

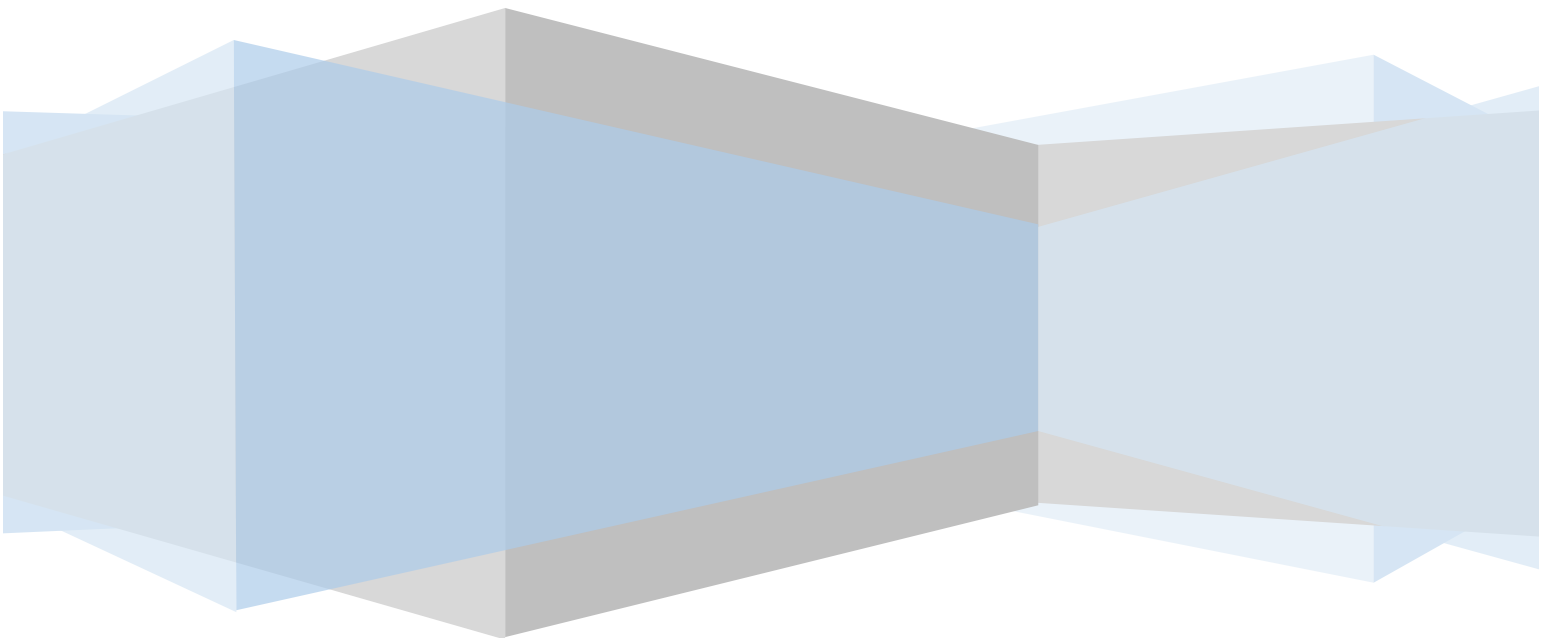
Multi-Faith Veteran Support Initiative

# **CBO4: FINAL REPORT**

## **Mapping Chicago's Veteran Population**

**GEO 442 | Julie Hwang, Instructor | March 18, 2016**

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# Project Summary

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This project involved collaboration with the Multi-Faith Veteran Support Project (MVP) through the Irwin W. Steans Center to complete a Community-Based Service Learning Project. The Initiative was launched in Fall 2014 with a mission to create partnerships and unite resources in the Illinois faith community (and beyond) in order to enhance the lives of veterans and their families.

On several occasions, our group and MVP met to discuss the goals and expected outcomes of this project. It was determined that this project would focus primarily on the mapping of the existing partnerships MVP had already established and known in this project as the "Core Resources". We also mapped additional veteran resources known as the "West Side ABCD" and resources that had the potential to provide veteran services known as "Austin Military Families". In addition to mapping the veteran resources, our project also includes a series of maps aimed at identifying the veteran population throughout Chicago with Austin as the primary area of focus.

Through our collaboration with MVP, our group was able to produce an interactive map displaying the existing veteran resources throughout the City of Chicago and state. This is an information product that MVP will be able to share with its partners, employees, and veterans. It is also a product that can be expanded or changed in the future as the Initiative grows. A second component to this project included a series of maps to help MFVS understand more about the veteran population in Chicago. These maps focused on identifying the veteran population in conjunction with specific demographic and socioeconomic factors. These factors were displayed using as normalized data to show the intensity of the population throughout the City; such factors included were race, gender, educational attainment, disability, and period of service. This product will be a vital resource to MVP when determining what communities are in need of services. A third, and final, component to our project included a network analysis map. The network analysis map is used to display the core resources that are (and are not) within a half-mile walking distance of any CTA "L" stop. MVP will also be able to use this information in the future to determine ideal locations for future partnerships.

Since MVP is a relatively new initiative and much of their information was in the form of names, addresses, and phone numbers, our project was not able to complete a full analysis of potential resources and partnerships. With only the contact information available for many of the potential resources, we were not able to determine if there services were ones that would aid and benefit the veteran community. Fortunately, our interactive map is a product that MVP can modify as assets change.

We believe that when this information is used together, MVP will be able to expand their network of faith-based organizations and houses of worship in communities where:

- Veteran services do not exist;
- There is a veteran population in need; and,
- There are adequate transportation services for existing veteran populations.

Ideally, this project will provide MVP with a product that could be used for many years to come.

# Introduction

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The DePaul University Multi-Faith Veteran Support Project (MVP) seeks to increase the capacities of local houses of worship and faith-based institutions to better serve veterans and veteran families. MVP does so to adhere to their mission, "to mobilize the Illinois faith community to improve the quality of life for veterans and their families." Their program does so through a threefold action plan:

- Providing pastoral care training to faith communities focused on the issues of military-related moral injury, post-traumatic stress, and suicide
- Improving the integration of behavioral health support within faith communities through relationship building
- Identifying, sharing, and advancing best practices among faith communities for proactively engaging veterans and military families

MVP is able to maintain and create relationships with those that are able to help veterans and veterans' families. In order to create these relationships, MVP utilizes common functions. These functions include understanding the resources that are available to veterans across the city as well as where veterans live. This is vital in order to best determine where veterans can access resources and utilize them.

MVP has a variety of resources throughout the Chicago area. However, the organization has not yet been able to centralize these resources to effectively connect veterans with the services they need. The types of services MVP aims to connect veterans to include social work, peer support, emergency facilities, legal services, family and child support, gender-specific resources, housing, and counseling.

Specifically, MVP has categorized their service network into three main categories. The primary resources of MVP consist of those organizations that MVP has made specific partnership with. These partners provide resources that MVP has referred veterans to as well as continues to work with in order to provide vital services to veterans. MVP refers to these resources as their "core resources" and includes nineteen organizations that range in services from child and family support to housing, counseling, and emergency services.

An additional resource network that MVP utilizes is the "West Side ABCD" network. This network is a collection of faith leaders that have provided resources in identifying behavioral health services within the community. The faith leaders in this network are not considered partners, but rather part of MVP's West Side Network.

Finally, MVP has a network that is referred to as "Austin Military Families". This network consists of organization or individuals that MVP could possibly connect to through the Chicago area. There are 206 organizations within the Austin Military Families network that have shown interest in providing veterans with services.

In this report, we will first look into the needs of our organization through a needs assessment. After determining the needs of MVP, a discussion around the data collected will be provided. Methods will then be determined according to MVP's needs and the data available. In the discussion of results we will analyze both the data and methods used to create information products that can be used by our organization. Following the conclusion of our findings we will provide the visual representations of the data found.

# Needs Assessment

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The mappable needs of MVP were determined through in depth discussions surrounding how the organization can best support the veterans they serve. Through these discussions, it was determined that the critical needs of the organization is to map the current resources MVP partners with, the possible connections they could make, and an analysis of the veteran population of Chicago focusing specifically on Austin. The current partners that MVP has are their core resources that consist of locations they have connected veterans to and continue to work with. The possible connections MVP can make consist of organizations that have expressed interest through attendance to the Austin Military Family meetings, where future support of veterans was discussed. Currently, MVP has faith-based organizations that have committed to providing resources to veterans. However, the organization does not fully understand the geospatial relation between sites and those that they service. Therefore, they are unable to properly connect veterans with the services they require. Lastly, MVP does not currently have visual representation of veteran data throughout Chicago according to the U.S. census. By providing this information to MVP via GIS, the organization can better fulfill the goals of their organization.

The representatives from MVP are seeking to address the following questions through GIS mapping provided through our project:

- Veteran populations in communities they are addressing
- Locations of faith based and non-faith based groups and organizations that provide services to veterans
- Health and business-based resources that may be beneficial to their work and the locations of veterans' resources across the city

Each of these questions has spatial elements that can be mapped. Each fits into the maintenance of relationships between MVP and those organizations that provide resources to veterans. Mapping such data allows MVP to determine where resources are available, where more resources need to be, and the amount of access veterans and their families have.

MVP promotes sustainability by developing and maintaining relationships to strengthen community coordination around veterans and veteran family issues. By working with multiple community sites around Chicago, MVP has been able to identify best practices, develop spiritual care curriculum for faith leaders to aid veterans, as well as brand faith-based institution organizations that serve veterans. For the purposes of this project and to maximize usage efficiency, MVP has decided to focus its attention on the Austin Community Area and the resources it can provide within that community.

MVP is able to improve the quality of life of veterans and their families by maximizing access to coordinated resources and services. Our goal in this project is to provide a deliverable that cannot only be used by MVP, but also by the veterans that they serve as well as the organizations that they partner with. The client's needs were determined by their three-fold action plan and discussions on what would best assist them in accomplishing these goals.

## Data Acquisition

Data for this project was acquired by a combination of the community-based organization (MVP) and public domains. While MVP provided all data in relation to their network, data also needed to be obtained from the census, City of Chicago, and the GEO442 course to properly provide the information products MVP was interested in receiving. Below is a summary of all the data utilized in this project to produce the final information products.

## Census Data for Veteran Population

### *Data Dictionary*

#### 1) Census Data for Veteran Population

- a) **Source:** United State Census Bureau, American FactFinder 2010-2014 American Community Survey 5-Year Estimates Retrieved from:  
[http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS\\_14\\_5YR\\_S2101&prodType=table](http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_14_5YR_S2101&prodType=table)
- b) **Details:** This is a database of the total estimated civilian veteran population in each Cook County census tract. Veteran status is defined as a person 18 years or older with active duty military service and service in the Military, Reserves and National Guard. This does not include veterans who are currently serving or on active duty.
- c) **Processing Steps:** The census veteran population data was processed by downloading it as a CSV file from the American FactFinder. Once the data was downloaded, the worksheet was formatted so that it could be properly joined in ArcGIS. The database includes several attributes (GEO.id (ID), GEO.id2 (Id2), GEO.display-label (Geography), and HC01\_EST\_VC01 (Total; Estimate; Civilian population 18 years and over); many of the attributes were deleted because there was more information than needed. The GEO.id2 field is a geographic identifier, which is used to join the data to the Chicago census tract shapefile from the Chicago Data Portal. The GEO.id2 field had to be changed from 'General' to 'Text' so that it could be used in ArcGIS. Additionally, the second row of headers was deleted because ArcGIS can only read one row of headers.

### *Fitness for Use*

The census data for the veteran population of Chicago is one of the most important aspects of this project. This data will enable us to create maps that show where veteran populations exist; and, eventually identify veteran populations in need of additional resources. The data provided from the American FactFinder is some of the most accurate information available. This data was obtained between January 1, 2010 and December 31, 2014; and, it provides an average over the 5-year period. All statistical data is subject to error; however, the United States Census Bureau identifies the 5-year estimates as the most reliable and has the largest sample size. With this data, we are limited the scale at which it is provided. This means that data was available at the census tract level, but not by specific community area.

## Network Organizations

### Data Dictionary

#### 1) Faith Leader Network (WestSite\_ABCD Network)

- a) **Source:** Multi-Faith Veteran Support Project (MVP)
- b) **Details:** Network of faith leaders on the West Side that are in communication with MVP. These organizations are behavioral health identifiers that are able to connect veterans with the resources they need. The data was collected from contacts and then narrowed from contact information to geographical information including Organization name, address, city, state, and zip code. In order to use the data, each of the addresses must be geocoded. The data format is an excel file that will be geocoded and made into a shapefile.
- c) **Processing Steps:** The faith leader network (Westside ABCD Network) was processed by importing the excel file into ArcMap, choosing an address locator, choosing locator (Street\_Addresses\_US), selecting the addresses field in in the Geocode Addresses box under input, and choosing a location for the output shapefile. These addresses, once geocoded became spatial points.

#### 2) West Site Core Resources (WestSite\_CoreResources)

- a) **Source:** Multi-Faith Veteran Support Project (MVP)
- b) **Details:** Network of locations and organizations that veterans have utilized on the West Side that are in contact with MVP. The data was collected from contacts and then narrowed from contact information to geographical information including Organization name, address, city, state, and zip code. In order to use the data, each of the addresses must be geocoded. The data format is an excel file that will be geocoded and made into a shapefile.
- c) **Processing Steps:** The Westside Core Resources were processed by importing the excel file into ArcMap, choosing an address locator, choosing locator (Street\_Addresses\_US), selecting the addresses field in in the Geocode Addresses box under input, and choosing a location for the output shapefile. These addresses, were geocoded and became spatial points.

#### 3) Austin Military Families Initiative Contact List (AustinMilitaryFamiliesInContacts)

- a) **Source:** Multi-Faith Veteran Support Project (MVP)
- b) **Details:** Monthly meeting group from throughout Chicagoland that are seeking to help veterans and connect them with other similar organizations. This is a group that MVP has not been in contact with directly in regards to their project but understands their interests. The data was collected from contacts and then narrowed from contact information to geographical information including Organization name, address, city, state, and zip code. In order to use the data, each of the addresses must be geocoded. The data format is an excel file that will be geocoded and made into a shapefile.
- c) **Processing Steps:** The Austin Military Families data was processed by importing the excel file into ArcMap, choosing an address locator, choosing locator (Street\_Addresses\_US), selecting the addresses field in in the Geocode Addresses box under input, and choosing a location for the output shapefile. These addresses were then geocoded and became spatial points.

### Fitness For Use

Each of the above data sets are different entities in that they can serve MVP in different ways given the level of contact they have with them, where they are located, and what these organizations

can provide to veterans. In the case of these data sets, each of the addresses will be geocoded to fit to a specific map. The accuracy of the maps is therefore assumed (as long as the geocoding is done correctly) due to our use of a geographic coordinate system and locator to plot specific points of data.

The completeness of the data is where there is a discrepancy between the data and the ability to produce what is desired. There are a number of attributes that have organization titles and contact persons but are lacking addresses for the location of these organizations. This leads to the inability to map the data that MVP has collected. There are also a number of attributes that are missing the “type” of organization they are. For instance, whether an organization provides assistance with mental health or housing. The limitations of using these contact lists to map 5 where MVP has a network and connections are that without thorough information about the addresses of these organizations, geocoding them will prove difficult.

The data in the Partnership Network, West Side Core, and Austin Military Families Initiative Contact List are all current as MVP collected each data set and is using them as their current contacts in the West Side area. The limitation of these data sets is that without information on veteran population and families, it is impossible to determine how these organizations can be beneficial to veterans and their families.

