Georgia	51	52	52	52	53	53	53	53

Table 46. Median age.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	38.1	38.8	39.2	39.9	39.9	40.0	40.6	40.6
Heart of Georgia Altamaha	37.6	37.1	37.6	37.4	37.9	38.0	38.4	38.2
Middle Georgia	39.4	40.5	40.5	40.8	40.9	41.3	41.4	42.5
River Valley	38.4	39.6	40.4	40.4	40.4	40.4	40.8	43.3
Southern Georgia	36.3	36.6	37.2	37.5	37.5	37.5	37.7	38.5

Table 47. White population.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	235,859	238,241	239,391	241,560	243,695	244,890	245,624	247,102
Heart of Georgia Altamaha	197,748	199,389	201,650	201,544	200,261	198,015	197,424	195,335
Middle Georgia	278,026	278,694	278,801	278,962	278,781	277,304	276,753	276,038
River Valley	183,661	185,169	186,360	187,273	188,178	187,350	185,490	182,186
Southern Georgia	266,600	268,277	271,295	272,538	273,705	275,413	275,753	275,618

Table 48. Percent of white population.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	52.8%	52.9%	52.6%	52.7%	52.8%	52.7%	52.4%	52.4%
Heart of Georgia Altamaha	66.3%	66.3%	66.8%	66.6%	66.2%	65.7%	65.7%	65.1%
Middle Georgia	57.7%	57.4%	57.0%	56.8%	56.5%	56.1%	55.9%	55.8%
River Valley	50.2%	50.3%	50.2%	50.0%	49.9%	49.6%	49.3%	48.8%
Southern Georgia	66.9%	66.5%	66.6%	66.6%	66.7%	67.0%	67.1%	67.1%

Table 49. Foreign-born population.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	16,709	17,260	17,413	17,191	18,484	18,955	19,612	20,396
Heart of Georgia Altamaha	12,692	12,489	11,713	11,399	11,827	11,242	10,864	11,378
Middle Georgia	17,310	18,018	18,862	19,565	19,608	19,847	19,032	19,274
River Valley	13,875	15,306	15,131	16,478	17,152	17,359	17,555	17,809
Southern Georgia	16,289	17,449	16,920	16,885	17,919	17,479	17,898	18,061

Table 50. Percent of foreign-born population.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	3.7%	3.8%	3.8%	3.7%	4.0%	4.1%	4.2%	4.3%
Heart of Georgia Altamaha	4.3%	4.2%	3.9%	3.8%	3.9%	3.7%	3.6%	3.8%
Middle Georgia	3.6%	3.7%	3.9%	4.0%	4.0%	4.0%	3.8%	3.9%
River Valley	3.8%	4.2%	4.1%	4.4%	4.5%	4.6%	4.7%	4.8%
Southern Georgia	4.1%	4.3%	4.2%	4.1%	4.4%	4.3%	4.4%	4.4%

Table 51. Median household income.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	$31,382	$32,188	$31,597	$31,494	$33,299	$33,641	$34,589	$37,711
Heart of Georgia Altamaha	$35,422	$33,863	$35,833	$35,830	$34,812	$34,271	$35,544	$36,355
Middle Georgia	$38,798	$37,975	$40,115	$41,550	$39,085	$41,588	$40,459	$41,032
River Valley	$30,996	$32,613	$32,504	$32,863	$32,752	$32,187	$33,427	$33,804
Southern Georgia	$35,360	$35,369	$35,434	$34,582	$34,677	$34,533	$34,952	$36,692

Table 52. Civilian employment.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	180,810	182,137	182,285	180,689	181,268	183,221	184,650	188,673
Heart of Georgia Altamaha	113,990	111,676	108,523	106,600	105,901	104,958	104,675	106,380
Middle Georgia	200,719	201,080	201,357	198,842	197,043	199,194	200,663	202,018
River Valley	141,214	140,933	140,349	139,558	142,094	142,480	144,272	143,599
Southern Georgia	163,452	160,116	158,150	153,983	154,213	155,409	157,439	158,674

Table 53. Civilian employment rate.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	90.6%	89.8%	89.3%	88.5%	88.9%	89.8%	90.5%	91.3%
Heart of Georgia Altamaha	93.4%	92.2%	91.3%	90.3%	90.9%	91.5%	91.7%	92.5%
Middle Georgia	91.3%	90.6%	89.8%	89.0%	89.0%	89.7%	90.5%	91.1%
River Valley	90.4%	89.2%	88.6%	87.5%	87.7%	88.0%	89.0%	89.3%
Southern Georgia	91.2%	90.1%	88.6%	88.2%	88.5%	89.6%	91.0%	92.6%

