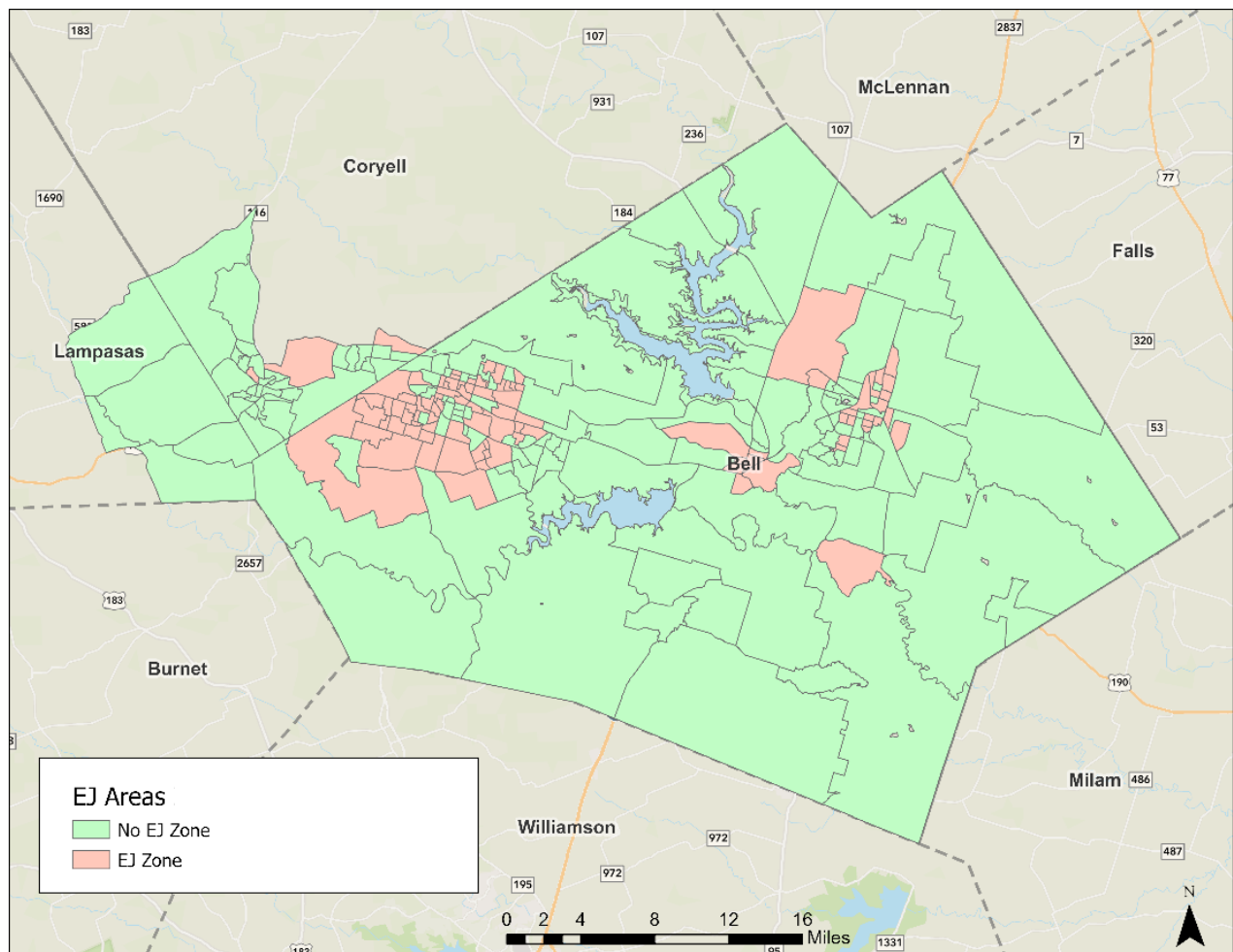




Environmental Justice Analysis



Prepared by Alliance Transportation Group, Inc.

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Table of Contents

Environmental Justice Analysis	1
Introduction	2
Environmental Justice Analysis Tools	3
Census Explorer.....	3
Description	3
Evaluation	4
EJ Screen	4
Description	4
Evaluation	4
ESRI Community Analyst™	5
Description	5
Evaluation	5
Evaluation Summary	6
Identification of Environmental Justice Areas	7
Environmental Justice Analysis Zones	7
Assessment of Transportation Project Impacts.....	8
Physical Proximity/Impacts.....	9
Transactional Analysis.....	9
Environmental Justice Process Improvements	11
Process Improvement Recommendations.....	12
Summary	15
Appendix A: Assessment of KTMPO Project Impacts on EJ Areas	16

List of Figures

Figure 1 – Census Explorer Reporting Capability, Hispanic Population, Bell County (2020).....	3
Figure 2 – EJSscreen Reporting Capability, City of Killeen.	4
Figure 3 - Example of ESRI Community Analyst Reporting.....	5
Figure 4: KTMPO Environmental Justice Zones	8
Figure 5: KTMPO 2020 Projects in Relation to Environmental Justice Zones.....	9

Introduction

Environmental Justice (EJ) is defined by the U.S. Environmental Protection Agency (EPA) as the *'fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.'* In addition to being Federally mandated, EJ Analysis is a critical component of transportation planning because it considers the potential impacts that transportation funding and infrastructure decisions may have on EJ communities. Transportation projects can have lasting impacts on all communities, so it is crucial to the planning process to establish and ensure fair and equitable transportation policies and funding decisions so that no group of people (based on race, ethnicity, or socioeconomic status) receives unfair treatment or bears a disproportionate share of negative consequences from decisions made by all levels of government.