## Other Data

### *Data Dictionary*

#### 1) Chicago Community Areas

- d) **Source:** City of Chicago Data Portal (<https://data.cityofchicago.org/>)
- e) **Details:** 77 Community areas of Chicago. This data was needed to properly reference MVP’s network throughout Chicago and acquire an Austin community area shapefile to focus veteran data on the specific community area of particular interest.
- f) **Processing Steps:** The Chicago Community Area data was obtained from the City of Chicago Data Portal. The projection coordinate system was altered to NAD83 Illinois specific by navigating to its properties. In order to acquire the Austin shapefile, the community area attribute table was opened and the Austin community area was selected by attribute and exported to create a new shapefile.

### *Fitness For Use*

The Chicago Community Area data was properly fit for its use to provide a reference of the network data provided by MVP. The only alteration to the data that was needed was to change the projection coordinate system.

#### 2) CTA

- a) **Source:** GEO442\_Lab 9\_Win2016\_NetworkAnalysis\_rev2
- b) **Details:** CTA\_RailStations.lyr is a shapefile that shows each of the “L” stations on CTA’s rail lines.
- c) **Processing Steps:** The CTA data was processed by importing the data from the GEO442\_Lab9\_Win2016\_NetworkAnalysis\_rev2 on DePaul’s D2L class website for GEO 442. The data files were then extracted from the zip file downloaded and imported into ArcMap.

### *Fitness For Use*

The above data is sufficient in its completeness including each of the rail stations that CTA offers on its elevated/subway rail lines. Neither the coordinate system nor the symbology needed to be altered

in order to work with the data. This data is used in accordance with MVP's needs for ensuring that veterans have access to available resources and is vital to the completion of network analysis for core resource proximity to CTA's rail stations across the city.

When MVP's data was initially acquired, the organization had a number of organizations they partnered with or had made contact with. However, much of their contact information consisted of names, phone numbers, and addresses rather than concrete addresses that can be mapped. This created challenges in obtaining accurate and complete data. Therefore, the data had to be interpreted in depth and cleaned in order to properly map MVP's networks geospatially. Additionally, it was difficult to determine potential partners for MVP to partner with outside of the Austin Military Families network the organization had already collected due to limited of public available data. Data acquisition restraints influenced the objectives and direction of our project by having our efforts focus less on potential partners for MVP, but rather for mapping current partners, potential partners already acquired by MVP, and veteran population within Austin and throughout the city of Chicago.



# Information Product

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With the help of GIS mapping, MVP will be able to expand their network and better understand how they can serve the veteran population by connecting them with existing partnered organizations but also determine additional organizations to partner with. This project will continue MVP's sustainability initiative by promoting and facilitating the existing relationships, which foster community coordination among veterans and their families.

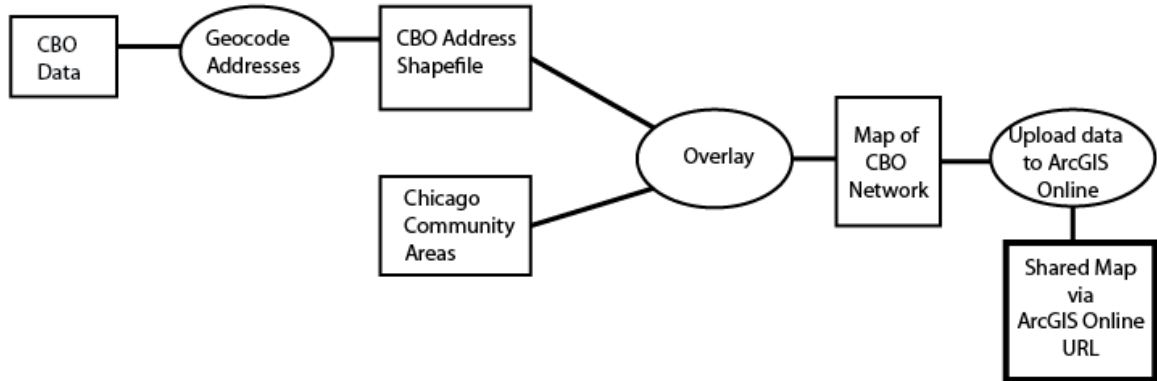
This GIS mapping project used a combination of datasets to create a series of maps to easily identify the areas in need. The census data for the veteran population is an important component of this project; this data helps create maps that display the distribution of veteran population and where those populations are clustered. The datasets for MVP's partnered organizations are also an important component because they display behavioral health identifiers, which are able to connect veterans with the resources they need. Lastly, MVP has identified potential organizations that they would like to partner with ranging from affordable housing developments to workforce centers to mental health clinics.

## Interactive Web Map: Multi-Faith Veteran Support Initiative Partners and Potential Partners Across Chicago

The interactive web map information product is developed to visually display MVP's various partners across the city of Chicago. MVP has a variety of partners across Chicago including their core resources, Austin coalition group, and the ABCD resources. These three different types of partners are designated in the information product with a unique color so that the three different categories of partners can be deciphered. The information product shows a base map of the Chicago area and is an interactive web map.

The web map information product allows MVP to visually understand the distribution of partners the organization has throughout the Chicago area. Therefore, this map fulfills MVP's geographic information needs of identifying locations of faith based and non-faith based groups and organizations that provide services to veterans throughout the Chicago area. With this information product, MVP is able to answer questions such as "In what areas of Chicago do we have a strong presence of partner resources? In what areas of Chicago do we need to improve our resources? Given the distribution of resources, is there a preferential location to adopt a new MVP site?"

The interactive web map also allows MVP to click on the resources displayed in the map and quickly understand which resources are located where. Additionally, the interactive map allows MVP to easily share their resources with the veterans they serve and the organization they work with.

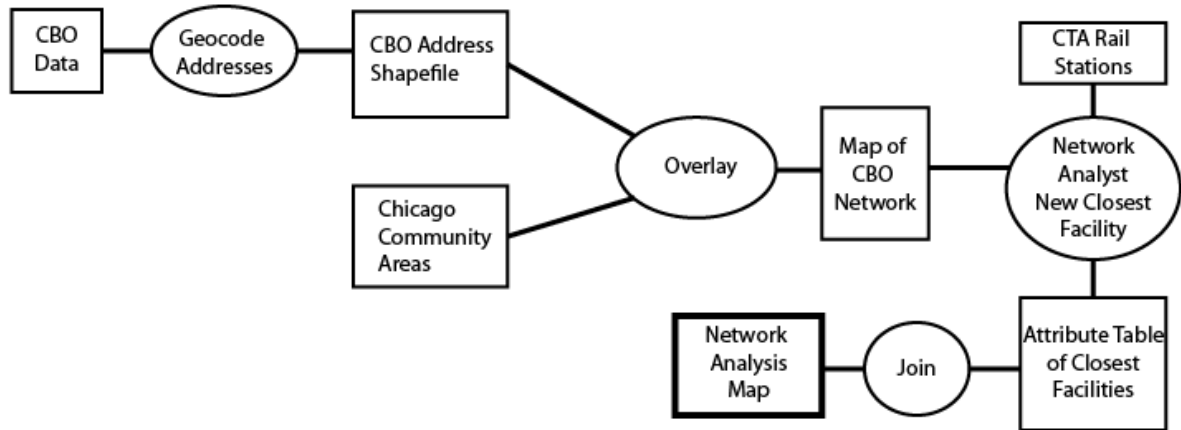


In order to create this information product, the above process diagram outlined above is followed. The data that was provided by MVP was cleaned and then geocoded in order to obtain address point data of the organization’s partners across the Chicago area. The geocoded addresses shapefile was then overlaid with the Chicago Community Area shapefile to create the dot density map of MVP’s partner network across the Chicago area.

## Network Analysis Map: Multi-Faith Veteran Support Initiative Partners within ½ mile radius of CTA stops

The network analysis information product displays the partners of MVP that are within a half-mile radius of a CTA stop. This map allows MVP to better understand the accessibility of their partner organizations by train. The information product shows the city of Chicago boundaries as well as the community areas. A network analysis is displayed in this information product in order to show the partners within a half-mile radius of a CTA stop.

The network analysis information product fulfills MVP’s geographic information needs of accessible beneficial resources to veterans. Providing a map showing the accessibility of current resources to CTA stops helps MVP assess the ease with which veterans can access these resources. While other modes of transportation are used among veterans, CTA lines are one of the cheapest and most convenient ways of traveling throughout Chicago. Therefore, providing a visual reference of how many of MVP’s partners are within walking distance of a CTA stop helps MVP understand how they can improve the accessibility of their resources. This map helps MVP answer questions such as “Are our resources accessible? In what areas of Chicago do we need to improve the accessibility of our resources? What partners provide more accessible resources that we can promote to the veterans we serve?”



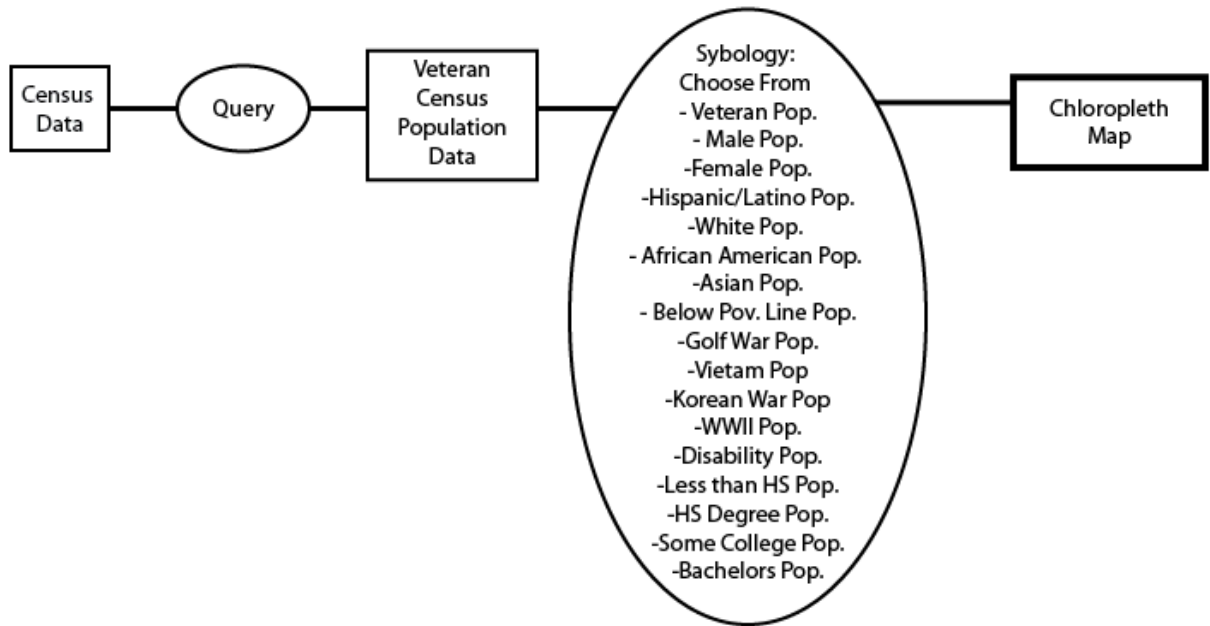
The process diagram above shows how the information product was produced. First, the data provided by MVP was cleaned and then the addresses were geocoded to create spatial data to work with in GIS. The overlay tool was then used on the newly created address shapefile and Chicago Community Area data, which was obtained from the city of Chicago data portal. This created a map of MVP’s partner network, which was then processed through the network analysis tool (new closest facility) and joined to obtain a map of MVP’s partners within a half-mile of a CTA stop.

## Density Maps: Veteran Population Density Variations

*Variations include: veteran populations of veteran, male, female, Hispanic/Latino, White, African American, Asian, below poverty line, Gulf War, Vietnam War, Korean War, WWII, disability, less than high-school degree, high school degree, some college, bachelor's degree, veteran with core resources overlay*

The density map information products use census data to isolate the veteran population in the Chicago area as well as map the veteran population based on specific socioeconomic factors such as gender, education, and race. These maps allow MVP to see what type of veteran populations are located across the city as well as helps them to determine where their services will be most useful to the largest amount of veterans. MVP can therefore use these map to compare to its network and where its resources are as well as where they need more. It can also help them to determine their next focus area.

The maps also speak to the questions that MVP asked in their original scope such as “What veteran populations are we working with across communities?” and “What locations of faith-based and non-faith groups and organizations that provide service to veterans?”



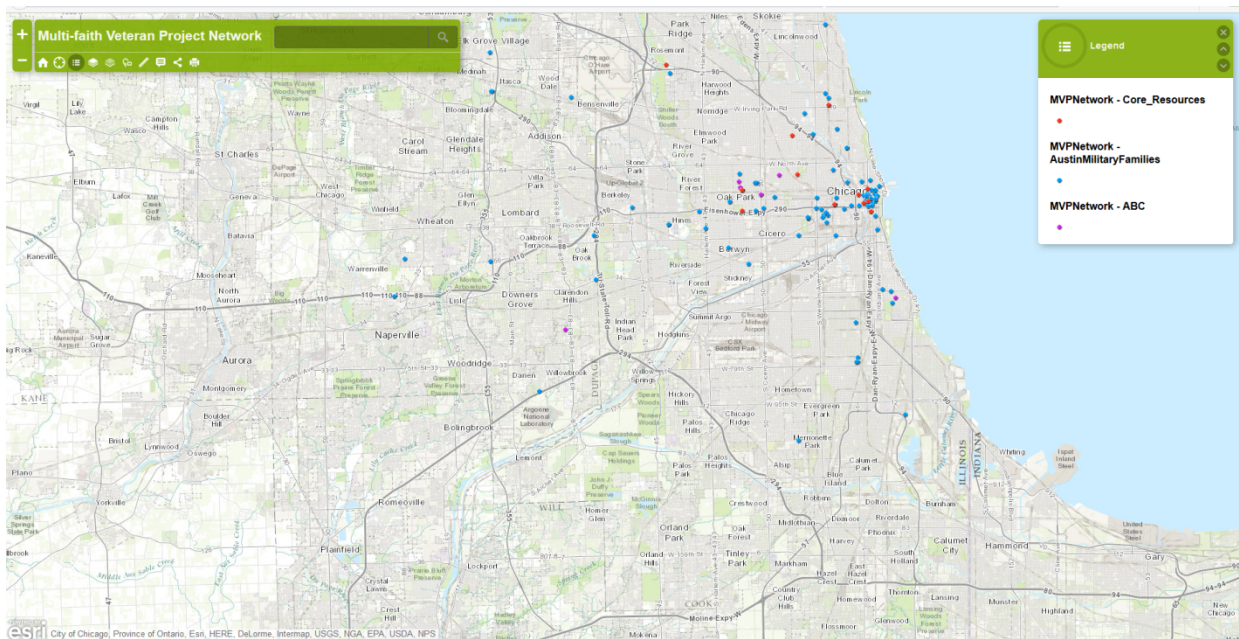
In order to process the veteran population maps, a query is performed on the census data for Chicago to seek out only the veteran population information. The census data has a number of fields and it needed to be narrowed down to the specific information needed to allow for a better view of the needed information. Once the veteran census population was selected and created into a separate database file, the various attributes had to be selected in the symbology tab in properties to make visibly informational maps. Graduated color maps were chosen with color spectrum to create a choropleth map. This type of map is ideal because it shows the desired population in an easy to read fashion over a geographic area that is easily explained to not only MVP but also to the rest of their network.

# Results

## Interactive Map with Dot Density MVP Network

The Dot Density map of the MVP Network that is available in an interactive format through ArcGIS Online. This analysis shows that a majority of those organizations that MVP is partnered with, those that are part of its ABCD faith leaders resources, as well as the Austin Military Families interest group are primarily located in the city and its surrounding suburbs with a few outliers in Bloomington and Springfield, IL. The core resources noted in red are located in the central and northern portions of the city, the ABCD network is located primarily on the West Side of Chicago near the Austin community area, and the Austin Military Families network has the largest spread from a dense concentration in the city's center to cover suburbs in all directions as well as members in central Illinois.