Table 54. Number of issued permits for housing units.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	1,815	1,659	1,780	1,883	2,186	2,364	2,084	2,195
Heart of Georgia Altamaha	162	195	200	134	119	125	206	183
Middle Georgia	1,204	1,264	1,291	1,493	1,073	1,636	1,205	1,763
River Valley	578	546	652	825	768	850	658	779
Southern Georgia	1,273	965	639	751	792	1,053	1,495	1,635

Table 55. Number of vacant housing units.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	15.4%	16.1%	16.3%	17.1%	17.6%	17.8%	18.0%	18.9%
Heart of Georgia Altamaha	16.8%	17.4%	17.3%	17.8%	18.1%	18.0%	18.6%	18.9%
Middle Georgia	16.6%	16.5%	16.3%	16.6%	16.8%	16.5%	16.6%	16.4%
River Valley	16.3%	16.5%	16.6%	16.4%	16.7%	16.8%	16.4%	16.5%
Southern Georgia	14.2%	14.9%	14.9%	14.9%	15.0%	15.4%	15.4%	15.4%

Table 56. Percent of population over the age of 25 with bachelor's degree.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	20.9%	21.1%	21.3%	21.6%	21.8%	22.4%	22.7%	22.6%
Heart of Georgia Altamaha	11.9%	12.3%	12.6%	12.9%	12.6%	12.9%	13.1%	13.2%
Middle Georgia	20.7%	20.6%	21.0%	20.7%	20.7%	21.1%	21.8%	22.7%
River Valley	18.8%	18.8%	19.3%	19.7%	20.4%	20.4%	21.2%	21.4%
Southern Georgia	14.0%	14.3%	14.4%	14.7%	15.0%	15.3%	15.6%	16.0%

Table 57. Percent obese population.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	31.0%	31.4%	31.2%	31.2%	31.7%	31.6%	33.1%	32.5%
Heart of Georgia Altamaha	30.5%	31.0%	32.2%	32.2%	32.8%	33.1%	33.4%	32.9%
Middle Georgia	30.6%	30.2%	29.9%	29.9%	30.9%	31.3%	32.0%	32.0%
River Valley	30.7%	31.4%	34.0%	34.0%	34.4%	34.4%	32.0%	30.2%
Southern Georgia	30.0%	31.0%	31.9%	31.9%	31.6%	31.6%	31.8%	32.8%

Table 58. Average commute.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	22.2	22.6	22.8	22.8	22.8	23.0	23.2	23.4
Heart of Georgia Altamaha	23.2	22.9	23.2	23.2	23.2	23.3	23.6	23.7
Middle Georgia	22.0	22.1	22.2	22.2	22.2	22.2	22.3	22.5
River Valley	20.3	20.7	20.8	20.9	21.0	21.3	21.3	21.6
Southern Georgia	20.5	20.7	20.8	21.1	21.3	21.4	21.5	21.5

Table 59. Median housing values.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	$77,000	$78,900	$78,100	$80,000	$79,700	$80,400	$79,400	$82,400
Heart of Georgia Altamaha	$76,700	$79,400	$78,700	$75,600	$73,400	$72,300	$73,900	$77,900
Middle Georgia	$113,900	$118,900	$120,000	$120,000	$122,000	$118,700	$117,000	$117,300
River Valley	$72,450	$74,950	$74,550	$74,400	$75,150	$70,850	$73,300	$81,450
Southern Georgia	$77,100	$81,900	$80,250	$79,900	$80,050	$81,450	$80,750	$81,700

Table 60. Vehicle miles traveled (in millions).

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	5,038	4,864	4,768	4,770	4,864	5,126	5,588	5,892
Heart of Georgia Altamaha	3,882	3,711	3,469	3,500	3,403	3,704	3,798	4,206
Middle Georgia	6,546	6,369	6,242	6,189	6,318	6,730	7,012	7,120
River Valley	4,302	4,140	4,087	3,999	3,963	4,471	4,637	4,874
Southern Georgia	5,350	5,082	4,899	4,948	5,006	5,469	5,592	6,070

Table 61. Mileage.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	8,191	8,191	8,192	8,510	8,481	8,486	8,520	8,531
Heart of Georgia Altamaha	12,589	12,618	12,657	12,782	12,771	12,762	12,784	12,786
Middle Georgia	6,765	6,770	6,770	7,009	6,986	6,993	6,975	7,016
River Valley	8,009	8,062	8,255	8,380	8,228	8,342	8,350	8,356
Southern Georgia	12,016	12,054	12,343	12,421	12,415	12,456	12,456	12,455

Table 62. Crash frequency (injury).