"Each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, 1994

This EJ Analysis defined and located EJ zones in the Killeen Temple Metropolitan Planning Organization (KTMP) Study Area. These zones were used to evaluate proposed transportation projects for equitable and proportional impacts.

The analysis included conducting a GIS based geo-spatial analysis and 2018 American Community Survey five-year rolling average population and household data to identify those areas that contain the criteria percentage of minority and low-income population to be designated an Environmental Justice Community of Concern (EJCOC). ATG used geo-spatial overlays to allocate the population to the KTMP travel demand model traffic analysis zones. Using this information, ATG assessed the impacts of recent and future transportation projects on the EJ population. The analysis included a physical proximity analysis to identify potential quality of life and quality of place impacts of projects located in the EJCOCs. The exercise was conducted in conjunction with a focus group of stakeholders, namely the KTMP TAC and project sponsors, who provide input and feedback. The analysis also included a transactional analysis using observed trip patterns to identify which travelers are benefiting from the improvement and to determine if the project has potential to create impediments to travel patterns in EJ Areas.

Environmental Justice Analysis Tools

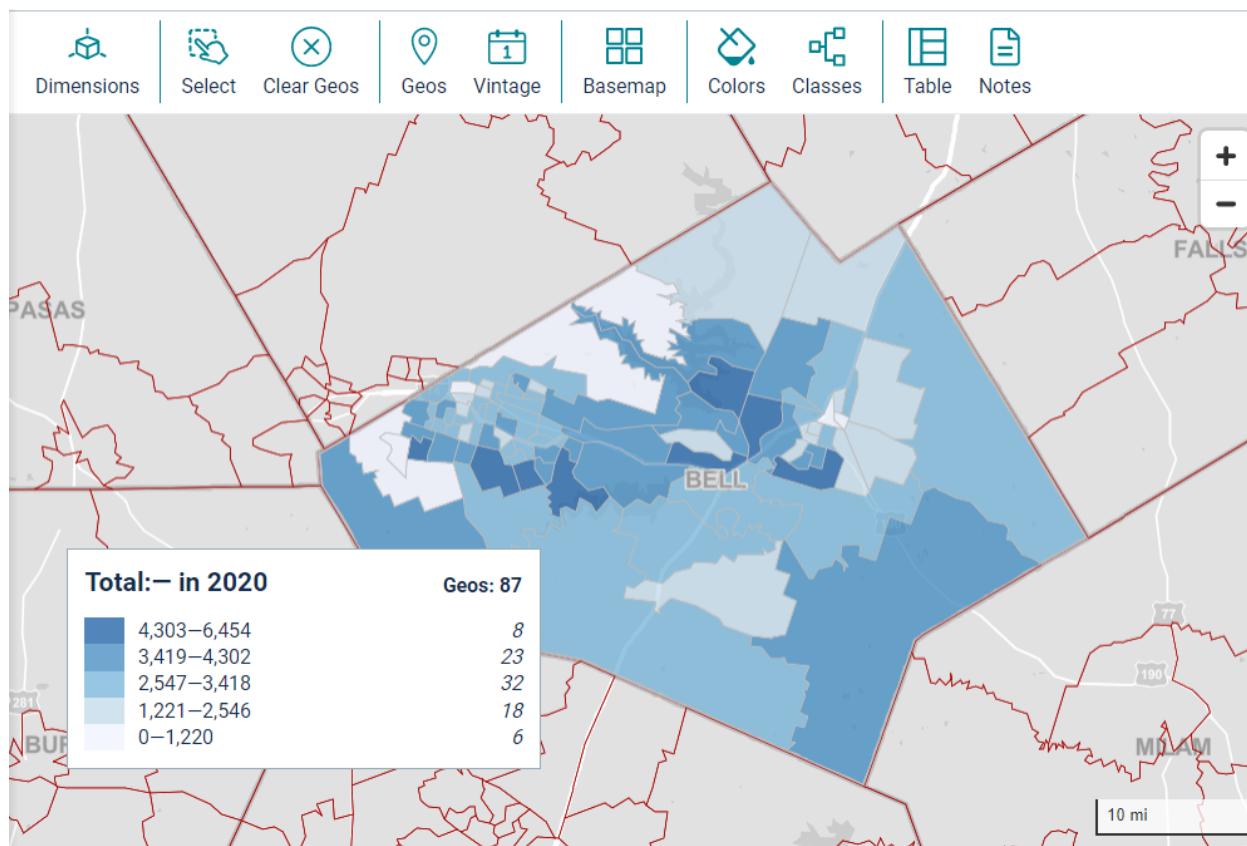
There are several GIS tools available to assist in identifying and mapping environmental justice zones. During the study, ATG reviewed and evaluated a range of available software applications designed to assist in the identification of EJ areas. As a part of the study, ATG evaluated several alternative applications to determine if they provided value in defining and mapping EJ zones. The applications reviewed included Census Explorer, EJ Screen, and ESRI Community Analyst™.

