

# A People's Atlas of Muncie: Citizen Representations of Urban Space

Junfeng Jiao, Steven M. Radil, Jenna Harbin, and Yuan Li

## 1 Introduction

Geographic Information Systems (GIS) are an essential tool for analyzing and representing spatial information. An emerging frontier in GIS deals with integrating qualitative data with GIS and other related geospatial technologies [1]. Situated within a growing body of mixed methods techniques, this emerging field of Qualitative GIS (QGIS) examines how GIS can be used to create new types of representations that incorporate multiple meanings and how these representations can be used to interrogate discussions of social action, community change, and power [1, 2].

Mental maps are a well-established type of qualitative methodology in planning, geography, and similar fields where individuals sketch aspects of a city or neighborhood, producing representations of urban space that blend physical reality with personal experience [3–5]. Akin to a cartographic survey instrument, mental maps have been used to advocate for social justice and as a springboard for citizen-based political interventions [6]. Mental maps also have potential to generate location specific information that can be utilized by a GIS. As such, mental maps may be seen as a potentially important method of data collection for QGIS. What makes mental maps important for QGIS research is that the opinions and knowledge

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J. Jiao (✉)

School of Architecture, University of Texas at Austin, Austin, TX 78759, USA  
e-mail: [jjiao@austin.utexas.edu](mailto:jjiao@austin.utexas.edu)

S.M. Radil

Department of Geography, University of Idaho, Moscow, ID 83844, USA

J. Harbin

Indiana Housing and Community Development Authority, Indianapolis, IN 46204, USA

Y. Li

Department of Urban Planning, Xiamen University, Xiamen, Fujian 361005, China

contained in a mental map is from a person with direct lived experience with a particular urban space or setting [1]. The use of mental mapping can help identify what residents understand as the most important features or aspects of their material and social environment and whether these are understood as positives or negatives [5].

This study used mental maps to explore how QGIS may be used to create meaningful information that could be used by neighborhood-scale organizations in Muncie, Indiana, USA (Fig. 1). Muncie, once seen a symbol of prosperous middle-class American society, is a small city whose manufacturing-based economic fortunes have rapidly shifted in the last two decades as factories have been closed and the population has steadily declined [6]. As a result of persistent economic challenges, Muncie’s residents have experienced high unemployment, a steadily deteriorating tax base, lower property values, and little new economic investment. The infrastructure and physical quality of many of Muncie’s

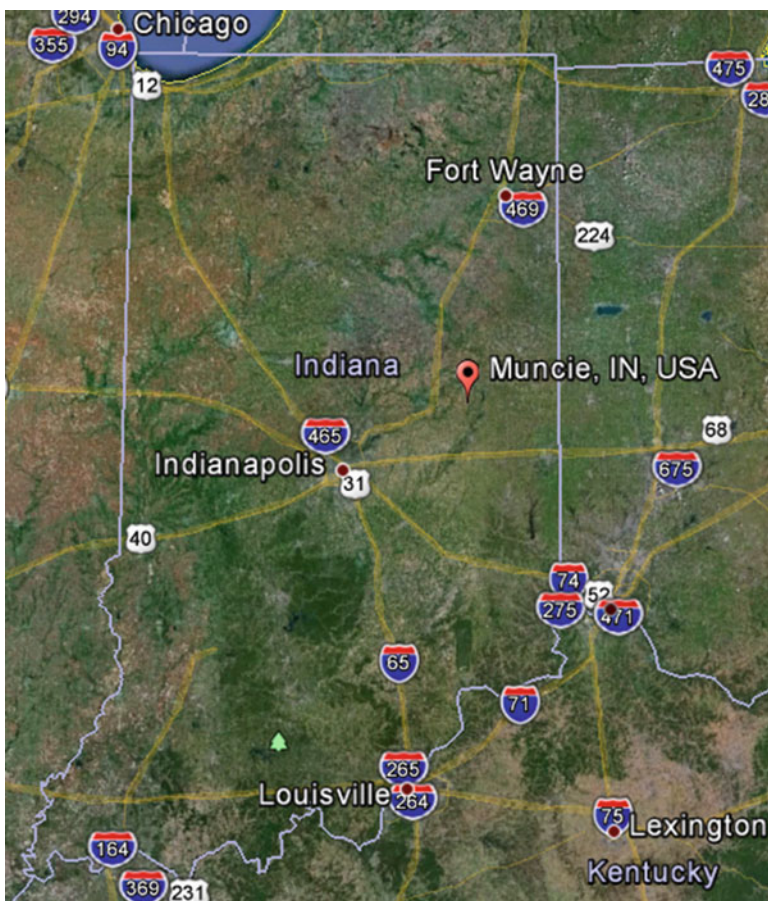


Fig. 1 Muncie is roughly 60 miles northeast of Indianapolis

neighborhoods have suffered in the face of these broad patterns of capital mobility and declining investment [7].

