POWDERHORN PARK

Charlotte Fagan, Skyler Larrimore, and Niko Martell

Introduction

Powderhorn Park Neighborhood, located in central-southern Minneapolis, is one of the most economically and racially diverse neighborhoods in Minneapolis. Powderhorn is a central neighborhood in the arts culture of Minneapolis, and has supported a diverse and vibrant community for over a century. The Powderhorn Park neighborhood hosts a number of arts festivals throughout the year, including Art Sled, May Day, and Powderhorn Arts Festival, among other events. Powderhorn also borders and contains commercial corridors along Lake St., Bloomington Ave., Cedar Ave., and Chicago Ave. (Map 1) With a mixture of land uses and home values, the neighborhood contains both challenges and assets influencing the strength of the local housing market. This study focuses on understanding the diversity of the housing market within the Powderhorn Park neighborhood and analyzing how the housing market varies by block.

History of Powderhorn and Powderhorn Park

The Powderhorn neighborhood was originally developed around 1900 with the advent and expansion of the streetcar network in Minneapolis. The neighborhood began to sprout up around the intersections of the Chicago/Lake and the Cedar/Lake lines, which bound the neighborhood to the north, east, and west. Development then moved south and around Powderhorn Park, named after Powderhorn "Lake" in the middle of the park. The park served, and continues to serve, as one of the major amenities attracting families to the neighborhood. The neighborhood was annexed by the City of Minneapolis in 1887 and began as a mostly middle-class to lower middle-class neighborhood. Up until 1920 most of the housing stock consisted of single-family homes, but from 1920-1925 construction shifted to mostly duplexes and three-story apartment buildings. Towards mid-century single-family homes in the neighborhood began to subdivide into smaller units, but many of the homes, especially around the park, did not subdivide. Due to this mixture of housing structures, the housing market in Powderhorn contains a variety of ages of structures and a variety of forms of residential units. We will discuss the current housing stock after a brief overview of the demographics of Powderhorn Park residents.

Demographics

The Powderhorn Park neighborhood was comprised of 8,655 residents in 2010, which is slightly lower than than the population in 2000 (8,957) but significantly greater than the population in 1990 (7,864). Of the current residents, nearly three-quarters have lived in the neighborhood for at least one year. Data from the 2010 U.S. Census indicate that 44.2% of residents are White, 32.2% are Hispanic or Latino, 13.8% are Black or African American, 4.0% identify with
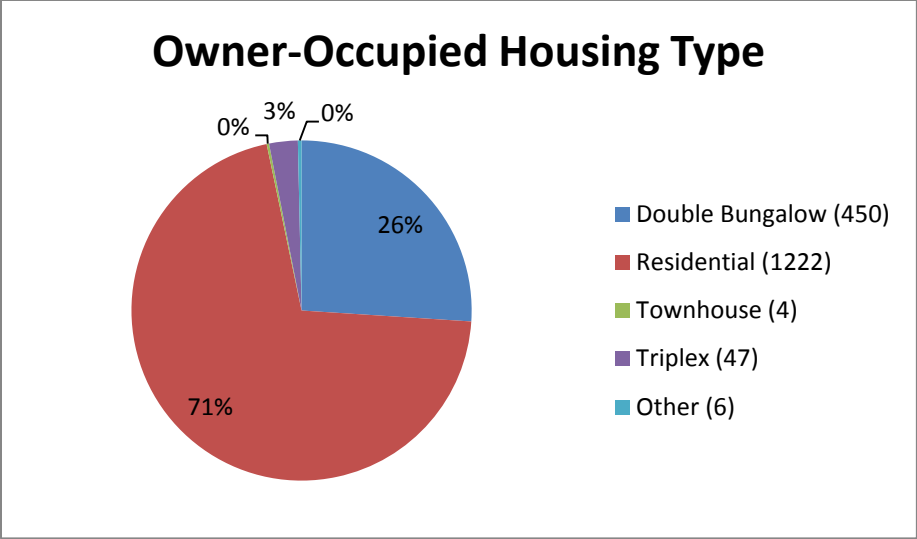
two or more races, 3.1% are American Indian or Alaskan Native, and 2.4% are Asian or Pacific Islander. English is the only language for 70.6% of households in Powderhorn Park, with 29.4% of households having a language other than English. Roughly one-quarter of the population (27.3%) is under the age of 18, with 68.5% of residents falling between the ages of 18 and 64. The median income for Powderhorn Park is $37,570 (2005-2009), which is down from $45,044 in 1999, and one-fifth of the population lives below the poverty line.