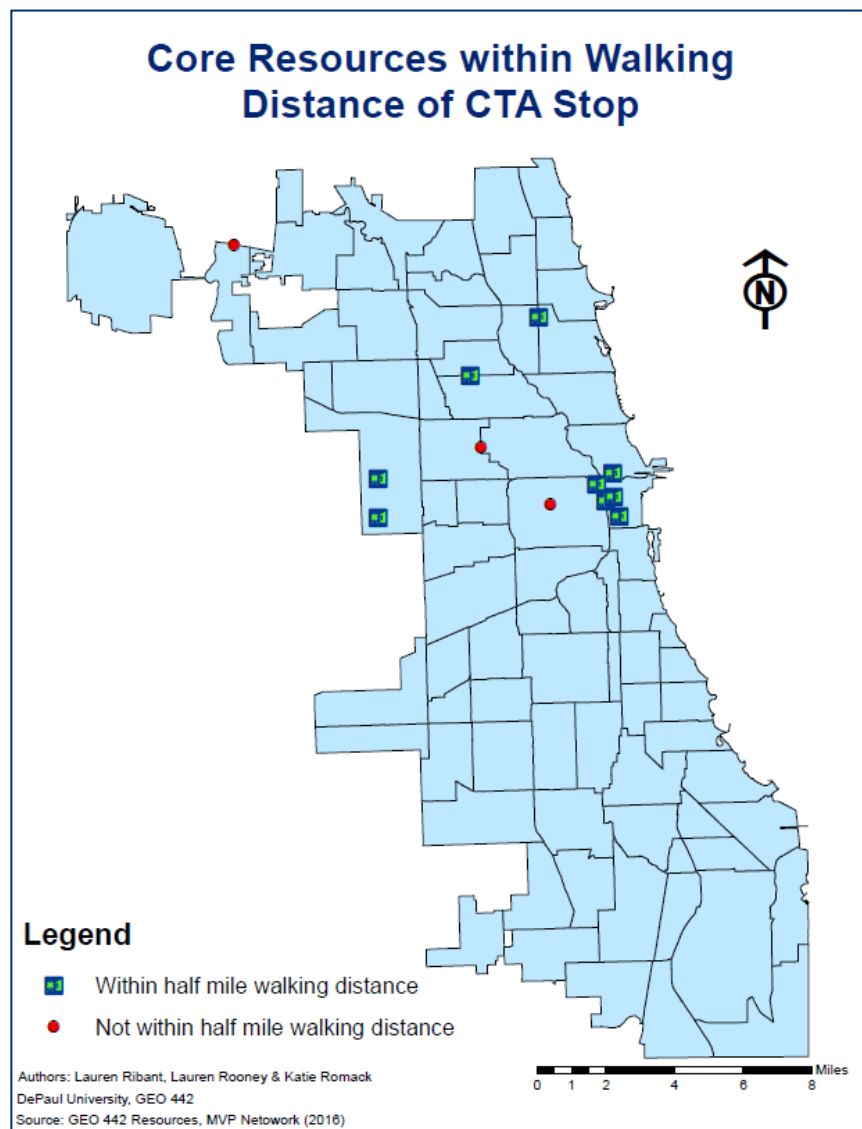
These results, overall, are expected but with a few outliers. This is because a majority of MVP's network members from all three groups are located within the city or within a close proximity of its suburban areas. However, a few of the Austin Military Families network members reach as far west as Naperville and south as Springfield, Illinois. Knowing the location of its network will help MVP to understand where their current resources are located and where would be most beneficial for additional resources, possible partnerships, and where their network is able to successfully help the veteran population.



## Network Analysis Map

The network analysis maps shows the MVP Core Resources, which are located a half-mile from a CTA stop. The analysis shows that out of the nine core resources, six are within walking distance to a CTA stop.

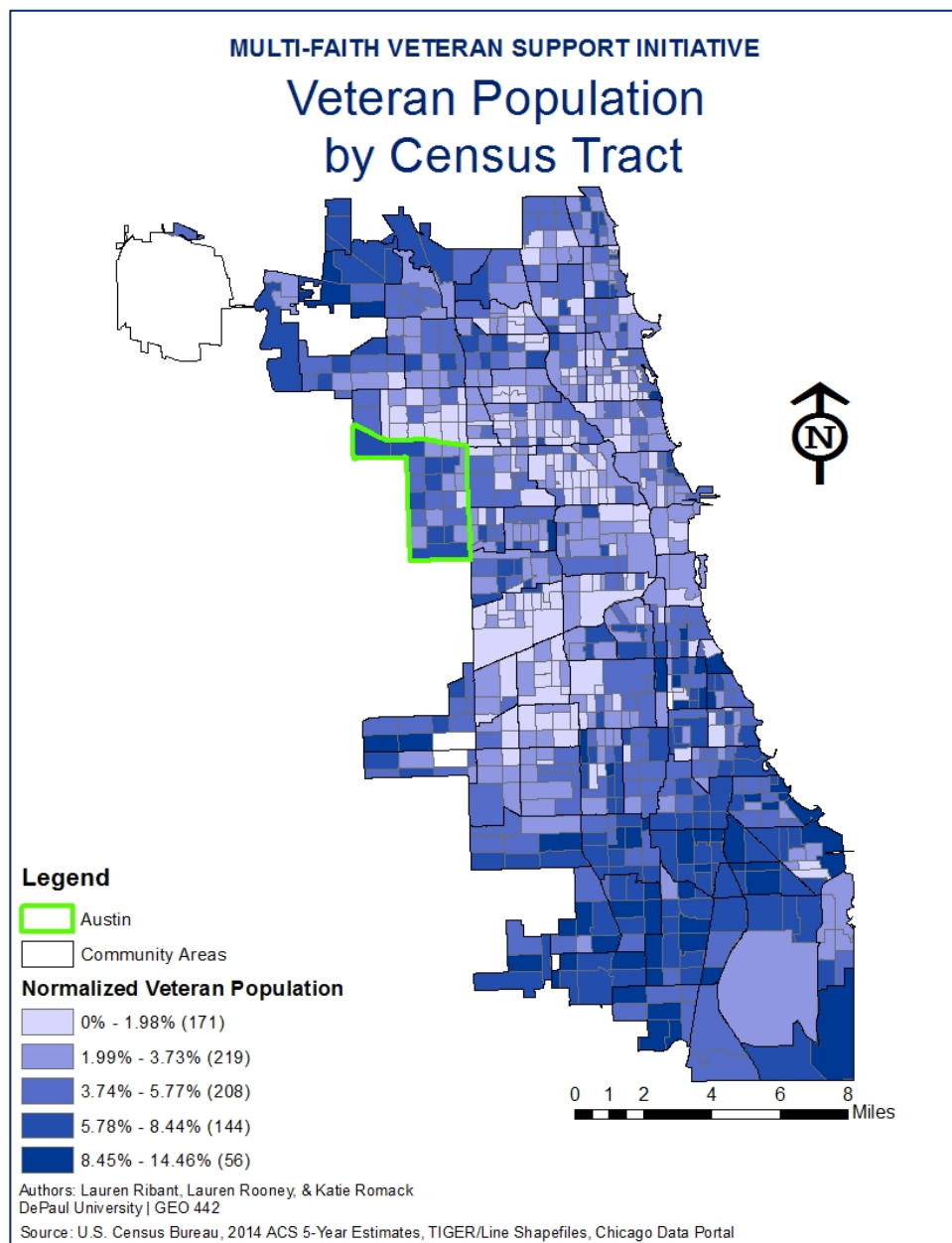
These results are overall expected since all core resources are within the Chicago boundaries and the CTA reaches most parts of the city. Accessibility is critical to getting veterans connected with resources especially in a largely populated city where train is the main form of transit. Although MVP has partnered with core resources that are mainly easily accessible by CTA, there are still some resources that may be more difficult for veterans to reach. Knowing this can help MVP be more knowledgeable about the accessibility of their resources and will allow the organization to help veterans more easily access the resources available. This information will also help MVP be more aware of accessibility challenges with current and future partners.



## Normalized Veteran Population by Census

The normalized veteran population by census tract map shows the veteran population throughout Chicago. The analysis shows that there is a significant veteran population in the southern region of Chicago as well as the northwestern region of Chicago. Austin is highlighted in green since MVP desired to have a focus on the Austin Community Area. Within Austin, there are a significant amount of veterans especially in census tracts located in the west and south.

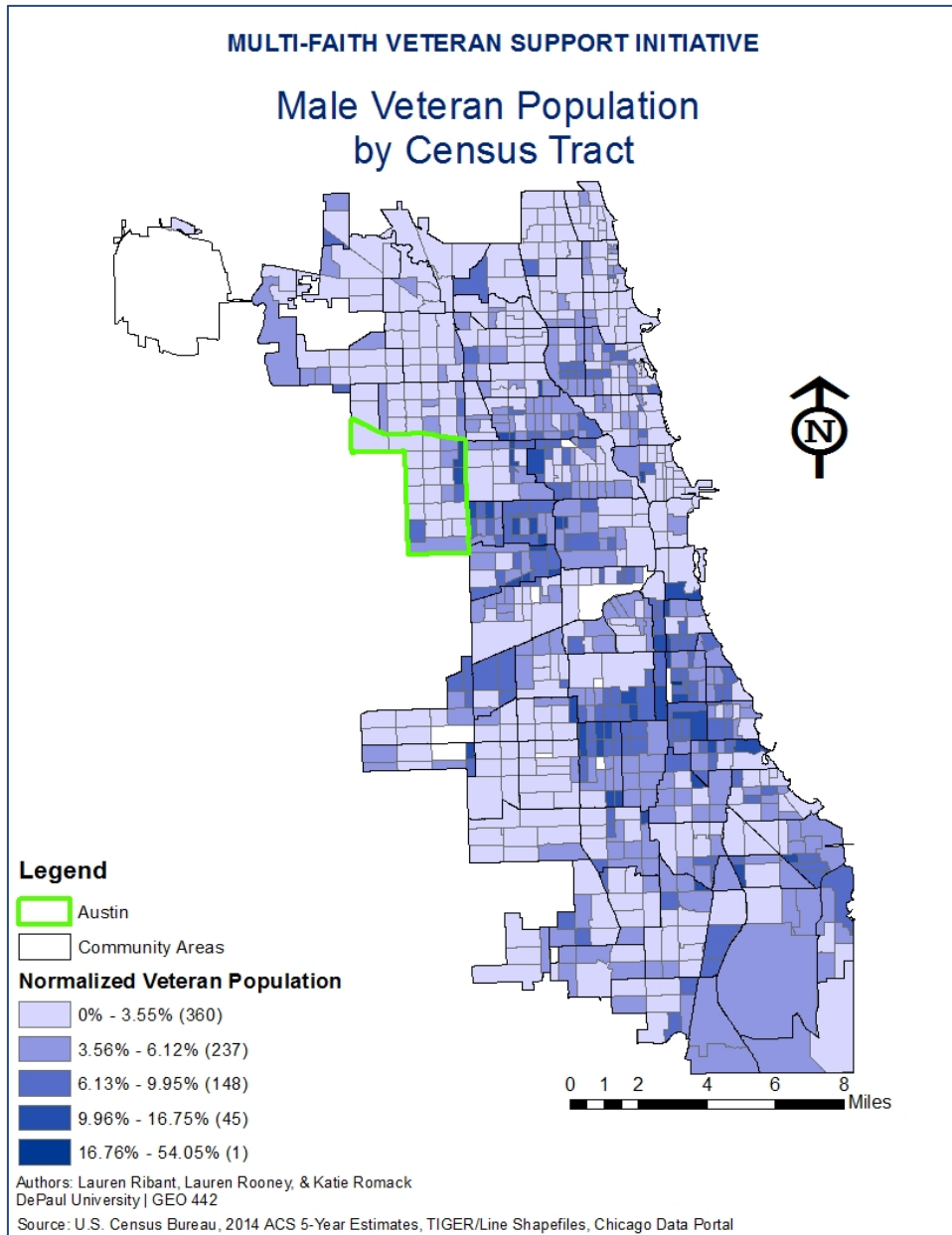
These results are not unexpected given MVP focus in the Austin area as well as their desire to create a stronger site in the southern region of Chicago. The implications of this map are that MVP should continue to strengthen their network within Austin, but also look towards creating additional resources in the northwest and south side of Chicago.



## Normalized Male Veteran Population Density Map

The normalized male veteran population map shows the male veteran population throughout Chicago. The analysis shows that there are larger populations of male veterans in the central parts of Chicago. This information product can be useful for MVP to understand where to focus their veteran services that are predominantly for males.

Given that the overall veteran population was heavily located in the south and northwest regions of Chicago, these results are unexpected. It would be more likely expected that the male veteran population would be located predominantly in the northwest and south regions of Chicago as well. However, the implications of this map determine that this is not the case.

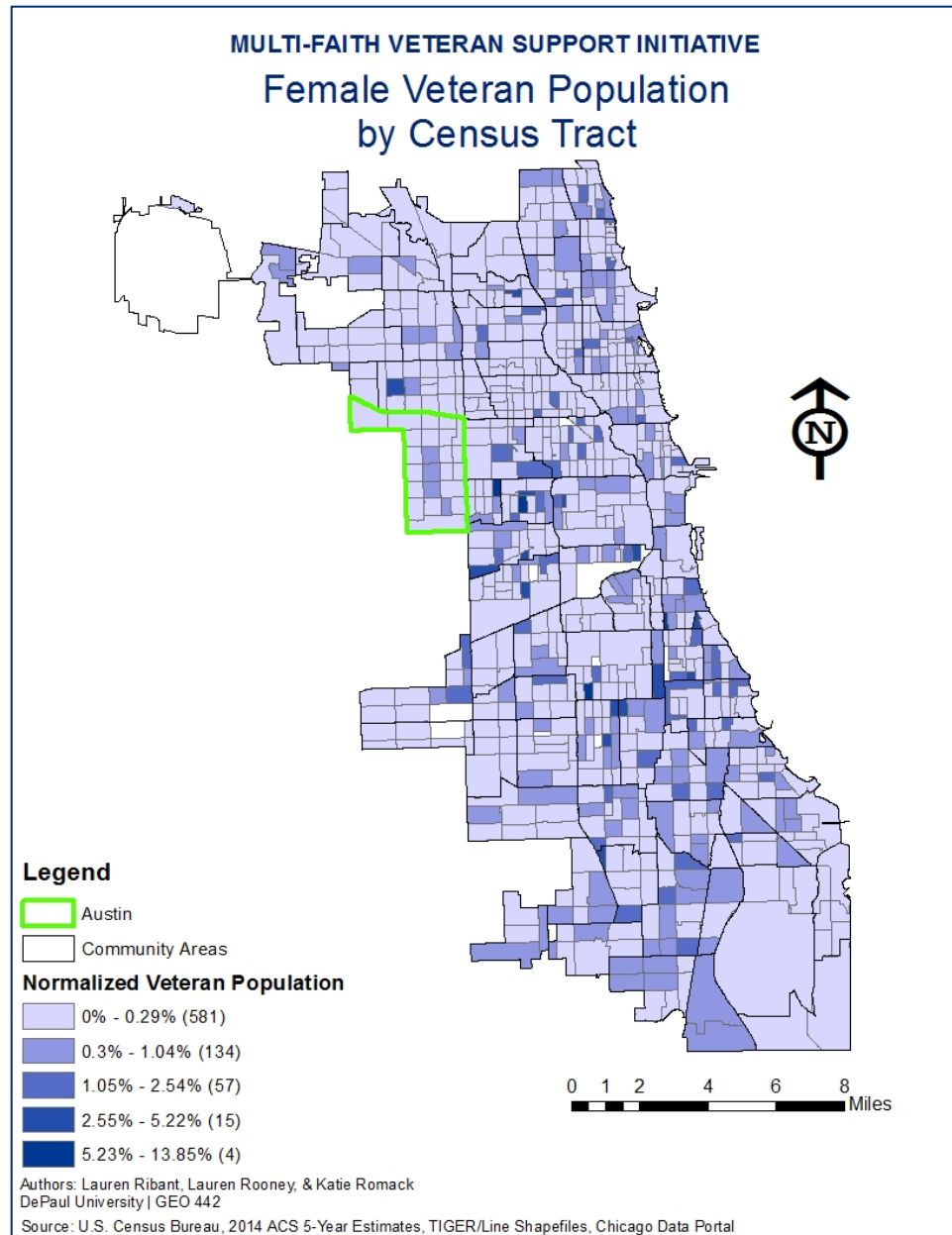




## Normalized Female Veteran Population Density Map

The normalized female veteran map shows the female veteran population throughout Chicago. The analysis shows that the female veteran population is scattered throughout Chicago. The implication of this analysis is mainly that services for female veterans need to be located throughout the city in order to appropriately serve this population.