Recently, Muncie has also experienced an attempt to revitalize the city as a citizen-based organization was formed to identify challenges to the city and develop plans to improve the quality of life for its residents. In 2010, this organization, which called itself the Muncie Action Plan, surveyed hundreds of Muncie residents about the strengths and weaknesses of the city as a whole. The results of this survey led to the development of several initiatives to attract new investment and improve aspects of daily life for residents [7, 8].

Our project drew upon the city-wide surveys [8] but sought to rescale knowledge and planning efforts to the level of individual neighborhoods. The project partnered an Urban Planning and a Geography course at Ball State University with the Muncie Action Plan to survey residents of seven different neighborhoods in Muncie about the perceived strengths and weaknesses of each neighborhood. The broad goal was to identify issues and strengths particular to those neighborhoods to complement the larger city results from the previous surveys. Students were divided into several teams and assigned to different neighborhoods. The students were then asked to develop a survey that involved the techniques of mental mapping as a means of collecting data from neighborhood residents about how they understood their own neighborhoods. Information generated from the survey process was mapped using GIS and interpreted in partnership with the participants. After feedback from multiple neighborhood meetings, a supplementary online survey was also created to reach more community members. Demographic data was also collected for each neighborhood through Census data.

## 2 Objective

The goal of this research was to explore incorporating qualitative information into a GIS and to examine what residents felt what was beneficial and what was missing from their own neighborhoods using mental mapping and surveys. This involved deriving mappable data from those answers that could be used to drive neighborhood-specific change and focus the efforts and activities of the neighborhood organizations into the locations or areas where residents' felt it was most important [1]. By combining such small scale and targeted neighborhood data with the larger city-wide data already gathered by the Muncie Action Plan [8], a better idea of the types of efforts needed at multiple scales could be developed. Critically, the project did not aim to develop action plans for the neighborhoods. Instead it strove to provide a spatial framework to residents' own understandings to enable neighborhood groups themselves to develop their own agendas and priorities.

### 3 Methods

In partnership with the Muncie Action Plan, seven neighborhoods were selected for the project: Anthony, Forest Park, Industry, Morningside, Old West End, South Central, and Westbrier. Under the supervision of the faculty members that led the project, students first developed base layers in GIS for each neighborhood. This included building locations, transportation layers (streets, sidewalks, railroads, walking trails, etc.), zoning, and open space (parks). Next, demographic summaries were prepared in GIS by using layers of neighborhood boundaries provided by the Muncie Action Plan to isolate the census blocks from the 2010 US Census that composed each neighborhood. Both the base map and the demographic summaries provided the students with a level of familiarity with the neighborhoods early in the project.

The next step involved developing surveys that incorporated aspects of mental mapping. A written survey form was designed that asked basic questions about the respondent before asking them to provide either a written list (with locations) of positive or negative features of their neighborhood. On the written survey, residents could also answer this question graphically, by sketching a hand drawn map and providing a legend (see Fig. 2). These surveys were distributed to residents by students that attended a series of neighborhood meetings. These were regularly scheduled meetings held by neighborhood organizations and students were connected with the community leaders in each neighborhood to open the lines of communication and attend meetings where possible.

After attending several meetings in different neighborhoods, it was clear that another method of distributing surveys was needed. While some neighborhood meetings were well attended, others were poorly attended by residents which limited the number of respondents. In consultation with several neighborhood leaders, students developed an online version of the survey. The online version (see Fig. 3) asked the same questions as the paper version but did not offer an opportunity to provide hand drawn sketch maps. Location information had to be provided in written form in this format.

The paper survey responses ( $n = 16$ ) and online survey responses ( $n = 78$ ) combined to provide a wealth of neighborhood-specific, mappable data. However, the number of responses varied widely between the seven neighborhoods as some had little to no participation, whereas other neighborhoods returned dozens of responses. Two neighborhoods (Morningside and Industry) had no participation at all as the neighborhood leadership did not hold meetings during the time frame of the project. Three other neighborhoods (Anthony, Forest Park, and South Central) had less than 10 respondents each which was largely a function of low attendance of regular meetings. Two neighborhoods yielded over 30 responses each (Old West End and Westbrier). Overall the interest and ease of response increased with the online version of the survey as compared to the paper format. In the remainder of this paper, we focus on results from Old West End, one of the two neighborhoods with the highest levels of participation.