Census Explorer

Description

Census Explorer is an analysis and mapping application made available by the US Census Bureau for use by the public. Census Explorer facilitates the exploration of neighborhood-level statistics including population, age, educational attainment, labor force participation rate, home ownership, and household income. Census Explorer reporting features include maps of results down to the census tract level using US decennial census and the latest American Community Survey (ACS) data. Figure 1 presents an example of Census Explorer reporting features.

Figure 1 – Census Explorer Reporting Capability, Hispanic Population, Bell County (2020).



Evaluation

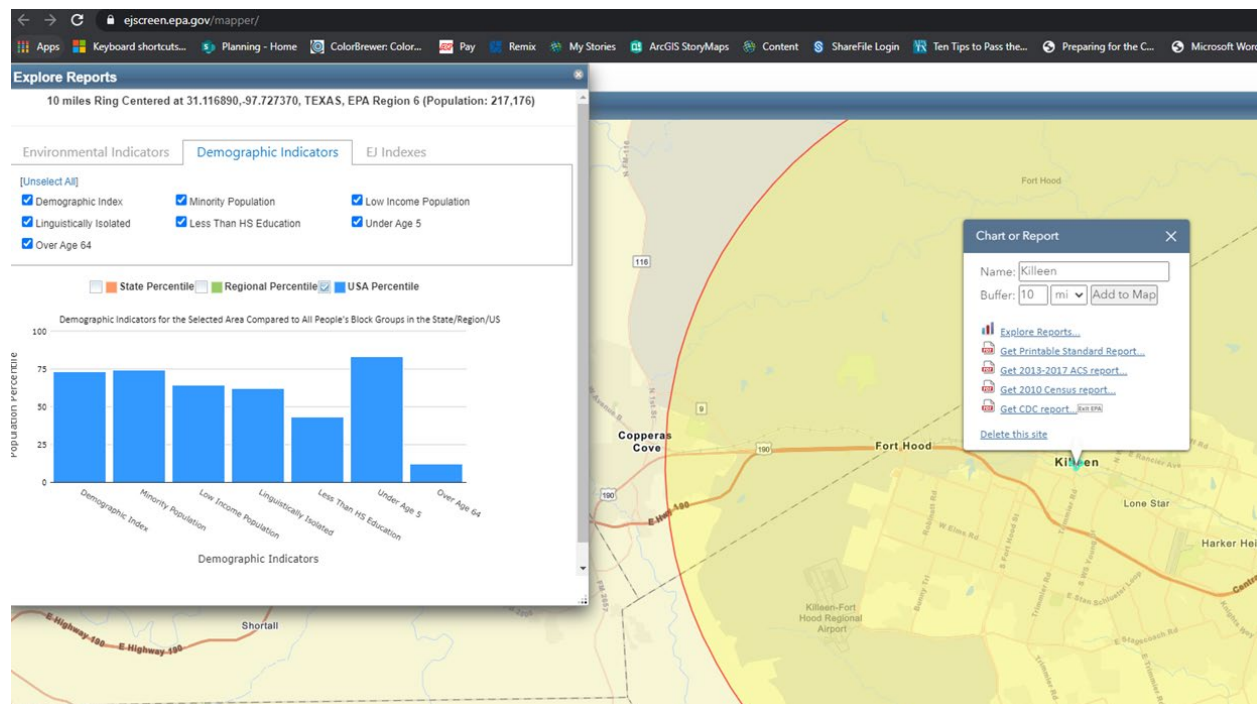
Census Explorer is a useful tool for many forms of data analysis using US Census Data. However, in the present case, the available data tables do not contain all the items needed to calculate the KTMP criteria. In addition, the minimum resolution of data mapping is the census tract level. The KTMP EJCOG identification process is better carried out at the census block group level. Although there are work arounds for these issues, they undermine the ease of use desired in using a preconfigured application.

EJ Screen

Description

EJ Screen was developed by EPA to highlight places that may be candidates for further review, analysis, or outreach to support the agency's environmental justice work. EPA released EJSreen to the public in part to be more transparent about how the agency considers environmental justice in its work. Figure 2 presents a sample of EJSreen reporting features using the area around the City of Killeen as an example.

Figure 2 – EJSreen Reporting Capability, City of Killeen.