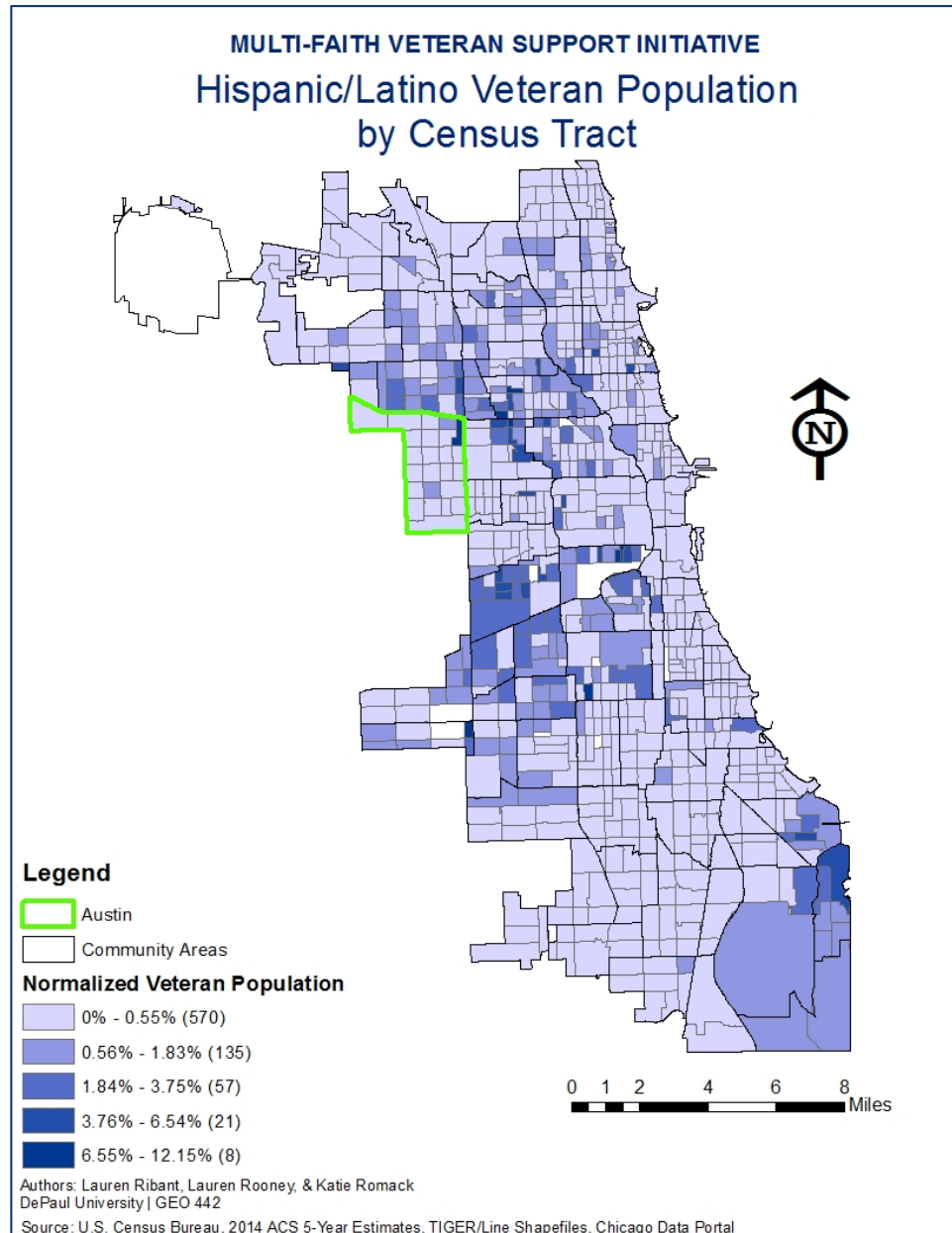
These results are expected given that female veterans do not make up the majority of the veteran population, although female military service is certainly growing. Within Austin there are some larger populations of female veteran population in the center of the community area, which concludes that Austin should also have services specifically tailored towards female veterans.



## Normalized Hispanic/Latino Veteran Population Density Map

The normalized Hispanic and Latino veteran population map shows that there are large amounts of Hispanic and Latino veteran populations in the west, northwest, and south regions of Chicago. There is not a large population of Hispanics and Latinos in Austin.

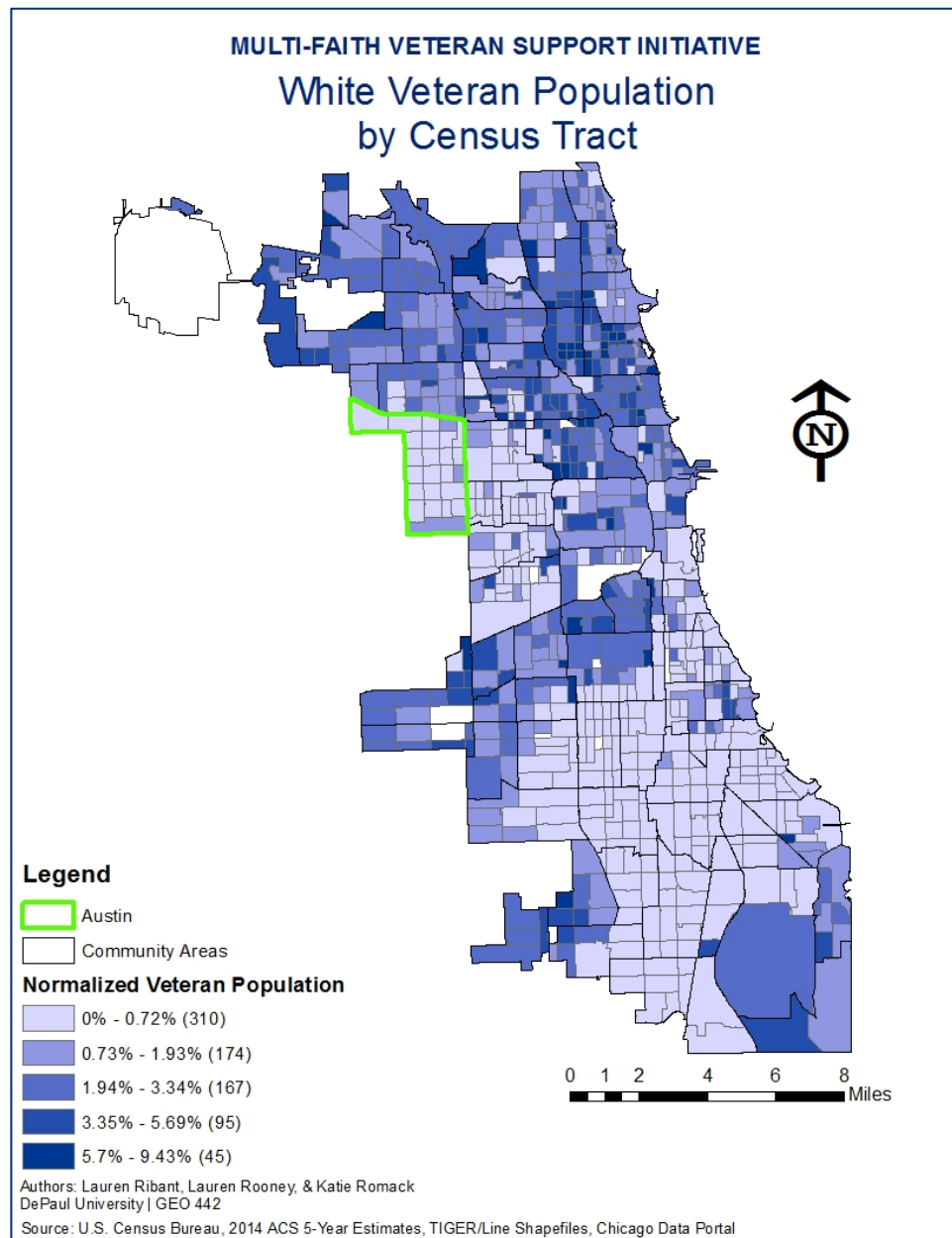
These results are expected given that the areas with higher Hispanic and Latino veteran populations are areas within Chicago that contain higher populations of Hispanics and Latinos. The implications of this analysis are that MVP could provide services more tailored to these populations in the northwest, west and south regions of Chicago. For examples, MVP could try to ensure that a majority of the services provided in this area are able to work with Spanish speaking populations.



## Normalized White Veteran Population Density Map

The normalized white veteran population density map shows that there are large white veteran populations in the north and southwest parts of Chicago. There is also a significant white veteran population in the far south region of Chicago along Lake Michigan. There is not a large population of white veterans in the Austin Community Area.

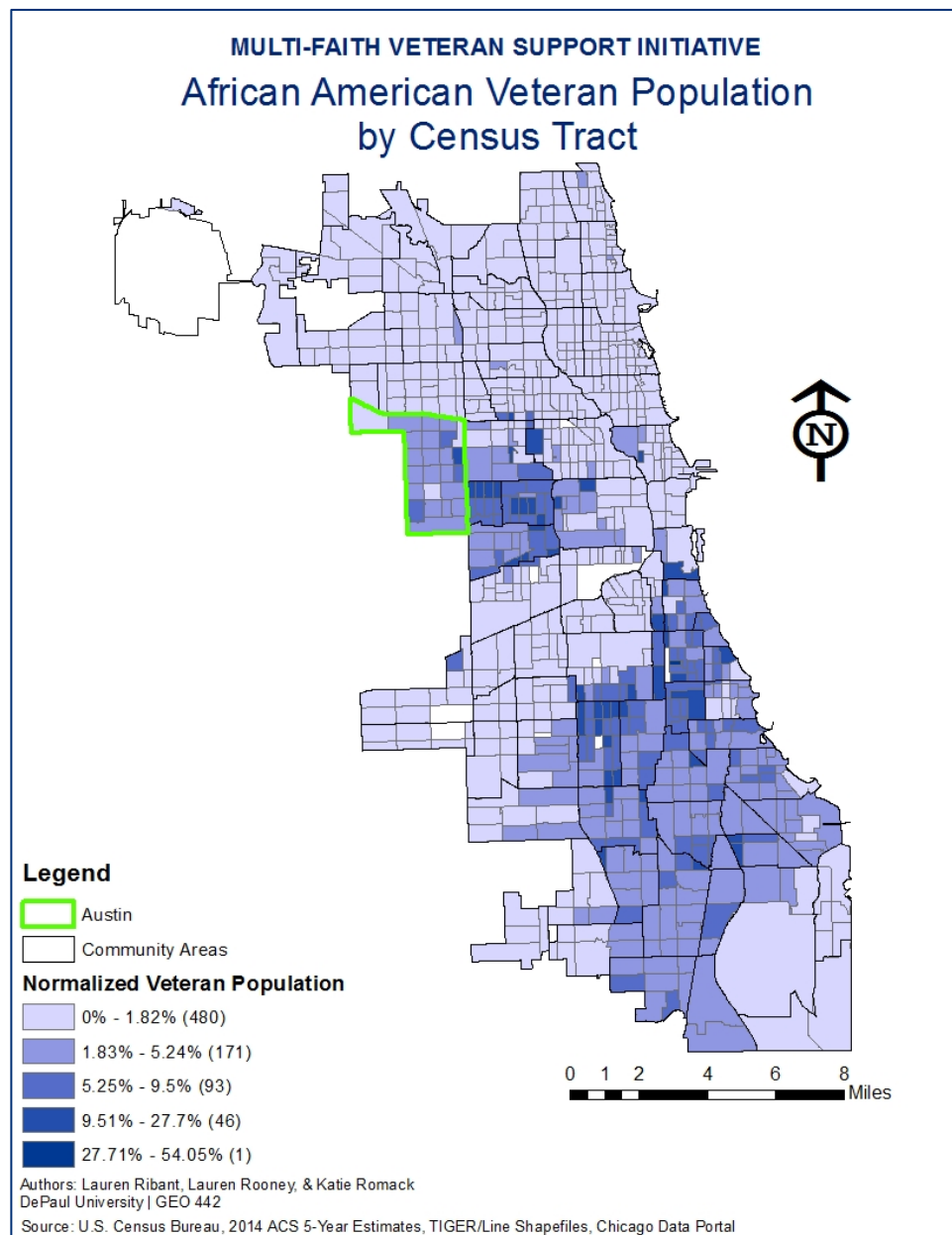
Overall, these results are expected as the areas where white veteran populations are most prominent align with the general race distribution in Chicago for all types of residents, not just veterans. The implications of these results can help MVP be better informed as to the veteran population they serve in Chicago. Different races are more susceptible to different health issues; therefore, knowing the disbursement of the white veteran population can help them ensure the proper health service resources are properly distributed throughout the city.



## Normalized African American Veteran Population Density Map

The normalized African American veteran population map shows that there is a large African American veteran populations in the northwest and south regions of Chicago. There is a large amount of African American veterans in Austin as well.

