

The City of Ypsilanti Street Infrastructure Assessment

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Introduction

The City of Ypsilanti is home to an estimated 20,081 residents who have access to several public parks and walkable corridors throughout town. However, the current quality of infrastructure at each public access point has yet to be documented. With the implementation of new GPS and mapping technology, relationships can be spatially analyzed to determine which areas of the city have better or worse quality infrastructure. Using this technology and analysis, we can discover where the city's street infrastructure is located and whether or not there is a spatial pattern in regards to condition. Results of this study have been presented to the City of Ypsilanti Planning Commission for their records. This project aims to discover how the presence and quality of street infrastructure in the City of Ypsilanti relates to geographic location.

Background

The City of Ypsilanti's 2014-2019 Parks and Recreation Master Plan states "The City aims to provide a high quality parks system and ample recreation opportunities". The City of Ypsilanti Street Infrastructure Assessment project was brought forward by Anthony Bedogne to assist the planning commission in identifying where improvements should be made. Parks and corridors surveyed included:

- Riverside Park (17 acres)
- Frog Island Park (5 acres)
- Recreation Park (17.3 acres)
- Parkridge Park & Community Center (11.7 acres)
- Candy Cane Park (6.7 acres)
- Peninsular Park (7 acres)
- Prospect Park (10 acres)
- Waterworks Park (9.3 acres)
- Edith Hefley Tot Lot (0.4 acres)
- Carrie R. Mattingly Tot Lot (0.4 acres)
- Ainsworth Park (0.55 acres)
- Charles Street Tot Lot (0.16 acres)
- Cross Street Corridor
- Michigan Avenue Corridor

Methods

We collected quantitative data using Geographic Information Systems (GIS) to assess street infrastructure quality and type in defined study areas for the City of Ypsilanti.

Data were collected by members of Eastern Michigan University's GIS Club.

Infrastructure Attributes

- Type
 - Table
 - Sign
 - Bench
 - Trash Can
 - Community Art
 - Historic Marker
 - Playground Equipment
 - Water Fountain
 - Other
- Assessment
 - Good: 3
 - Fair: 2
 - Poor: 1
- Specific notes
- Pictures
- Creator
- Date

Procedure	Tool
Prepared & edited data for spatial analysis	ArcMap Desktop
Collected data	Esri's Collector App on smartphones
Performed spatial analysis & presented data	Esri's ArcGIS Online for Organizations

Results



Figure 1. City Infrastructure

Figure 1 shows data collected over the course of this project. Each point reflects the status of the infrastructure investigated, and is linked to an image.

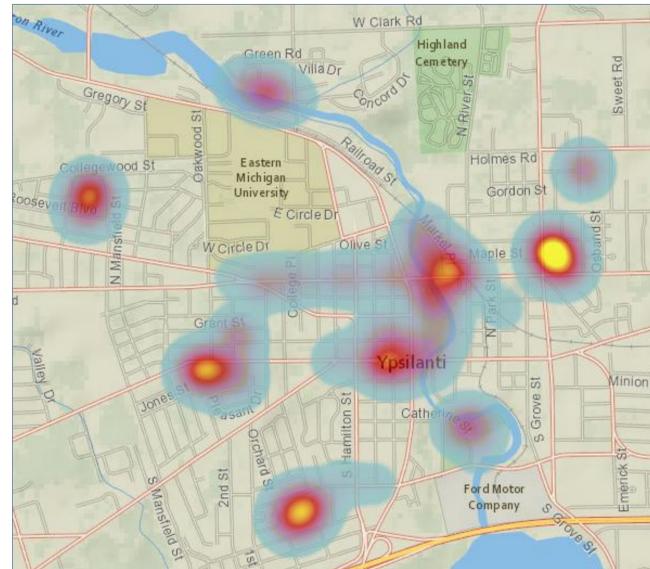


Figure 2. Heat Map of City Infrastructure

A heat map visualizes the geographic density of park infrastructure across the City of Ypsilanti (Figure 2). More park infrastructure is present at the center of the city, near the Southern edge of Eastern Michigan University's campus and along Michigan Avenue.

The spatial statistics tool "grouping analysis" was used to identify clusters of park infrastructure condition (Figure 3). Infrastructure in good condition was located in the center of the city, while blighted infrastructure was located towards the edges of the city.

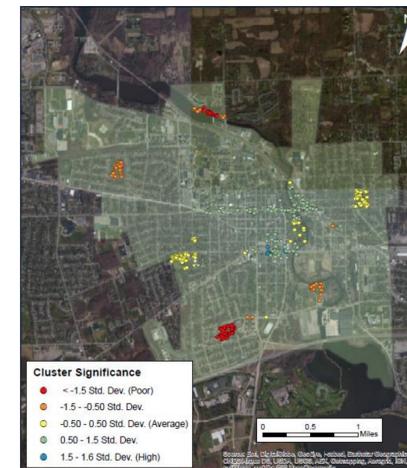


Figure 3. Clusters of City Infrastructure

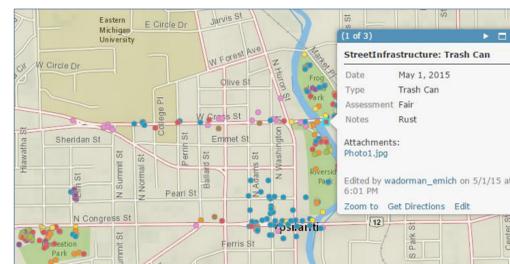


Figure 4. Story Map of City Infrastructure

City Planners (and you) can use an online story map to further investigate the data. This allows the city to share data with constituents, and further analyze the data themselves in relation to other factors. Try it yourself: use the QR code in our References Section.

Discussion

Through visualization and analysis of Ypsilanti's street infrastructure, we were able to address the question "why do certain areas of Ypsilanti have more dense or higher quality street infrastructure?"

Density and Location

- Why is there more infrastructure located in Depot Town, Downtown, and Prospect Park?
- Why is there less infrastructure along the Cross Street Corridor, Peninsular Park, Charles Tot Lot and Waterworks Park area?

Areas that are more likely to be visited frequently by pedestrians and customers require more street infrastructure. Similarly, if Ypsilanti residents are less likely to frequent a location, street infrastructure is in lower demand.

Quality of Infrastructure

- Why is the quality of infrastructure better at the center of the city?

This discussion is similar to the Density and Location theory in regards to where there is a higher population using the area and more commercial activity, infrastructure will be a higher quality. Out skirted areas become a lower priority compared to the importance of restaurant and commercial industry.

Conclusion

Using Collector for Arc GIS, ArcGIS Online, and Arc GIS for desktop, the location and quality of the City of Ypsilanti's street infrastructure was assessed. Findings and data from this study will allow the City of Ypsilanti Planning Commission to make better decisions regarding future investments and prioritization for street infrastructure across town. Development of new GPS and mapping technology is making data collection and analysis more available to the public to make a difference in communities.

Future Directions

For future studies, we can utilize and enhance this data analysis to make Ypsilanti more walkable and enjoyable to reside in. Examples may include assessment of safety, accessibility, and convenience in correspondence with the quality and location assessment performed. This may be done by adding additional data layers to the map, such as crime rates, poverty levels, population density, and access to sidewalks.

Acknowledgements

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References

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