Evaluation

Although EJSreen provides a substantial body of data and may be useful in a broad range of planning applications where the goal is conceptual understanding of various community and

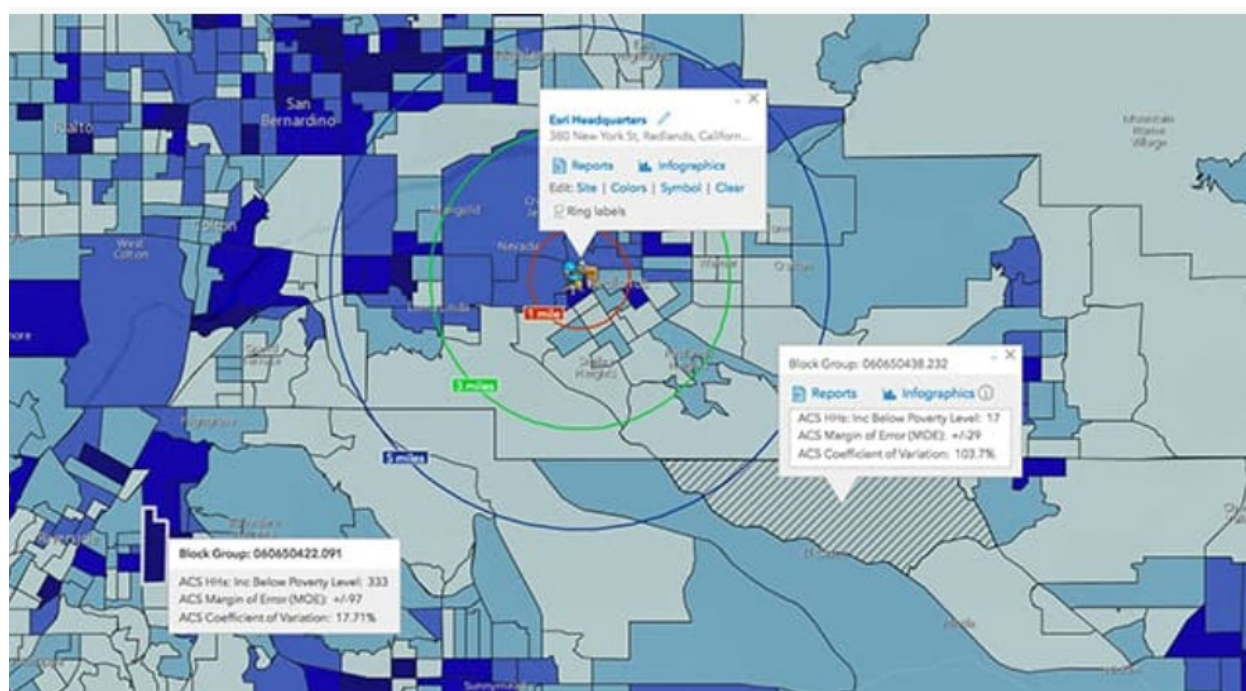
environmental factors, the tool is designed for high-level analysis to gain preliminary insight. The parameters reported are based on EPA benchmarks and are not readily customized to meet the specific KTMP criteria for identification of EJCOC.

ESRI Community Analyst™

Description

ESRI's Community Analyst is a proprietary add-in application to ArcGIS that lets ArcGIS users incorporate data and reports available from Community Analyst directly without leaving ArcMap. Community Analyst is a robust GIS analysis tool that can be used to identify high risk populations using up to five customizable criteria. With the Community Analyst Add-in, users can generate reports for features created in ArcGIS for Desktop and access the latest data from Esri and append it to feature attributes in ArcGIS.

Figure 3 - Example of ESRI Community Analyst Reporting



Source: ESRI, 2021

Evaluation

Although Community Analyst is a powerful, high-end application that has the capability of doing the types of investigation needed in the EJ Analysis, it has several shortcomings for the current analysis. The software is a proprietary application that requires additional investment by KTMP over and above the standard ArcGIS license to access and use the add-in module. The data, though originally sourced from US Census and other public domain sources, has been

post-processed and reconfigured. While this is not of particular concern in general planning efforts, the current effort has a regulatory compliance component that suggests the need to use primary source data. And lastly, the criteria are not fully customizable to address KTMPO criteria.

Evaluation Summary

Each of the software applications had strengths and weaknesses regarding the current effort. After discussion with the KTMPO project manager and staff, it was decided that the proprietary nature of Community Analyst and the uncertainty of what had been done to customize and format the primary source data made Community Analyst a less desirable choice for this effort.

It was also decided that the public domain tools were designed to simplify data analysis and mapping for the general public but did little to interest an experienced GIS analyst. Given the GIS skill level of the KTMPO staff, the assessment was that customizing either Census Explorer or EJ Screen was a greater level of effort than simply developing customized queries to extract the census tables and data needed for this specific EJ Analysis.

Therefore, in lieu of formal training in a specific package, the effort was converted into a collaborative effort to design the appropriate queries to extract the information. To that end, as a parallel process design, training, and quality control process, KTMPO staff developed a data query to identify the EJCOG using KTMPO criteria. At the same time, ATG developed a similar query and identified the block groups that met the KTMPO EJCOG criteria.

The results obtained by the KTMPO staff and the ATG results were then compared. Minor differences in the census blocks selected as EJCOG were noted and investigated to identify the reason for the discrepancy. Corrections were made and the query was rerun.

This collaboration resulted in two desired outcomes a) KTMPO GIS staff became totally familiar with the logic and methods used by ATG to perform the calculations to identify the EJCOG, which would make it possible in the future to perform subsequent queries without outside planning support, and b) Both ATG and KTMPO staff were able to replicate one another's results to provide a quality control and quality assurance checkpoint to provide confidence in the accuracy of the results.