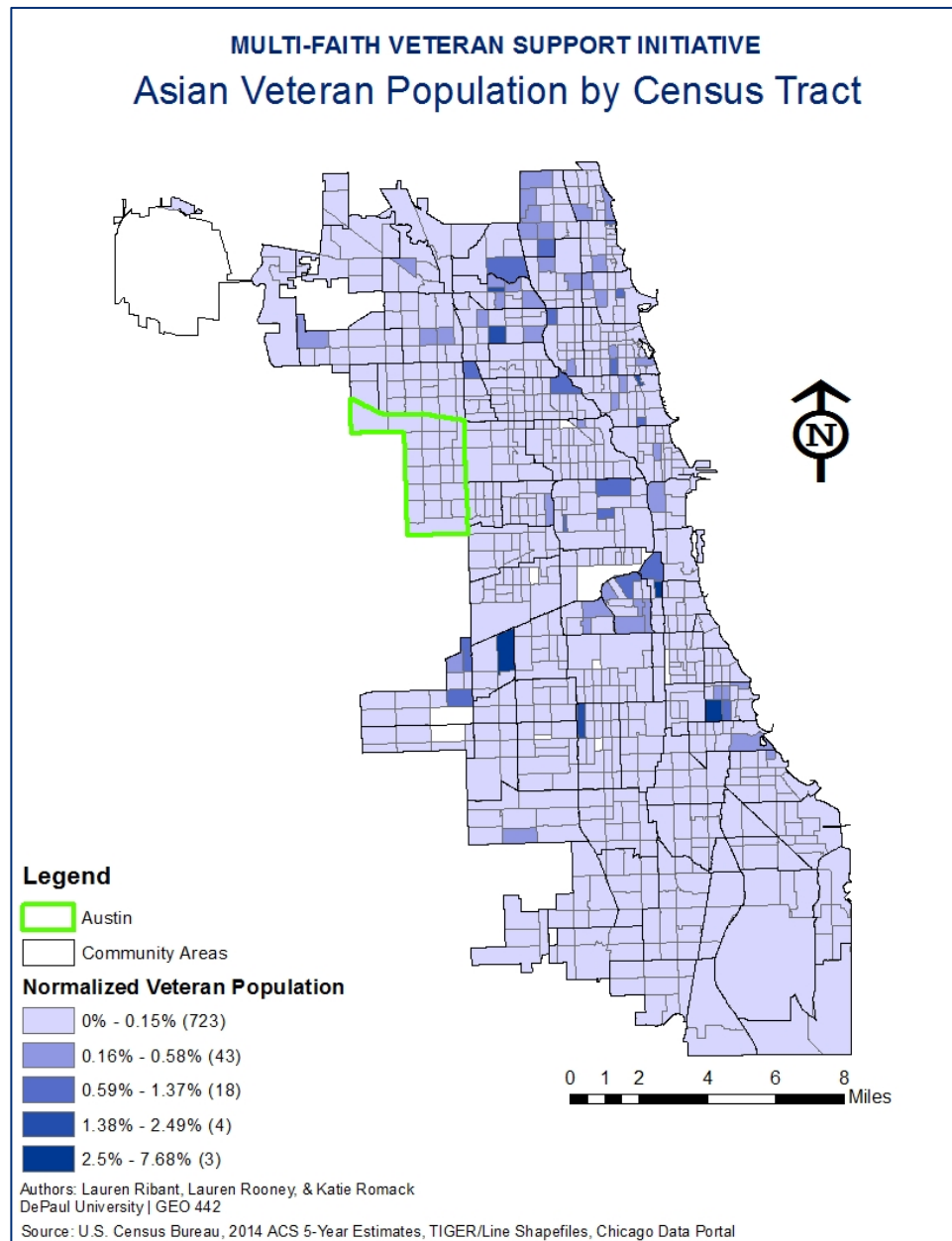
These results are expected since these areas of Chicago are known to be areas with higher African American populations in general, including Austin. The implications of these results can help MVP be better informed as to the veteran population they serve in Chicago. Different races are more susceptible to different health issues; therefore, knowing the disbursement of the African American veteran population can help them ensure the proper health service resources are properly distributed throughout the city.



## Normalized Asian Veteran Population Density Map

The normalized Asian veteran population density map shows low amounts of Asian veteran populations throughout Chicago. However, there are some higher amounts of Asian veteran populations scattered throughout the north and southwest regions of Chicago. Austin has a significantly low Asian veteran population.

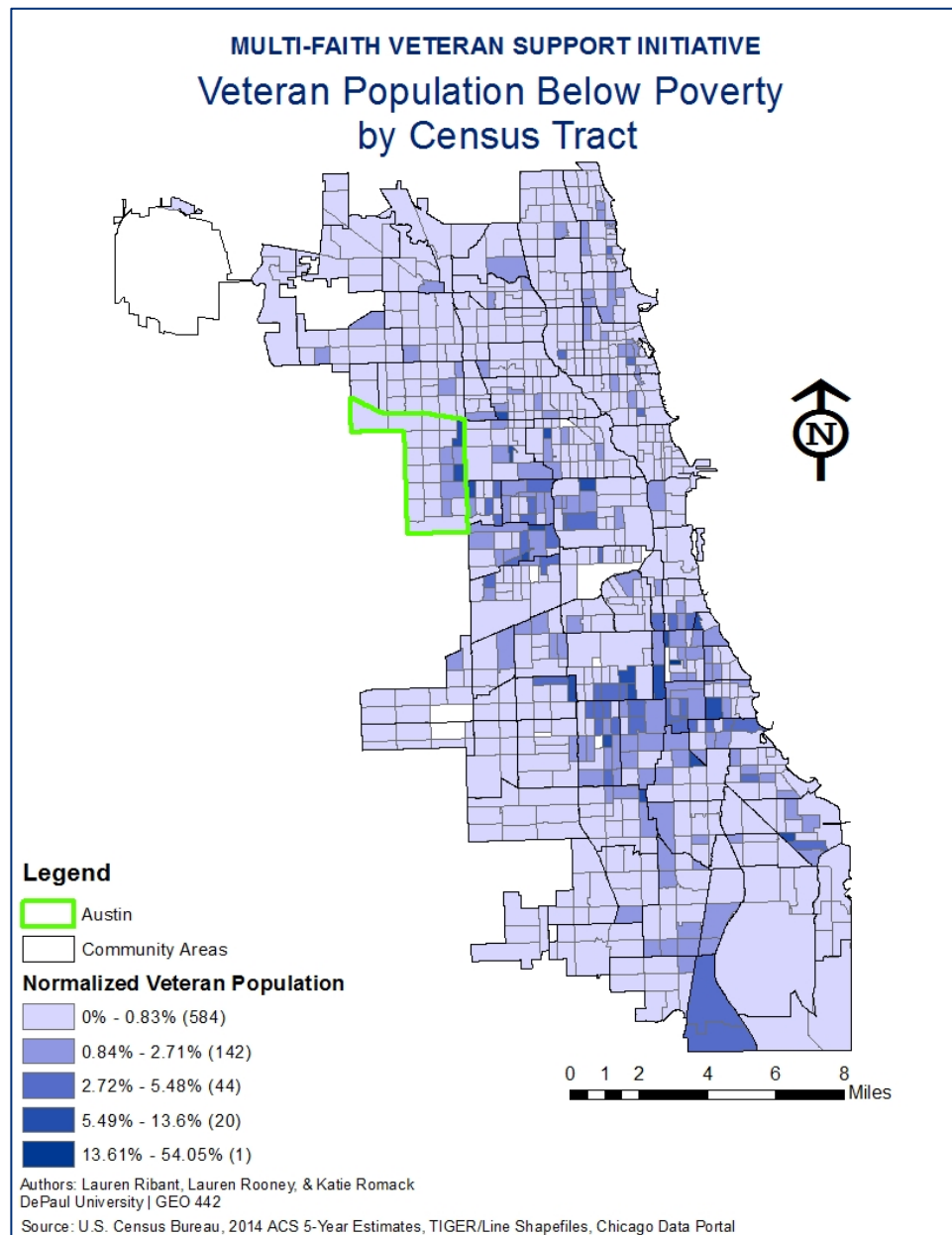
These results are expected since the overall Asian population is low in Chicago compared to the White and African American populations. The implications of these results can help MVP be better informed as to the veteran population they serve in Chicago. Different races are more susceptible to different health issues; therefore, knowing the disbursement of the Asian veteran population can help them ensure the proper health service resources are properly distributed throughout the city.



## Normalized Below the Poverty Line Population Density Map

The normalized below the poverty line population density map shows the veteran population in Chicago that is below the poverty line. This map shows that there are high amounts of veterans living below the poverty line in the south central and west central regions of Chicago. On the east side of Austin, there are also higher levels of veterans living below the poverty line.

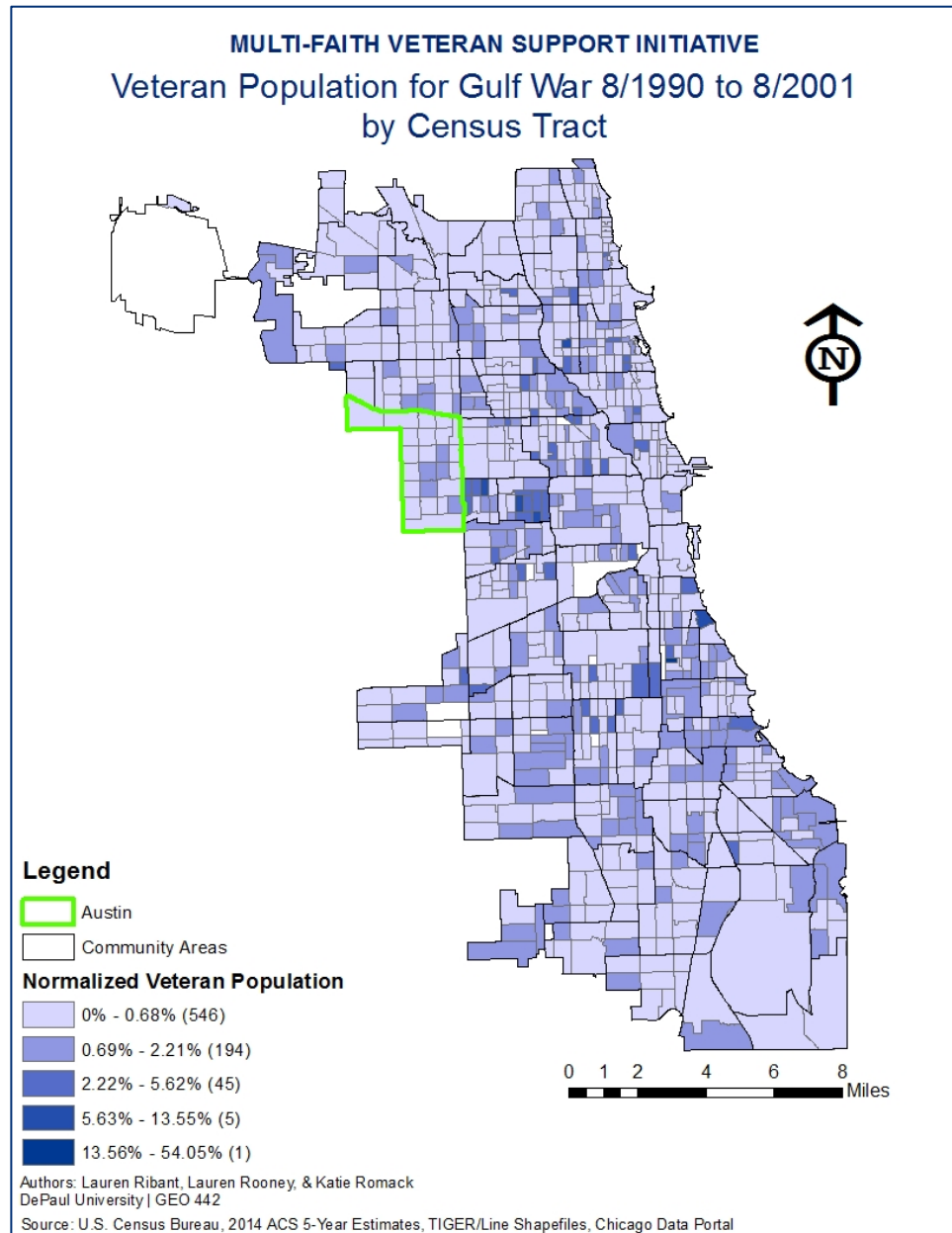
These results are expected in that the areas, which are higher for veterans living below the poverty line, are low-income areas. The implications of these results for MVP are that veterans living below the poverty line will have significantly higher needs and most likely needs that require greater investment. With this knowledge, MVP can focus on providing these types of services in these areas along with increased amounts of vocation, nutrition, and health related services to properly assist this veteran population.

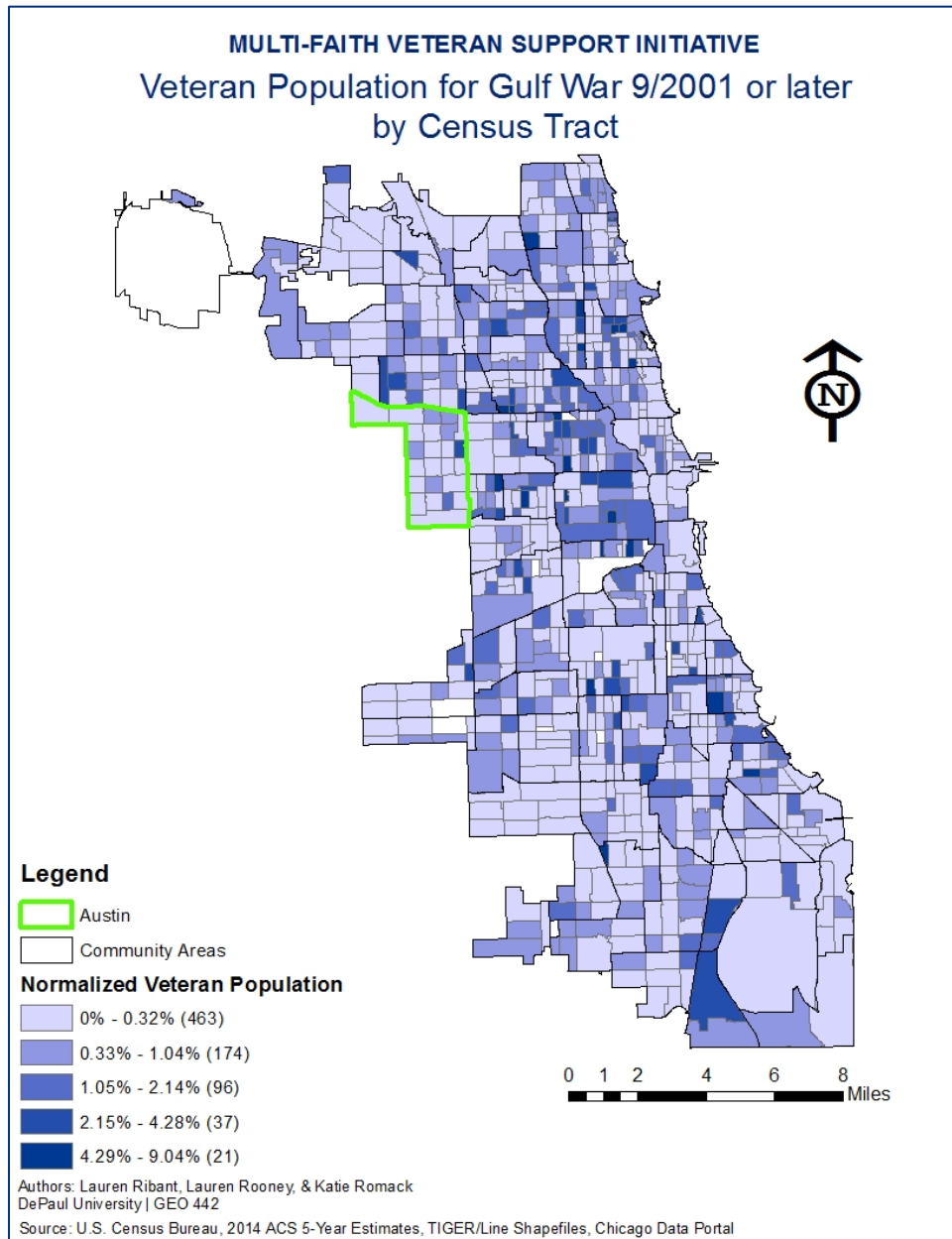


## Normalized Gulf War Veteran Population Density Map

The normalized Gulf War veteran population by census tract map shows the population of Gulf War veteran populations across the city of Chicago. The analysis shows that the population is dispersed throughout Chicago, but there is a relatively large cluster in the north central and south central parts of the city. Austin is highlighted in green and shows a scattered Gulf War veteran population.

The scattered results are overall expected.