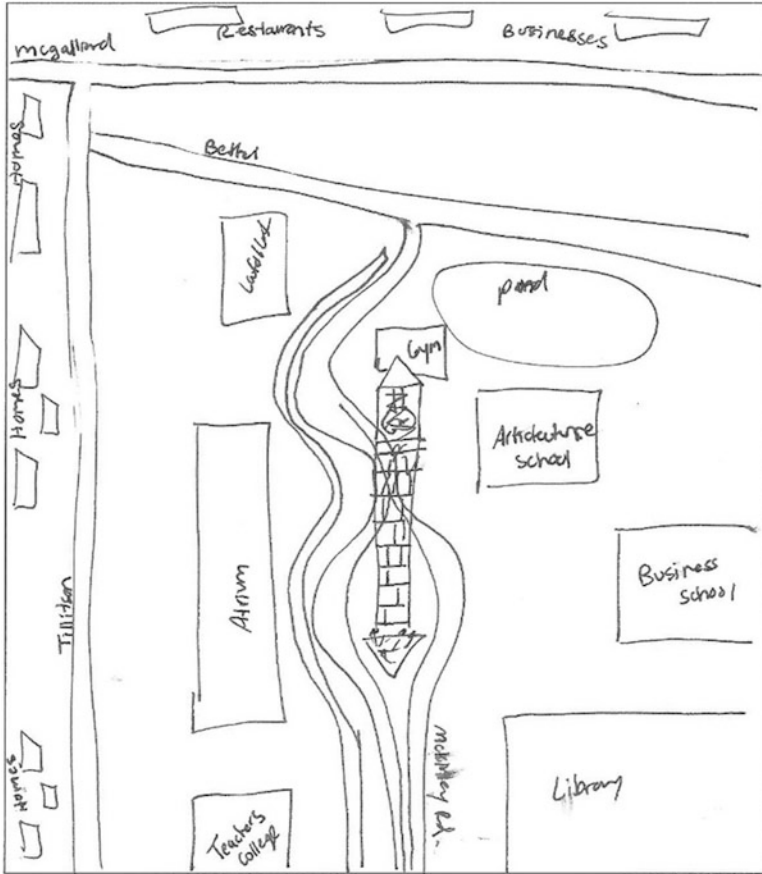


Fig. 2 An example of mental map survey response

Survey results were then synthesized into charts and maps for a report to be given to the neighborhood associations. The goal was to come up with creative ways to map problems in the community. This required critical reasoning on what features would be able to be displayed in map format (e.g. specific addresses mentioned versus tracts of the neighborhood and more abstract responses) versus what may have to be displayed in charts and graphs. Houses, blocks, and specific sections of sidewalks could be mapped by points, polygons, and lines, respectively (Fig. 4). Other more generalized responses (e.g. disinvestment without specific location details) were not as straightforward to map and were often better synthesized in graphical displays.

Old West End in Muncie, Indiana, was the neighborhood with the most responses returned. Thirty online responses and three paper versions were returned. With a very active neighborhood association, it greatly aided the enthusiasm for the survey. The map below shows strengths and weaknesses mapped in Old West End (Fig. 4).

1. Have you participated with the Muncie Action Plan before?
2. What is your gender?
3. What is your age?
4. What is the name of your neighborhood?
5. About how long have you lived in this neighborhood?
6. List any specific features of your neighborhood that you believe are strengths. Provide an approximate location for each feature using addresses, landmarks, intersections, etc. Examples: community center, located at 5th and main friendly neighbors, 3300 block of 12th street
7. List any specific features of your neighborhood that you believe are weaknesses. Provide an approximate location for each feature using addresses, landmarks, intersections, etc. Examples: abandoned house, 123 B street potholes in road, 1st street across from elementary school