The methodology and criteria used in identifying the EJCOG are described in the following section.

Identification of Environmental Justice Areas

Just before work on this project started, as part of review and continuous improvement of the Public Participation Plan (PPP), the KTMPO Transportation Planning Policy Board (TPPB), re-adopted the agency's standing criteria for defining an area as an Environmental Justice Community of Concern (EJCOC). At project initiation for the EJ Analysis project, ATG worked with KTMPO to confirm that the EJCOC definition criteria were being correctly interpreted and applied.

The criteria for defining EJCOC's are based on analysis of US Census Data at the census block group level, using the currently available American Community Survey (ACS) 5-year sample data. KTMPO defines a census block group as an EJCOC if it contains any one of the following:

- Low-income population above the 85th Percentile of the regional income index (Family Poverty, Household Poverty, Median Income).
- 50% or more population that identifies as minority of one or more race (Black; Asian or Pacific Islander, American Indian, Eskimo or Aleut; Other Race)
- 35% or more persons of Hispanic or Latino descent.

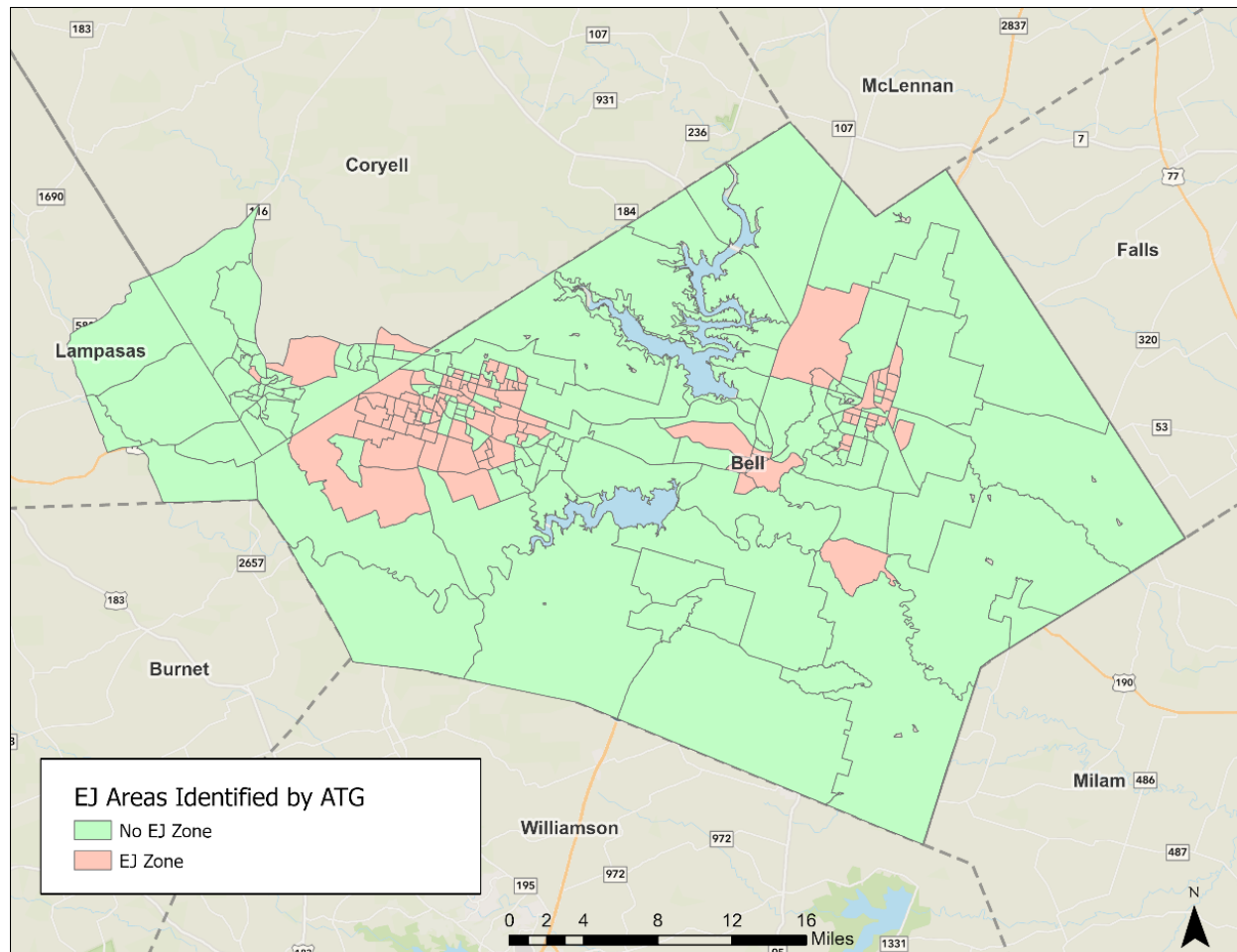
Once the metrics had been confirmed, ATG conducted a geo-spatial analysis of the region using 2018 American Community Survey five-year rolling average population and household data to identify those census block groups that contain one or more of the criteria percentages of minority or low-income population to be designated an EJCOC.