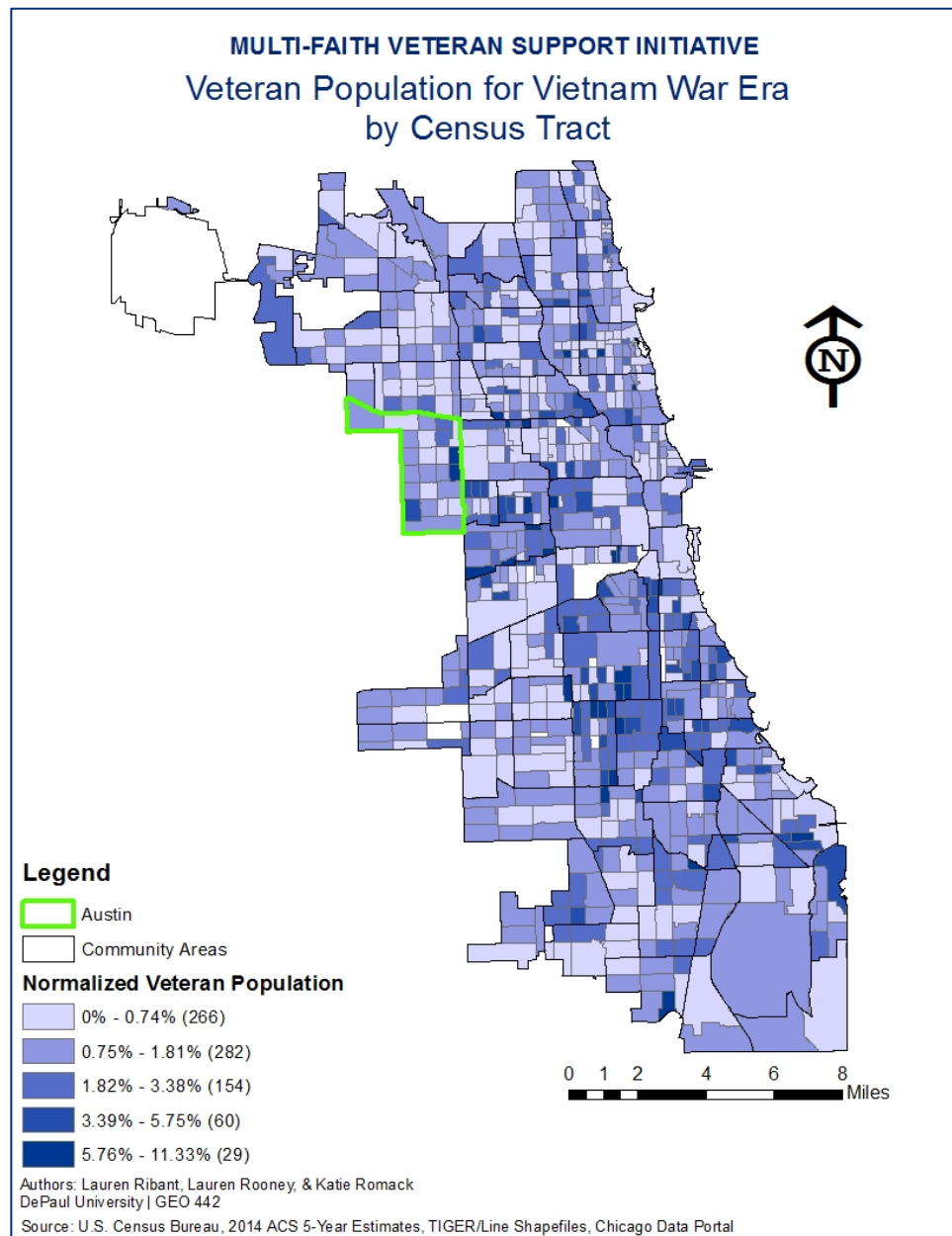




## Normalized Vietnam Veteran Population Density Map

The normalized veteran population for Vietnam War veterans by census tract map describes the population of Vietnam War veteran population across the city of Chicago. The analysis shows that the population is primarily dispersed but there is a relatively large cluster of Vietnam War veterans in the central portion of the city south of the Loop. Austin is highlighted in green since MVP desired to have a focus on the Austin Community Area. Within Austin, there is a dense population in the most eastern census tracts as well as in the southwestern corner of the community area.

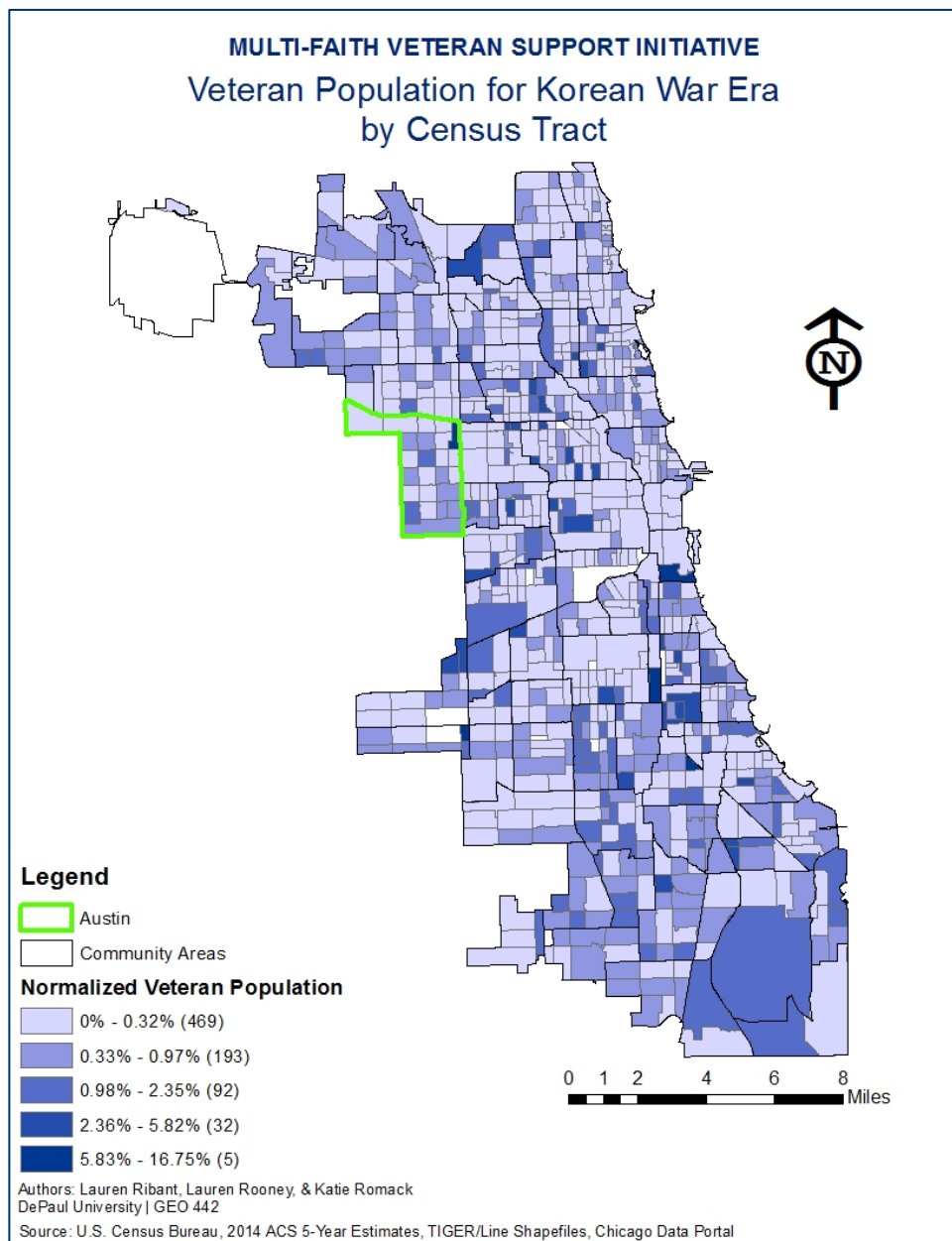
The results are slightly unexpected in that the clusters of Vietnam War veterans are not in the same areas that the overall veteran population for Chicago is the densest while the population of Vietnam War veterans is expected to be relatively high due to the fact that the war was not too far into the relative past.



## Normalized Korean War Veteran Population Density Map

The normalized veteran population for Korean War veterans by census tract map describes the population of Korean War veterans across the city of Chicago. The analysis shows that the population is primarily in the south and northwest of the city as well as a dense cluster in the west, central portion of the city. Austin is highlighted in green because it is a community area that MVP is focusing on. Within Austin, there is a dense population of Korean War veterans in the northeastern corner of the community area.

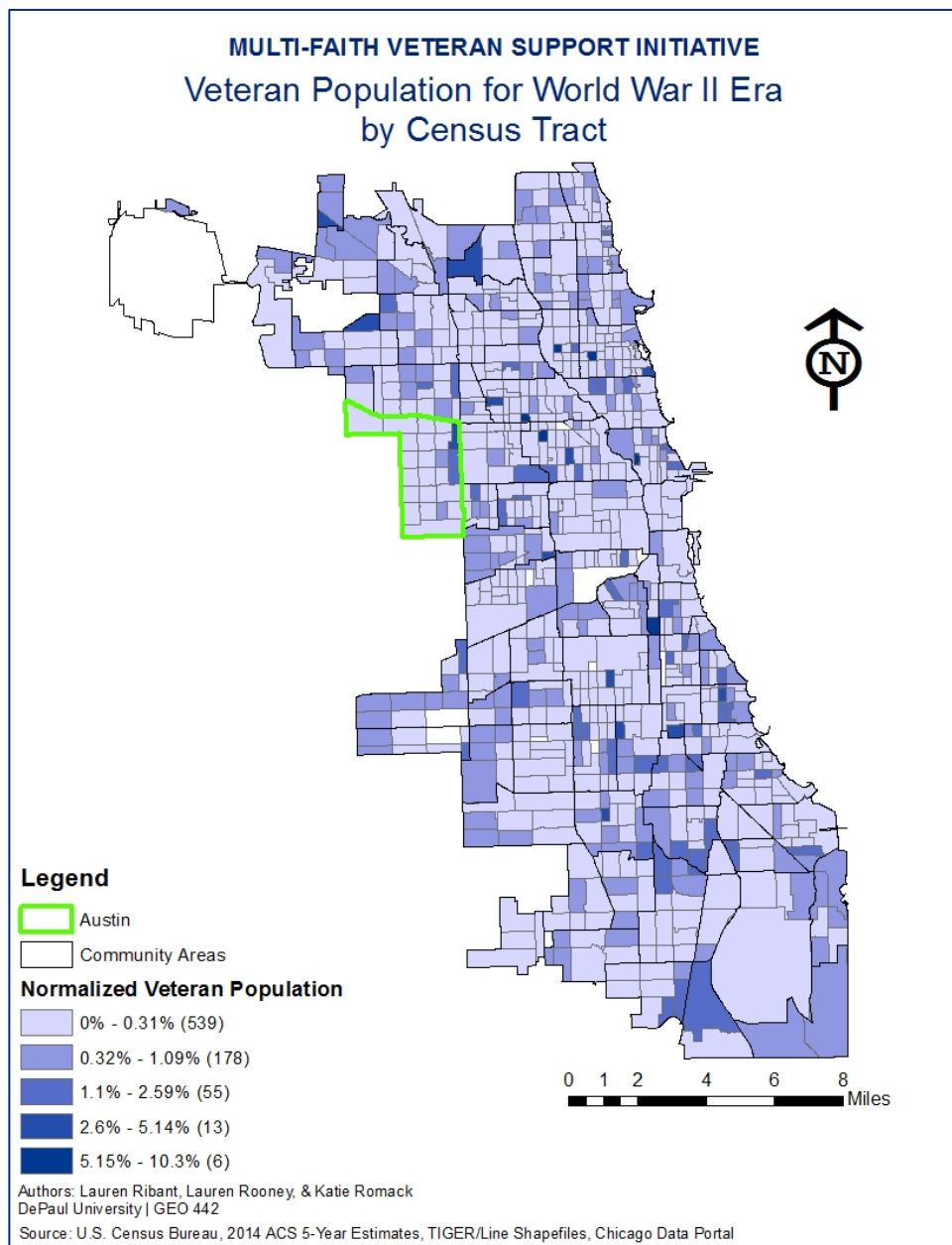
The results are not unexpected in that the density of Korean War veterans matches the density locations of the overall veteran population. It also is not surprising that in many areas the density is relatively low due to when the war was fought and that aging portion of the population.



## Normalized WWII Veteran Population Density Map

The normalized veteran population map for WWII veterans by census tract map describes the population of WWII veterans across the city of Chicago. The analysis shows that the population is overall quite small but there are a few clusters of dense populations on the city's northwest side as well as in the south central portion of the city. Austin is highlighted in green since MVP desired to have focus on the Austin Community Area. Within Austin, there is a dense population of WWII veterans within the eastern census tracts of the community area.

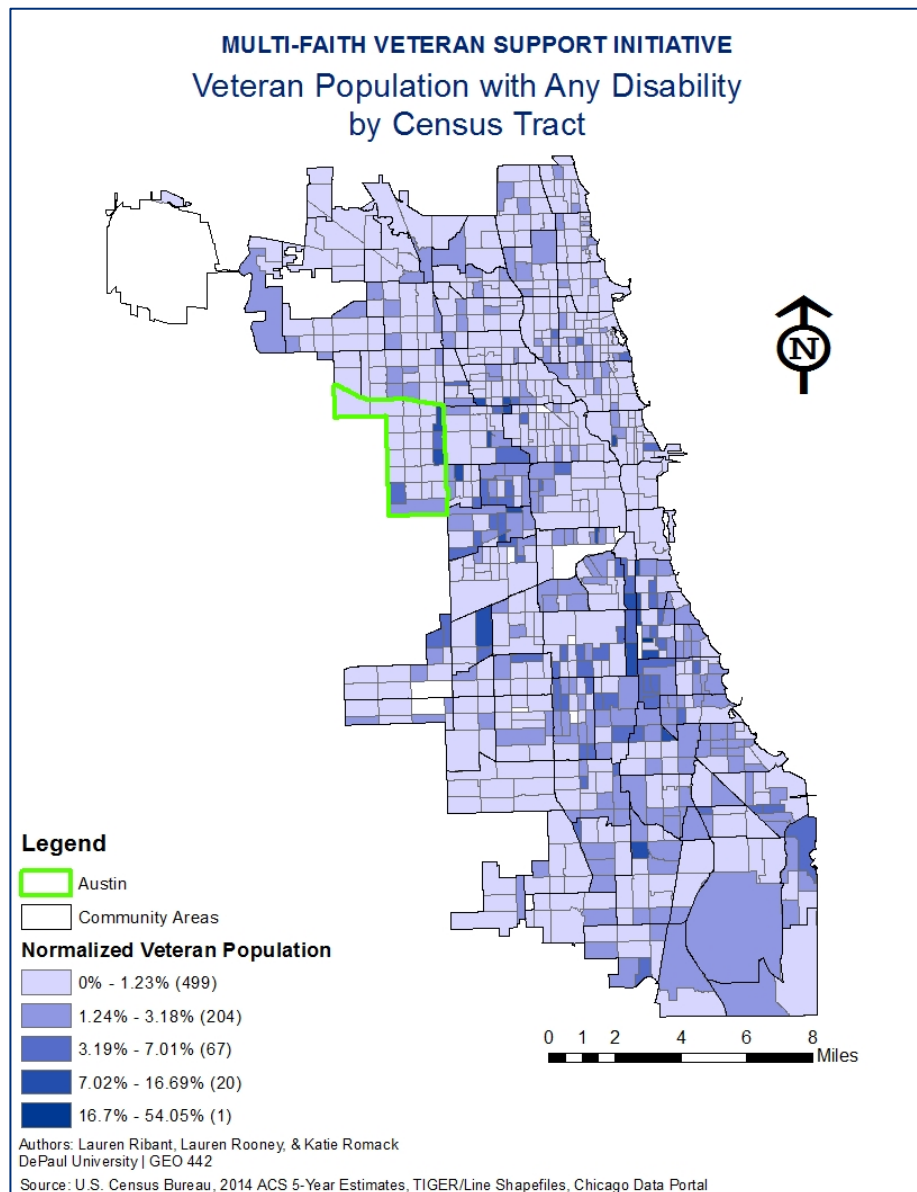
The results are not unexpected as the population of WWII veterans has been dwindling due to the age of those that served in WWII. Also, the clusters of dense populations are located in the same areas of the city that the overall veteran population of Chicago is located.