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	5,204	4,932	5,117	5,298	5,217	6,119	6,255	6,689
Heart of Georgia Altamaha	3,065	2,549	2,627	2,572	2,625	3,137	3,146	3,054
Middle Georgia	6,324	5,943	6,092	5,522	5,177	7,078	7,822	7,449
River Valley	3,706	3,933	3,921	3,921	3,831	4,010	4,052	3,834
Southern Georgia	4,738	4,252	4,302	3,714	4,049	4,626	5,020	4,554

Table 63. Crash frequency (serious injury).

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	568	542	623	663	671	836	746	685
Heart of Georgia Altamaha	695	682	780	797	804	927	972	859
Middle Georgia	498	579	642	722	620	724	704	731
River Valley	499	536	521	550	514	574	608	571
Southern Georgia	847	860	980	884	1,033	1,067	1,144	1,071

Table 64. Crash frequency (fatality).

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	69	78	92	68	69	86	77	93
Heart of Georgia Altamaha	85	77	57	72	64	69	66	81
Middle Georgia	77	82	64	71	72	80	127	104
River Valley	54	55	57	51	54	42	67	70
Southern Georgia	95	105	66	57	67	82	110	84

Table 65. Crash rate.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	2.95	3.06	3.07	3.13	3.19	3.30	3.07	2.94
Heart of Georgia Altamaha	1.38	1.45	1.61	1.71	1.86	1.81	1.71	1.50
Middle Georgia	2.33	2.47	2.47	2.42	2.27	2.69	2.70	2.61
River Valley	2.12	2.66	2.57	2.76	2.76	2.61	2.52	2.29
Southern Georgia	1.88	1.83	1.92	1.94	1.84	1.95	2.01	1.68

Table 66. Injury rate.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	1.03	1.01	1.07	1.11	1.07	1.19	1.12	1.14
Heart of Georgia Altamaha	0.79	0.69	0.76	0.73	0.77	0.85	0.83	0.73
Middle Georgia	0.97	0.93	0.98	0.89	0.82	1.05	1.12	1.05
River Valley	0.86	0.95	0.96	0.98	0.97	0.90	0.87	0.79
Southern Georgia	0.89	0.84	0.88	0.75	0.81	0.85	0.90	0.75

Table 67. Fatality rate.

Regional Commission	2010	2011	2012	2013	2014	2015	2016	2017
Central Savannah River Area	0.014	0.016	0.019	0.014	0.014	0.017	0.014	0.016
Heart of Georgia Altamaha	0.022	0.021	0.016	0.021	0.019	0.019	0.017	0.019
Middle Georgia	0.012	0.013	0.010	0.011	0.011	0.012	0.018	0.015
River Valley	0.013	0.013	0.014	0.013	0.014	0.009	0.014	0.014
Southern Georgia	0.018	0.021	0.013	0.012	0.013	0.015	0.020	0.014

APPENDIX C: Logistic Regression Results

Predict the Odds of Voting Yes on a Future TIA Referendum

Case Processing Summary

Unweighted Cases		N	Percent
Selected Cases	Included in Analysis	466	84.6
	Missing Cases	85	15.4
	Total	551	100.0
Unselected Cases		0	.0
Total		551	100.0

Dependent Variable Yes: The odds that an individual will vote yes on a future TIA referendum. Coded as 1 = Yes and 0 = No

Categorical Variables Coding

		Frequency	Parameter coding (1)	Parameter coding (2)
Professional or work status	a. Elected Official	197	1.000	.000
	b. Government Employee	192	.000	1.000
	c. Other (not a or b)	77	.000	.000
How important local transportation funding is to you	a. Somewhat Important	44	.000	
	b. Very Important	422	1.000	

Classification Table

			Predicted		
			Future. TIA. Vote		Percentage Correct
	Observed		NO	Yes	
Step 0	Future. TIA. Vote	NO	0	21	.0
		Yes	0	445	100.0
	Overall Percentage				95.5

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	145.860[a]	.053	.172

a. Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.

Classification Table

			Predicted		
			Future TIA Vote		Percentage Correct
	Observed		NO	Yes	
Step 1	Future TIA Vote	NO	0	21	.0
		Yes	0	445	100.0
	Overall Percentage				95.5

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp (B)
Step 1[a]	Local Transportation funding is very important	1.719	.516	11.087	1	.001	5.578
	Other (Professional or work status) Reference			7.162	2	.028	
	Elected Official (Professional or work status)	.191	.507	.142	1	.706	1.210
	Government Employee (Professional or work status)	2.862	1.085	6.958	1	.008	17.502
	Constant	1.007	.526	3.670	1	.055	2.737

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