The results of the analysis were documented in a GIS database provided to the MPO for use in future planning efforts. The availability of this data will allow KTMPO to replicate the analysis without external support.

Environmental Justice Analysis Zones

For some steps in the process, it is preferable to have the EJCOC defined in terms of the KTMPO TDM. To this end, ATG performed a geospatial overlay to allocate the census block group population and households to KTMPO TDM traffic analysis zones. This process documented and defined which zones contain the EJ areas. Once the EJ zones were defined, ATG used the defined EJCOC geographies to assess the impacts of recent and future transportation projects on low-income and minority populations.

Figure 4: KTMP Environmental Justice Zones



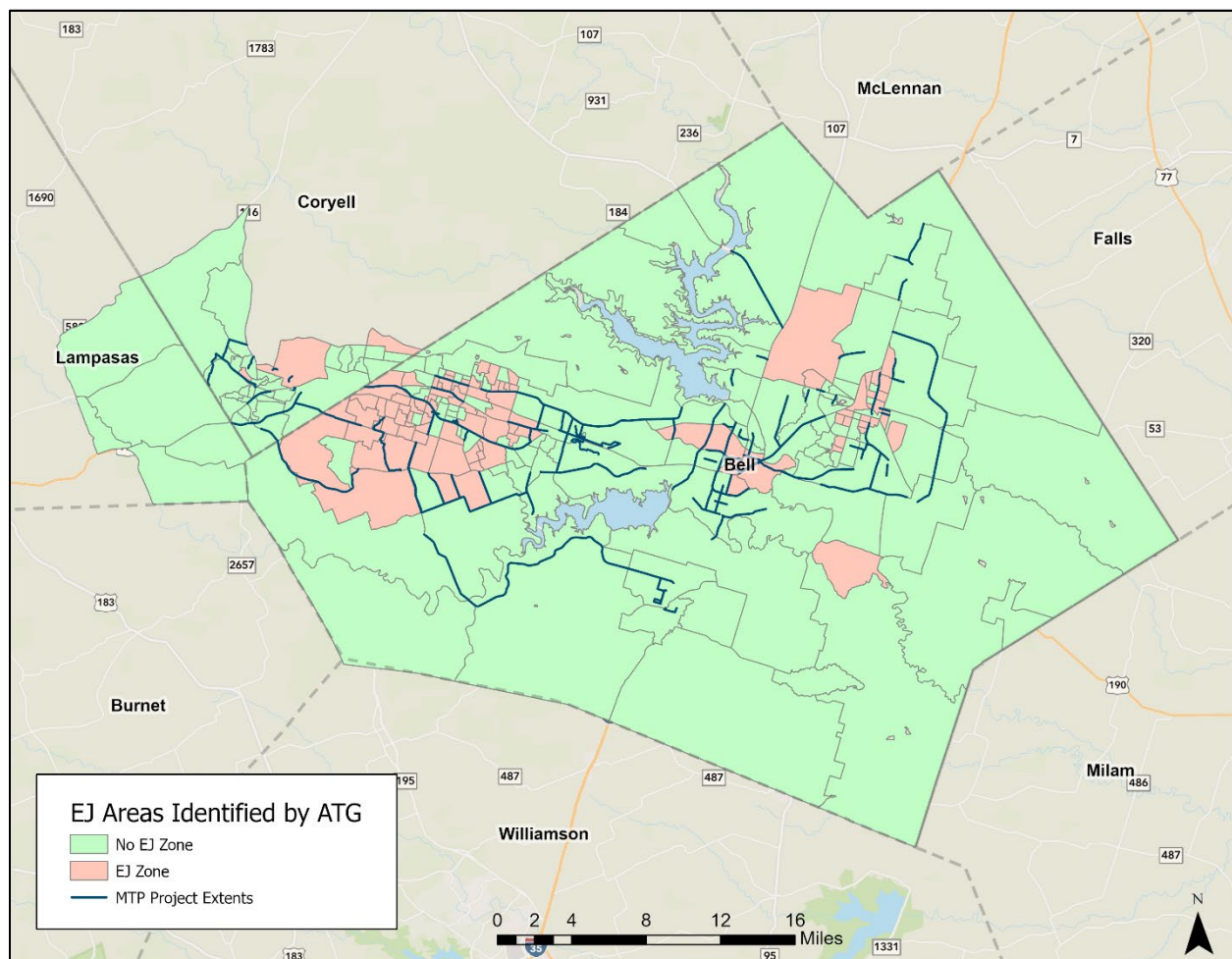
Source: ATG, 2021

Assessment of Transportation Project Impacts

Using the defined EJCOG geographies, combined with a GIS layer depicting the cross-section, alignment, and limits of proposed projects provided by KTMP, ATG performed a desktop GIS review supported by aerial photography and limited field review to assess each project's impact on the EJCOG. Figure 5 presents the candidate projects being reviewed for inclusion in the 2045 MTP shown over the identified EJCOG traffic analysis zones.

The analysis was performed in two steps. The first step was a physical impacts analysis based on the proximity of the project to each EJCOG and the footprint of the project. The second step was a transactional analysis to determine how each project affected EJCOG travel patterns.