The Local Housing Stock

Today, the Powderhorn Park neighborhood is comprised of 3,468 housing units, 46.7 percent of which are owner-occupied, with 50.8 percent renter-occupied (Wilder Research, 2011). The remaining two percent are commercial structures. The chart below displays the diversity of land use types within the neighborhood. Many of the parcels in our database did not have specific land uses identified other than 'Residential.' However, a look at this chart indicates that there is a large presence of historic Double-Bungalow structures, and a moderate presence of commercial units, cooperatives, condominiums, and apartments in Powderhorn. Map 2 is a map of the distribution of land-use types throughout the neighborhood.
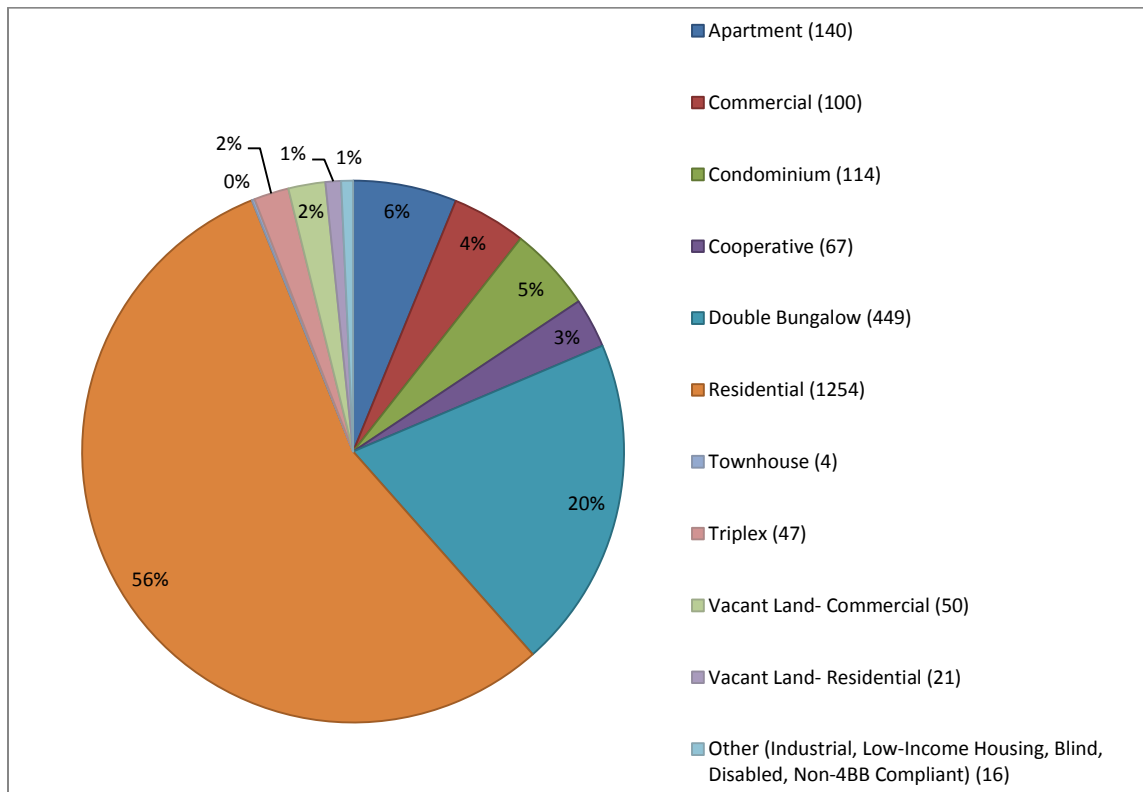
The chart below depicts the land use distinctions among the owner-occupied property, the subject of this study. Most owner-occupied housing is not specified with a use other than "Residential," but we also see a large representation of Double Bungalow and Triplex housing that is owner-occupied.