## Normalized Veteran Population with Any Disability Population Density Map

The normalized veteran population map of veterans with any disability by census tract map describes the population of veterans from any service period that have identified through the census that they have a disability. The analysis shows that the population is located primarily in the southern and western portions of the city just south and west of the City's center. Austin is highlighted in green since MVP desired to have focus on the Austin Community Area. Within Austin, there is a dense population of veterans with disabilities in the southwestern corner of the community area as well as the north eastern corner.

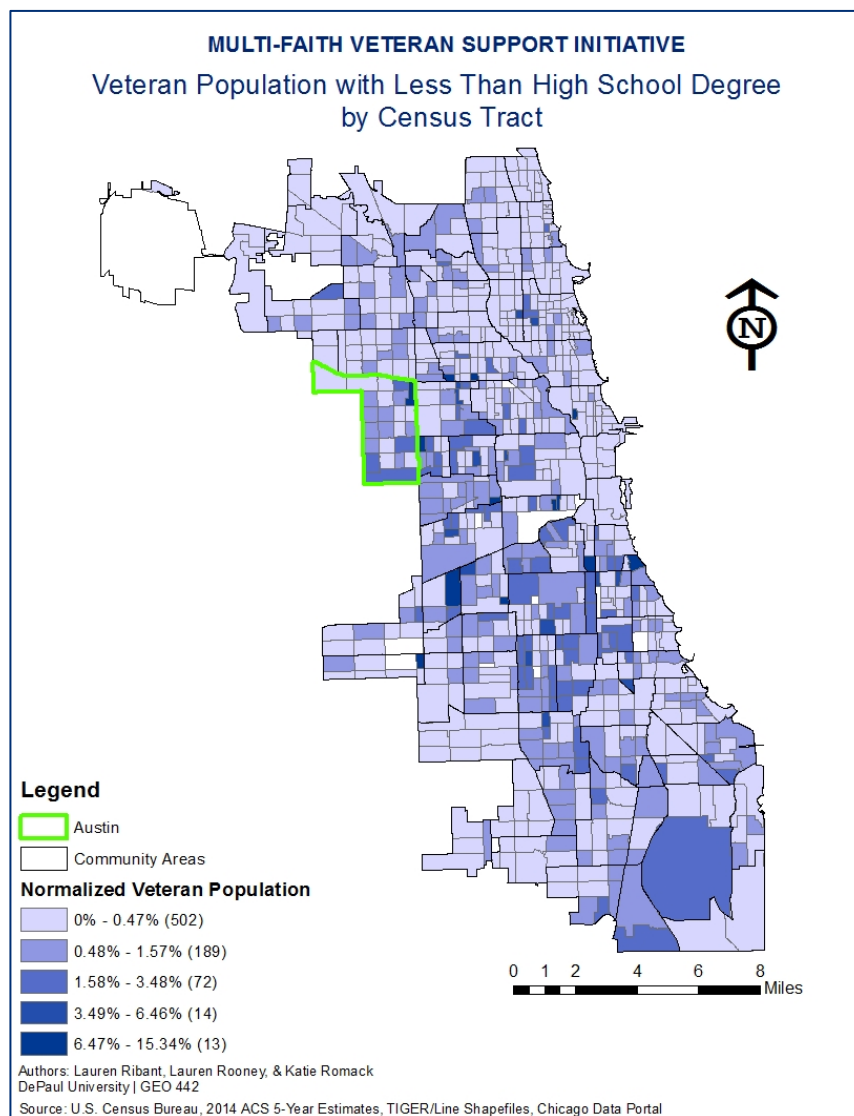
These results are slightly unexpected because this population density for veterans with any disability seems to shift slightly from the overall density map of veteran population in Chicago. A majority of this particular veteran population is to the south and west of the city's center, which differs slightly from the density of the overall veteran population that is more northwest, and south than this analysis.



## Normalized Veteran population with Less than High School Degree Population Density Map

The normalized veteran population of veterans with less than a high school diploma by census tract map shows the population of veterans without a high school diploma within the city of Chicago. The analysis shows that the population is primarily in the central portion of the city, west and south of the loop. Austin is highlighted in green since MVP desired to have focus on the Austin Community Area. Within Austin, there is a high density in the most northeastern census tract as well as on the southern border of the community area.

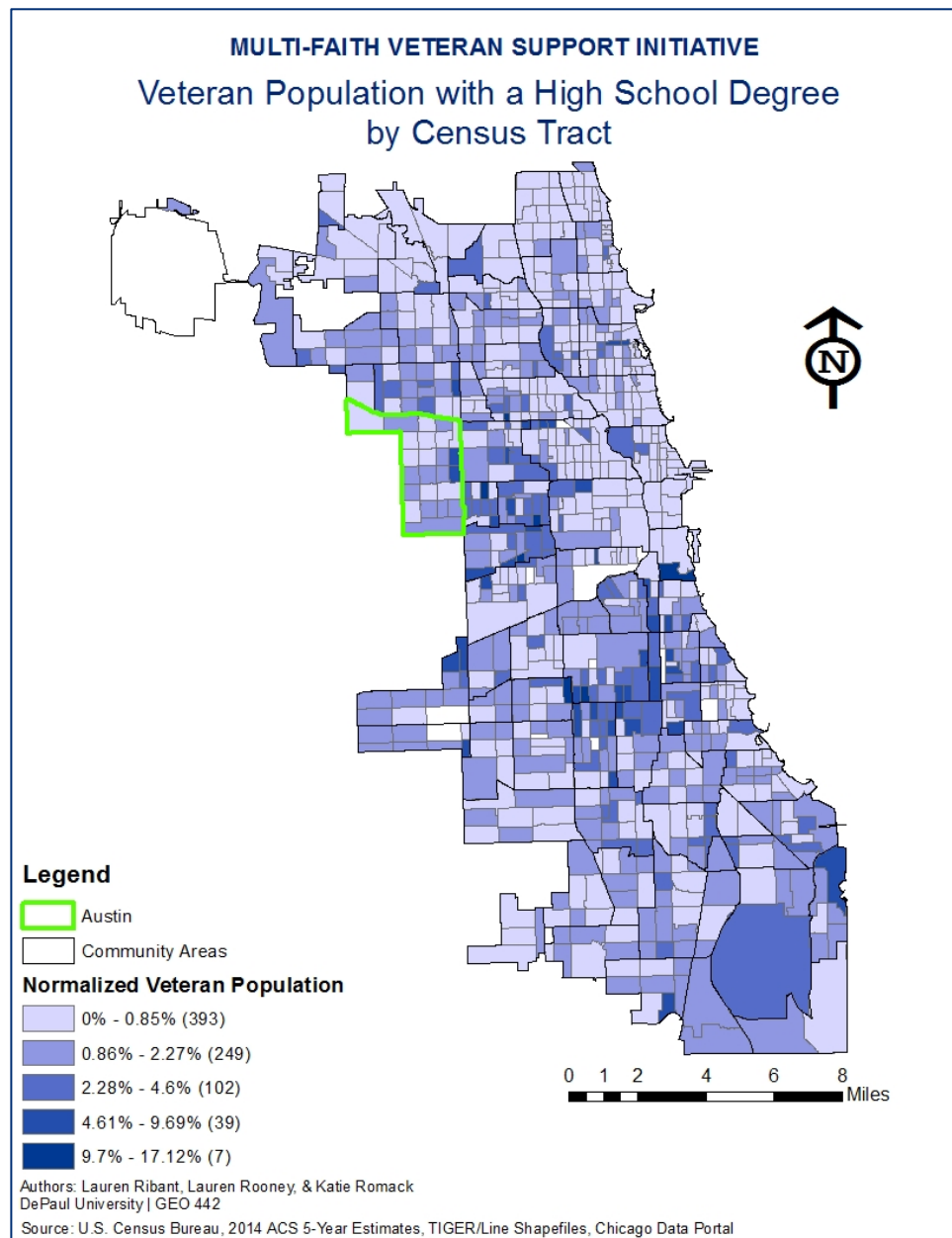
These results are expected in that the areas with the highest densities of veteran population without a high school degree are located in areas that have an overall low portion of high school degrees. This can be understood as a number of the veterans in these areas joining the military prior to high school graduation.



## Normalized Veteran Population with a High School Degree Population Density Map

The normalized veteran population of veterans with a high school degree by census tract map shows the population of veterans with a high school diploma within the city of Chicago. The analysis shows that the population is spread throughout the city. Austin is highlighted in green since MVP desired to have focus on the Austin Community Area. Within Austin, there is a high density on the eastern side of the community area.

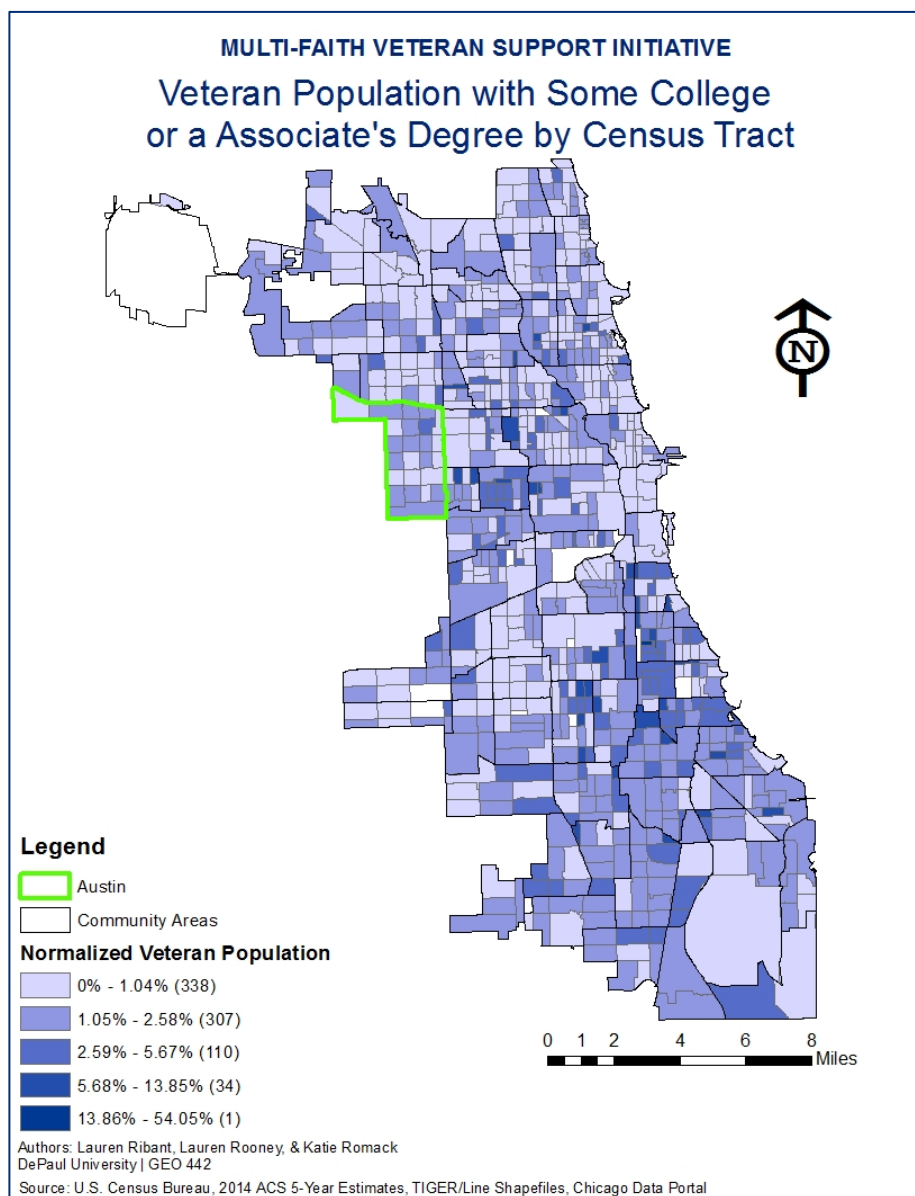
These results are expected because those joining the military are at least 18 years of age and therefore would most likely have a high school diploma. The areas with the highest density are also those with the densest overall population of veterans across the city.



## Normalized Veteran Population with Some College or Associate's Degree Population Density Map

The normalized veteran population of veterans with some college education or Associate's degree by census tract map shows the population of veterans with some college education experience within the city of Chicago. The analysis shows that the population is spread pretty evenly throughout the city. Austin is highlighted in green since MVP desired to have focus on the Austin Community Area. Within Austin, there is a medium density of those with some college education or an associate's degree throughout the community area.

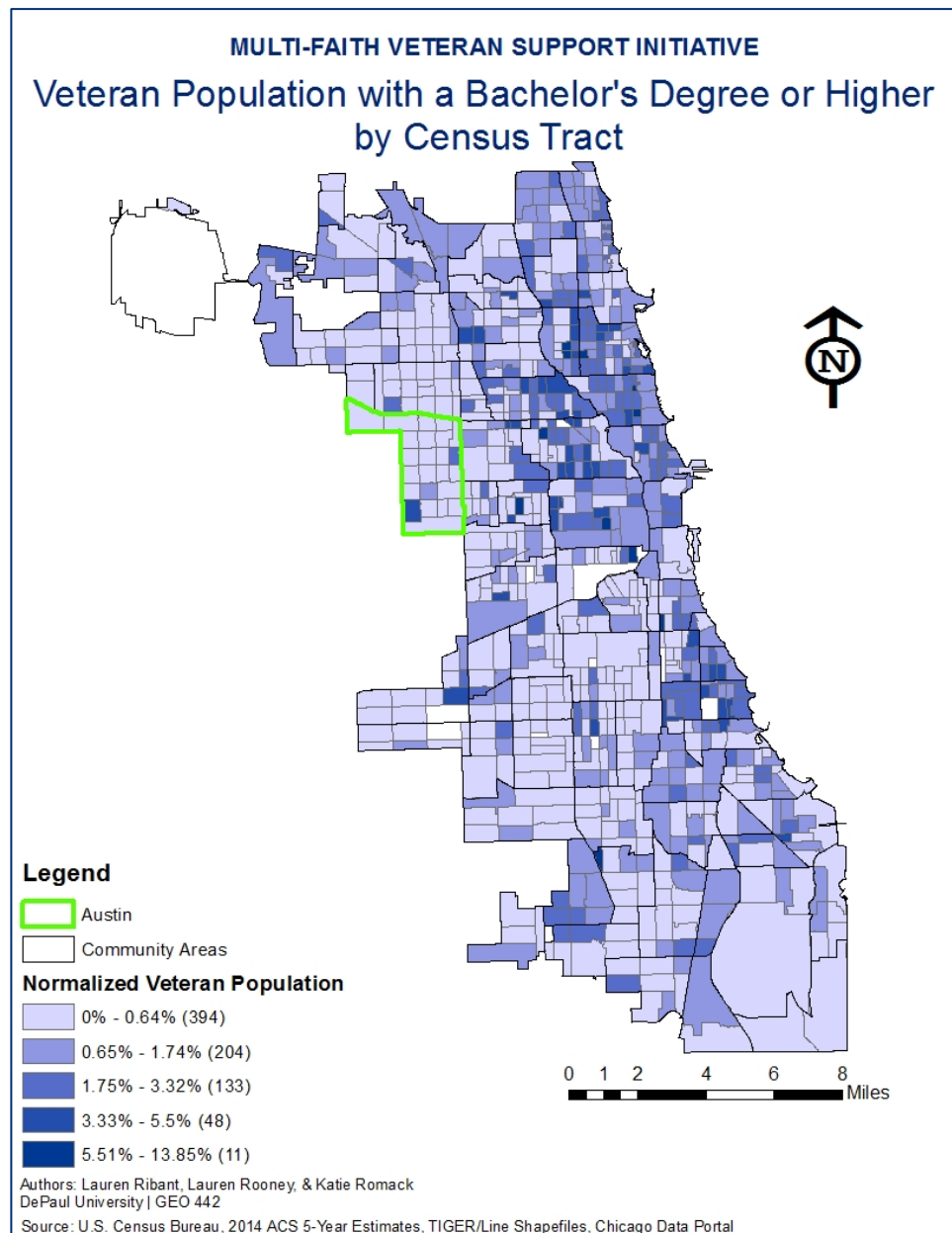
These results are somewhat expected in that a large amount of veterans have college experience or an associate's degree prior to serving in the military whereas other attend college after their period of service. The spread out population shows that veterans throughout the city have some college education or an associate's degree.