Figure 5: KTMP 2020 Projects in Relation to Environmental Justice Zones



Source: ATG

Physical Proximity/Impacts

Step 1 was a physical proximity analysis to identify potential quality of life and quality of place impacts of projects located in the EJ areas. This exercise is by its nature somewhat subjective, and therefore was carried out by a small team of GIS analysts who collectively reviewed the projects and maintained a dialogue to share their observations, question each other's findings, and document the collective decision made on project physical impacts.

Transactional Analysis

Step 2 was a transactional analysis using the KTMP TDM. To perform the first part of the transactional analysis, ATG used the TDM results from the Alternative Growth Scenario Study to review the zone-to-zone travel impedances (accrued travel times) for a no-action scenario and a build scenario containing the proposed 2045 MTP projects. This review determined that there

were no significant differences in the accrued auto travel time benefit to EJCOCs versus any other communities. Overall, the projects provided proportional mobility benefits to all auto users regardless of whether they resided in an EJCOC or other community.

However, this TDM approach to the transactional impacts and benefits of the proposed projects is highly auto centric and does not provide insight into any impacts that a project may have on pedestrian travel. Because low-income and minority populations are more often dependent on walking and biking to meet their travel needs, a second tier of transactional analysis was performed.

Using a desktop review similar to the one performed to evaluate physical impacts, the ATG team performed a GIS analysis of project cross-sections and amenities for all projects that increased roadway capacity or right-of-way to determine if the design of the project presented any barriers to pedestrian or bicycle travel, particularly regarding safety issues for pedestrians crossing the street. The team also noted projects that incorporated concepts or design elements that facilitated safe and convenient pedestrian or bicycle travel.

The various elements of the physical impacts and transactional reviews were used to provide an ordinal score of how well each project supported or hampered travel in the EJCOC. The results of this analysis were provided to KTMP staff and planning partners for review and feedback. If a project's impacts or benefits were not clear or if a negative finding was proposed, ATG provided the KTMP staff with additional questions to be answered by the project sponsor. Typical questions included:

- Was the project developed in collaboration with the community?
- What design elements were considered / included in the project to avoid or mitigate impacts on pedestrian or bicycle projects.
- Does the improvement support EJ Area travel patterns? If so, how.
- Does the project add amenities / livability elements that directly serve the EJ Area but were not noted in the project application?

The results of the project impact analysis for each project are contained in the Appendix at the end of this technical memorandum.

Environmental Justice Process Improvements

As part of the certification of the 3C planning process, KTMPO must meet certain Title VI and Environmental Justice requirements. FHWA has encapsulated these requirements in the following tenets expected of all MPOs:

To certify compliance with Title VI and address environmental justice, each MPO needs to:

- Enhance the MPO's analytical capabilities to ensure that the long-range transportation plan and the transportation improvement program (TIP) comply with Title VI.
- Identify residential, employment, and transportation patterns of low-income and minority populations so that their needs can be identified and addressed, and the benefits and burdens of transportation investments can be fairly distributed.
- Evaluate and - where necessary - improve the MPO's public involvement processes to eliminate participation barriers and engage minority and low-income populations in transportation decision making.
- Design transportation facilities that fit more harmoniously into communities.

From: http://www.fhwa.dot.gov/environment/environmental_justice/overview/

To assist KTMPO in complying with these requirements, part of this study is for ATG to review the KTMPO process for identifying and meeting the needs of low-income and minority individuals. Based on the EJ analysis and a review of other KTMPO planning processes, such as the project prioritization process and the public participation plan, ATG has developed a set of recommendations on how KTMPO can continue to identify the EJ community and interact with the under-served populations in the region.

It should be noted that KTMPO already places a strong emphasis on social equity and has successfully taken steps to identify and consider the needs of low-income and minority populations in the planning process and in the development of the program of projects. For that reason, each of the recommendations begins with a reference to the steps KTMPO is already taking to address Title VI and Environmental Justice compliance topics enumerated by FHWA and then follows with some recommended steps to foster a process of continuous improvement in the progress already made.

Process Improvement Recommendations

1. **FHWA Topic: *‘Enhance the MPO’s analytical capabilities to ensure that the long-range transportation plan and the transportation improvement program (TIP) comply with Title VI.’***

KTMPO currently uses analytical processes and quantitative methods to identify transportation system deficiencies and prioritize projects. Activities include the long-standing Congestion Management Process and the use of the KTMPO TDM to identify system deficiencies, analyze growth scenarios, and evaluate the outcomes of proposed transportation investments in the project selection and prioritization project. KTMPO has also recently included Environmental Justice as a stand-alone project-performance criterion in the project selection and prioritization process. The EJ Analysis that is the subject of this study, supports the scoring of that performance criterion by evaluating submitted projects for their physical and transactional impacts on low-income and minority populations is another example of current best practice. Steps that KTMPO could take to enhance this process, include:

- a. Identify and publish the map of EJCOCs / EJ Zones earlier in the process and provide them to project sponsors for use in the development of their projects and the development of the narrative for their project applications. Bringing attention to social equity issues earlier in the project development process promotes a project design process that more fully considers the needs of underserved populations.
 - b. When an application for a project in or near an EJCOc is submitted in response to the call for projects, specifically request that project sponsors include what evaluation of EJ impacts they have performed and what steps they have taken to avoid or mitigate negative impacts and to incorporate elements that positively address the needs of the EJCOc residents.
2. **FHWA Topic: *‘Identify residential, employment, and transportation patterns of low-income and minority populations so that their needs can be identified and addressed, and the benefits and burdens of transportation investments can be fairly distributed.’***