Fig. 3 The online survey format

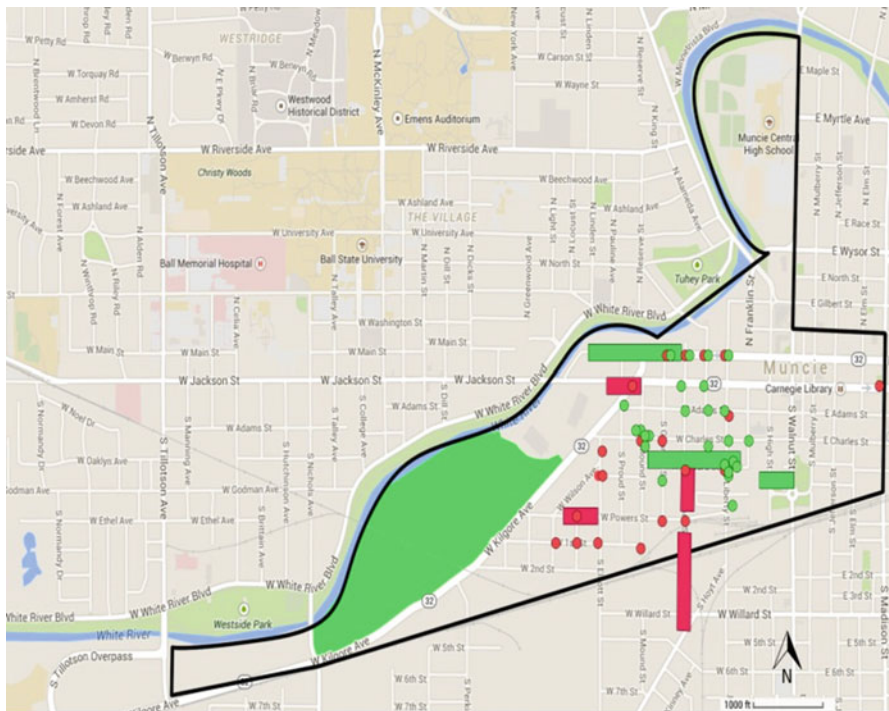


Fig. 4 Example of mapped results for Old West End Neighborhood

## 4 Results and Discussion

In general, the major concern commonly identified by residents across all the neighborhoods in the study had to do with the condition of sidewalks and roads in the neighborhoods. This usually came about from a perspective of safety of children or those who enjoy riding their bikes or jogging in the neighborhoods in terms of sidewalks. Disinvestment, reflected in abandoned residential properties, was another large concern throughout the various neighborhoods, particularly in older neighborhoods such as the Old West End. Interestingly, neighborhoods that were identified with a lot of negative issues in the original city-wide surveys showed more positive aspects when only residents of those neighborhoods were surveyed. Similarly, our surveys reveals smaller negative issues (e.g. sidewalks instead of widespread blight) when residents living in the neighborhood mentally mapped their own immediate surroundings as opposed to reflecting on the city as a whole. Many residents of the neighborhoods had particular features they took pride in, such as restored homes or pocket parks, that were often overlooked in the city-wide survey results.

Other concerns spanning across neighborhoods included large blighted tracts of land formerly occupied by industrial uses, lack of businesses nearby, and limited access to bus shelters. Road conditions were also commonly cited across neighborhoods. On the reverse, historic features, and proximity to Ball State University and the Minnetrista cultural center were commonly cited as strengths across neighborhoods.

Old West End consistently returned mentions of restoration of historic houses as a strength. Community members took a great deal of pride in the work that has gone into restoring residential properties in their neighborhood and continue to rally around these houses that have been restored. Historic landmarks were also consistently cited as strengths, alluding to the residents' pride in its history and location. Sidewalks were consistently mentioned as a weakness as some had cracks and crumbling pieces, which was also an overall note for the city as a whole when the Muncie Action Plan originally gathered large-scale responses.

Old West End, along with other neighborhoods such as Anthony Neighborhood, mentioned a lack of signage as a negative. With some roads being converted to one way streets, especially in downtown, there were specific intersections noted that needed indicative signage. Road conditions, with pot holes being specifically cited, were also raised in multiple neighborhoods. Lack of churches and presence of liquor stores was noted specifically as weaknesses in Forest Park, while Anthony residents specifically mentioned sewer drainage as an issue.

## 5 Conclusions

Surveys collected from meetings held throughout the city do have the ability to collect a large amount of results quickly, but may not always accurately display what the problems truly are in a community. By going through various neighborhoods and focusing solely on what is in that area, data can be obtained from

residents on how to fix what is directly in their community. Mental mapping is a valuable research tool that helps survey participants visualize and communicate their thoughts in an easily accessible way [9, 10].

However, an important caveat of the changing preferences of society is that an online survey may generate more interest and participation. Online surveys gave the respondents the ability to finish the survey on their own time, which may have allowed them to make note of particular strengths and weaknesses. The downside to the online version of the survey is that it did not allow for mental mapping. In the future, with the increased use of tablets and similar, mental mapping may be able to synthesize more easily with online survey responses [11, 12].

The results of this survey and those like it will allow city officials to target specific areas and results with their resources. In a time when many cities face limited budgets, targeted responses that delineate right where bad potholes, lacking sidewalks, and missing signage in a city exist can be far more beneficial and solutions oriented than general responses of “bad roads” and “missing sidewalks”. By going to individual neighborhoods we can utilize an important asset in the form of community members, who often know their area better than anyone else.

The goal for future research of this nature may be to combine the results and benefits of mental mapping with the changing public interest toward online surveys and mobile devices. With the rising use of smartphones and tablets, generating online surveys and data collection may be a better way to reach wider ranges of people and collect real time data within cities and neighborhoods.

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