## Normalized Veteran Population with a Bachelor's Degree Population Density Map

The normalized veteran population of veterans with a Bachelor's Degree by census tract map shows the population of veterans with a Bachelor's degree across the city of Chicago. The analysis shows that the population is primarily located in the northeastern portion of the city as well as along the eastern border of the city south of the Loop as well. Austin is highlighted in green since MVP desired to have focus on the Austin Community Area. Within Austin, the highest density of those with a Bachelor's degree is in the southwestern corner of the community area.

These results are somewhat expected given the similarity to the population of the Chicago residents with a Bachelor's degree in these areas as well. The most dense census tracts also align with those areas that are the densest for overall veteran population in Chicago.

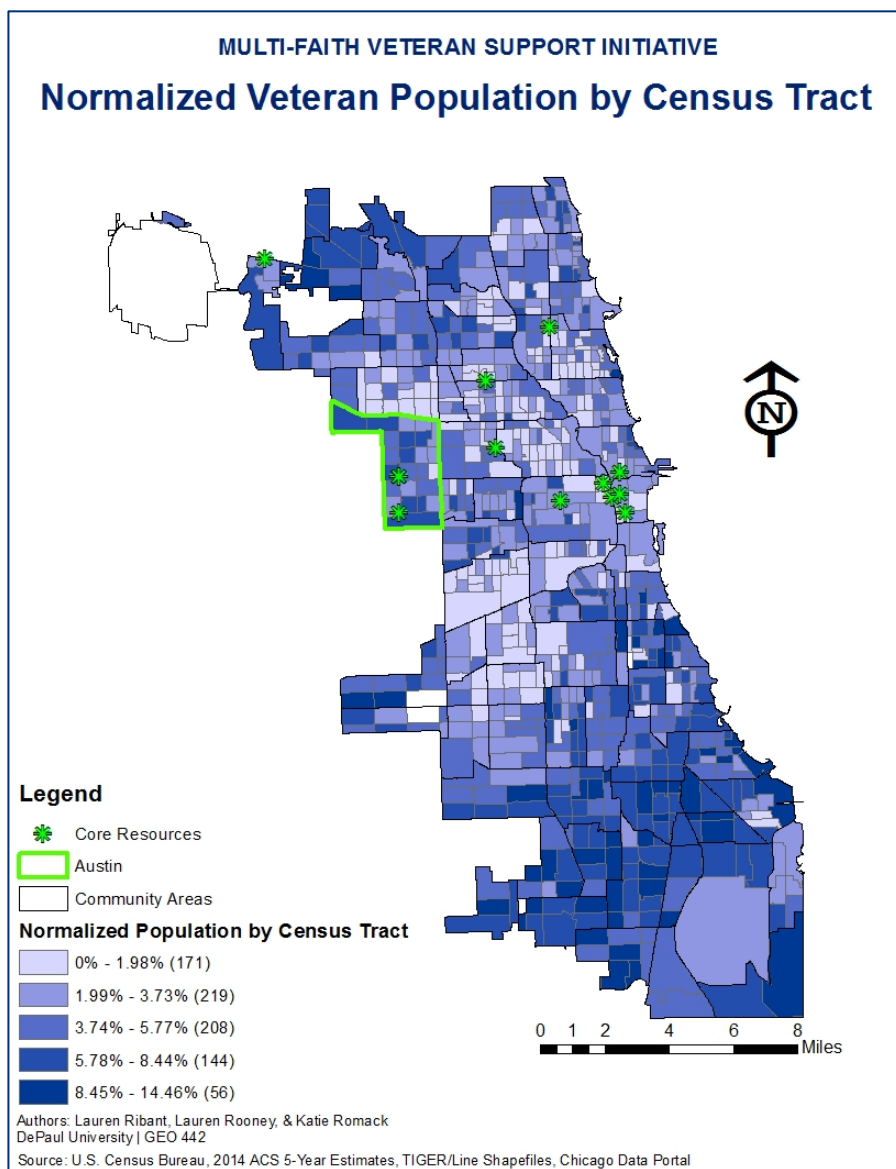




## Veteran Population with Core Resources Overlay

The normalized veteran population of veterans compared to MVP’s network of core resources shows the veterans across the city of Chicago with the information provided by MVP about its core resources. This analysis shows the population of veterans that MVP is able to help with its current core resources. Austin is highlighted in green since MVP desired to have focus on the Austin Community Area. Within Austin, the core resources are located in the southwestern portion of the community area.

These results are expected because MVP has concentrated its time and resources in the Austin community area and there are two core resources available directly for this community area. There is also a core resource in the northwestern portion of the city that has a very high density of veterans. The rest of the resources seem to be in the city’s center which is able to help veterans close to their home base as well as those that go to the city in order to find resources. The map does show that areas that could be aided by additional resources would Chicago’s south side as well as more resources in the northwestern portion of the city.



# Conclusion

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Overall, our goal for this project was to create an information product that would assist MVP in their outreach to faith-based organizations and houses of worship. This project achieved that goal and more by providing MVP with an information product that they will be able to use now and in the years to come.

MVP will now have access to an interactive map to view their existing networks geographically. The interactive map is a tool that MVP will be able to use and make changes to in the future, as needed. MVP will be able to add or delete from the map as their network grows and changes. This is a map that they will be able to share with everyone - organizations, employees, and veterans.

Furthermore, the comprehensive series of population and demographic choropleth maps will serve as a reference for MVP to understand the geographic locations of the veteran populations across the City of Chicago. MVP will be able to use these maps to identify the concentrated populations of veterans and if there are any veteran resources nearby. These maps will also serve as a tool for determining where services will be most beneficial to veterans and their families. The network analysis will also provide MFVS with knowledge of CTA "L" stops near their partners. Ideally, all three components will be used together to further promote the network of faith-based organizations and houses of worship as well as raise awareness and support for underserved veteran populations.

As previously mentioned, MVP is a relatively new initiative and much of their information was in the form of names, addresses, and phone numbers. Some of the information that was provided only provided contact information and nothing about the type of organization or the type of service it provided for veterans. This limited our ability to analyze if there were any potential organizations or resources that MVP could partner with to benefit the existing veteran population. In order for a more detailed analysis to be completed on the potential resources and partnerships for veterans, more information about the type of resources (i.e. house of worship, support groups, veteran rehabilitation centers) would be crucial.

Despite the inability to map certain resources for MVP, this project overall will provide MVP with a means to link their existing resources and veteran population geographically. MVP will be able to promote sustainable communities by informing veteran populations of the existing services available.

# Technical Appendix

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Appendix A: Multi-Faith Veteran Support Initiative Contact List

Appendix B: Metadata Used

Appendix C: Technical Data for TIGER/Line Shapefiles (some information attached separately)

Appendix D: Veteran Census Data - CSV file (attached separately)

Appendix E: Chicago Neighborhoods - CSV file (attached separately)

Appendix F: Austin Military Families Initiative Contact List - Excel file (attached separately)

Appendix G: West Site ABCD Contact List - Excel file (attached separately)

Appendix H: West Site Core Resources List - Excel file (attached separately)

Appendix I: Veteran Population Maps (22 maps attached separately)

# Appendix A: Contact List

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Chicago, Illinois 60614

[Camilo.pedromosak@gmail.com](mailto:Camilo.pedromosak@gmail.com)

# Metadata Used

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## TIGER/Line Shapefiles for Cook County, IL Census Tracts:

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MTDB represents a seamless national file with no overlaps or gaps between parts, however, each
TIGER/Line File is designed to stand alone as an independent data set, or they can be combined to cover
the entire nation. Census tracts are small, relatively permanent statistical subdivisions of a county or
equivalent entity, and were defined by local participants as part of the 2010 Census Participant
Statistical Areas Program. The Census Bureau delineated the census tracts in situations where no local
participant existed or where all the potential participants declined to participate. The primary purpose
of census tracts is to provide a stable set of geographic units for the presentation of census data and
comparison back to previous decennial censuses. Census tracts generally have a population size
between 1,200 and 8,000 people, with an optimum size of 4,000 people. When first delineated, census
tracts were designed to be homogeneous with respect to population characteristics, economic status,
and living conditions. The spatial size of census tracts varies widely depending on the density of
settlement. Physical changes in street patterns caused by highway construction, new development, and
so forth, may require boundary revisions. In addition, census tracts occasionally are split due to
population growth, or combined as a result of substantial population decline. Census tract boundaries
generally follow visible and identifiable features. They may follow legal boundaries such as minor civil
division (MCD) or incorporated place boundaries in some States and situations to allow for census tract-
to-governmental unit relationships where the governmental boundaries tend to remain unchanged
between censuses. State and county boundaries always are census tract boundaries in the standard
census geographic hierarchy. In a few rare instances, a census tract may consist of noncontiguous areas.
These noncontiguous areas may occur where the census tracts are coextensive with all or parts of legal
entities that are themselves noncontiguous. For the 2010 Census, the census tract code range of 9400
through 9499 was enforced for census tracts that include a majority American Indian population
according to Census 2000 data and/or their area was primarily covered by federally recognized
American Indian reservations and/or off-reservation trust lands; the code range 9800 through 9899 was
enforced for those census tracts that contained little or no population and represented a relatively large
special land use area such as a National Park, military installation, or a business/industrial park; and the
code range 9900 through 9998 was enforced for those census tracts that contained only water area, no
land area. </abstract><purpose>In order for others to use the information in the Census MAF/TIGER
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database in a geographic information system (GIS) or for other geographic applications, the Census Bureau releases to the public extracts of the database in the form of TIGER/Line Shapefiles.

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**timeperd**: **timeinfo**: **rngdates**: **begdate**: 201001 **enddate**: 201007

**current**: Publication Date

**status**: **progress**: Complete

TIGER/Line Shapefiles are extracted from the Census MAF/TIGER database. No changes or updates will be made to this version of the TIGER/Line Shapefiles. Future releases of TIGER/Line Shapefiles will reflect updates made to the Census MAF/TIGER database.

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**themekey**: Polygon **themekey**: Census Tract

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**placekey**: United States **placekey**: U.S. **placekey**: County or Equivalent

**placekey**: Cook **placekey**: 17031

**acconst**: None **useconst**: The TIGER/Line Shapefile products are not copyrighted however TIGER/Line and Census TIGER are registered trademarks of the U.S. Census Bureau. These products are free to use in a product or publication, however acknowledgement must be given to the U.S. Census Bureau as the source. The boundary information in the TIGER/Line Shapefiles are for statistical data collection and tabulation purposes only; their depiction and designation for statistical purposes does not constitute a determination of jurisdictional authority or rights of ownership or entitlement and they are not legal land descriptions. Coordinates in the TIGER/Line shapefiles have six implied decimal places, but the positional accuracy of these coordinates is not as great as the six decimal places suggest.

**Title\_13\_Restrictions**: Yes, the data are free from Title 13 restrictions

**ptcontac**: **cntinfo**: **cntorgp**: **cntorg**: U.S. Department of Commerce, U.S. Census Bureau, Geography Division, Geographic Products Branch

**cntaddr**: **addrtype**: Mailing address

**address**: 4600 Silver Hill Road, Stop 7400

**city**: Washington **state**: DC **postal**: 20233-7400 **country**: United States

**cntaddr**: **cntvoice**: 301-763-1128 **cntfax**: 301-763-4710 **cntemail**: geo.tiger@census.gov

**Data\_Set\_Character\_Set**: 8859part1 **Data\_Set\_Language**: eng

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**logic**: The Census Bureau performed automated tests to ensure logical consistency and limits of shapefiles. Segments making up the outer and inner boundaries of a polygon tie end-to-end to completely enclose the area. All polygons are tested for closure. The Census Bureau uses its internally developed geographic update system to enhance and modify spatial and attribute

data in the Census MAF/TIGER database. Standard geographic codes, such as FIPS codes for states, counties, municipalities, county subdivisions, places, American Indian/Alaska Native/Native Hawaiian areas, and congressional districts are used when encoding spatial entities. The Census Bureau performed spatial data tests for logical consistency of the codes during the compilation of the original Census MAF/TIGER database files. Most of the codes for geographic entities except states, counties, urban areas, Core Based Statistical Areas (CBSAs), American Indian Areas (AIAs), and congressional districts were provided to the Census Bureau by the USGS, the agency responsible for maintaining FIPS 55. Feature attribute information has been examined but has not been fully tested for consistency. For the TIGER/Line Shapefiles, the Point and Vector Object Count for the G-polygon SDTS Point and Vector Object Type reflects the number of records in the shapefile attribute table. For multi-polygon features, only one attribute record exists for each multi-polygon rather than one attribute record per individual G-polygon component of the multi-polygon feature. TIGER/Line Shapefile multi-polygons are an exception to the G-polygon object type classification. Therefore, when multi-polygons exist in a shapefile, the object count will be less than the actual number of G-polygons.

Data completeness of the TIGER/Line Shapefiles reflects the contents of the Census MAF/TIGER database at the time the TIGER/Line Shapefiles were created.

U.S. Department of Commerce, U.S. Census Bureau, Geography Division  
 Unpublished material  
 Publication Date  
 MAF/TIGER  
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TIGER/Line Shapefiles are extracted from the Census MAF/TIGER database by nation, state, county, and entity. Census MAF/TIGER data for all of the aforementioned geographic entities are then distributed among the shapefiles each containing attributes for line, polygon, or landmark geographic data.

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 2010  
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## Chicago Community Areas:

Metadata was not available. However, it was obtained from the City of Chicago's Data Portal at <https://data.cityofchicago.org/Facilities-Geographic-Boundaries/Boundaries-Community-Areas-current-cauq-8yn6>.

# Appendix C: Technical Data for TIGER/Line Shapefiles

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Attached separately is the technical documentation for the TIGER/Line Shapefiles for the census tracts. This data is from *Section 2: About the 2010 Census TIGER/Line Shapefiles* and *Section 3: Structure and Format* from the 2010 TIGER/Line Shapefiles Technical Documentation.

Source: United States Census Bureau. (2010). Technical Documentation. TIGER/Line Shapefiles. Retrieved from <http://www2.census.gov/geo/pdfs/maps-data/data/tiger/tgrshp2010/TGRSHP10SF1.pdf>.