In addition to its overall transportation planning process, KTMPO identifies residential, employment, and transportation patterns of low-income and minority populations through special studies such as this EJ Analysis study and the Alternative Growth Scenarios study completed in tandem with the EJ Analysis effort. The demographic/socioeconomic forecasting process used to calibrate the KTMPO TDM used in these evaluations helps to identify residential patterns of low-income and minority populations. The challenge is that the TDM in its current form is a rather blunt instrument when it comes to identifying and evaluating the employment and travel patterns of persons with limited access to an automobile. To address this challenge, it is recommended that KTMPO:

- a) Consider increasing attention to transit systems planning and service planning. It may not be cost efficient to incorporate a transit component into the KTMP TDM at this time, but there are available analysis techniques, such as transit propensity studies, and sketch planning tools such as the FTA STOPS application for evaluating transit service and developing improved systems designed to better meet the needs of underserved populations. These types of special studies would increase understanding of travel patterns and employment access challenges and solutions.
- b) Use CTTS journey to work data to frame a discussion among KTMP planning partners on job-access for low-income and minority populations and Incorporate job-access workshops, surveys, or polls into the Public Participation Plan.

3. FHWA Topic: *‘Evaluate and - where necessary - improve the MPO’s public involvement processes to eliminate participation barriers and engage minority and low-income populations in transportation decision making.’*

KTMP already has a robust Public Participation Plan (PPP) that emphasizes inclusion of Title VI and Environmental Justice activities. This emphasis is evidenced by the fact that a substantial portion of the PPP is dedicated to regular demographic updates to identify current and future EJCOCs and to develop community outreach to these communities. The PPP also places strong emphasis on transparent, interactive communication with as much information as possible made available to the public through a variety of online and physical publication methods. To further support these activities and foster a process of continuous improvement in the dialogue with low-income and minority populations, it is recommended that KTMP take the following steps to strengthen outreach to EJCOC:

- a) Acknowledging that constraints due to COVID-19 have created challenges in the outreach process regarding all communities but especially the EJCOC, when the health of participants can be protected, KTMP should consider taking the initiative in approaching low-income and minority populations. The current PPP references public appearances and responding to requests for speakers, but underserved communities are often reluctant to reach out. KTMP is likely to advance its goals for EJCOC engagement if the MPO actively reaches out with requests to speak at events in the communities the MPO wants to reach.
- b) To continue to educate policy makers and planning partners on social equity issues, consider using the identified network of community leaders to foster a dialogue related to equity in the planning and delivery of transportation investments. This dialogue could be stimulated by creating either a standing equity committee or by recruiting participants for periodic equity forums that explore the issues and the transportation challenges faced by low-income and minority communities.

- c) Encourage planning partners and project sponsors to engage in a dialogue with the low-income and minority communities in their jurisdiction as early as possible in the project development process. Engaging concerned populations early in the project feasibility and design process has much greater potential for reaching equitable decisions than any effort KTMPO can accomplish by engaging the same communities once a project concept has been submitted to KTMPO through a call for projects.
- d) Continue to develop mechanisms to make information about the transportation decision making process open sourced, transparent, and available. An initiative of this type is already anticipated in the Fall of 2021 with the development of a KTMPO dashboard to significantly increase the level of information available to the public.

4. FHWA Topic: *‘Design transportation facilities that fit more harmoniously into communities.’*

KTMPO has taken significant steps toward addressing this compliance criteria by a) including a Sustainability Track in its project selection and prioritization process to raise the profile and level the playing field for projects that improve the quality of place for the communities in which they are located, and b) including a Complete-Streets criteria / performance measures in the project selection and prioritization process. To foster continuous improvement in these components of the planning process, it is recommended that KTMPO:

- a) Continue to develop its Complete-Streets policies and increase the emphasis on the role that Complete-Streets concepts play in supporting the trip patterns and travel needs of low-income and minority populations.
- b) Consider ways to modify the project scoring process to prioritize projects with Complete-Streets design elements that promote the quality of place / quality of life in EJCOs by specifically addressing the needs of low-income and minority communities.

Summary

There are three fundamental environmental justice principles:

- To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
- To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

KTMPO has demonstrated a strong commitment to incorporating these principles into the planning process. This commitment is evidenced by the inclusion of social equity / Environmental Justice criteria in the project selection and prioritization process, a robust PPP with substantial elements to identify and promote outreach to the Environmental Justice community, and commissioning studies such as this Environmental Justice Analysis to inform the decision-making process on the impacts of proposed transportation investments on minority and low-income communities.

The specific analysis and findings related to each of the proposed projects evaluated during this Environmental Justice Analysis can be found in the Appendix to this technical memorandum. The Appendix is in Excel spreadsheet format for ease of access.

Appendix: Assessment of KTMPO Project Impacts on EJ Areas