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Owner-Occupied Housing Type

- 0%
- 3%
- 0%
- 26%
- 71%

Legend:
- ■ Double Bungalow (450)
- ■ Residential (1222)
- ■ Townhouse (4)
- ■ Triplex (47)
- ■ Other (6)

Map 3 depicts the age of residential and commercial structures in the neighborhood. From this map, we can see that the newest structures are clustered along the main commercial corridors. The oldest housing is located surrounding Powderhorn Park and on blocks to the east of this landmark. The average home in Powderhorn was built in 1914, and approximately two-thirds of the homes in Powderhorn were built between 1895 and 1933. The age of the housing stock in Powderhorn presents an interesting situation, because most of the older homes require regular maintenance and upkeep. Residents of Powderhorn have also expressed that owners take pride in their older homes, and that those homes "keep their value" whereas the values of newer homes have not withstood the test of time.

An example of a popular architectural style in Powderhorn Park

Selecting Residential Parcels for Analysis

When selecting which parcels to include in this housing market study, we chose parcels that were most likely to be owner-occupied residential units. Our data included a land use classification for each parcel; among the categories were commercial, non-profit, residential, and many more. We selected out parcels that had the following land use designations: double bungalow, residential, townhouse, and triplex. These land uses represent residential parcels that are likely to be at least partially owner-occupied. For example, in the case of a triplex, it is possible that the owner would occupy at least one of the units, even if the other two units are rented out. All of the estimated market value maps, vacancy maps, and housing condition maps are based on parcels that are defined as one of these four land uses. Furthermore, we did not include parcels that had new structures built between 2007 and 2011 because these parcels made it seem as though the value of existing structures on those blocks had greatly increased over time.

Minimum Parcel Threshold

We further narrowed the blocks that we analyzed by setting a minimum number of residential parcels and eliminating blocks that did not meet this threshold. We set the minimum number of residential units for a block at ten residential units; we chose this number after looking at the overall statistics for the number of residential units per block. Overall, the blocks ranged from six residential units to eighty residential units; the average was 21.6 residential units per block with a standard deviation of 6.35. Given these statistics, a minimum of ten residential units removes blocks that could skew the overall findings, but represents blocks that have a significant number of residential units.

Analysis & Discussion

Variables in the Housing Market Index

Owner-Occupancy

Map 4 depicts the percent of owner-occupied housing by block in the neighborhood. The owner-occupancy variable reflects the percent of parcels whose occupants own the properties within which they are living. These data were collected by the U.S. Census Bureau and reflect conditions for the year 2010. The variable is expressed as a percentage of owner-occupied units per block relative to the total number of parcels. There is considerable variation in the owner-occupancy rates by block within Powderhorn Park, with the lowest owner-occupancy rate being 9.68% and the highest rate being 93.75%. The majority of blocks have an owner-occupancy rate between 41.19% and 69.23%, with fewer blocks falling towards the extremes of ownership or non-ownership. The owner-occupancy rate appears to be highest in the southern portion of the neighborhood and lowest in the northern portion, particularly along the eastern border of Powderhorn Park.

Vacancy

Maps 5 and 6 depict the distribution of vacant owner-occupied housing in Powderhorn Park. In 2011, 66 homes, or .038% of the owner-occupied housing stock was vacant. There were 14 vacant residential lots, most of which are likely owned and managed by the owner of the neighboring house. The highest number of vacancies on one block was four, with most blocks containing no vacancies at all. As Map 5 indicates, there is a large number of vacancies along Bloomington Avenue, particularly near the intersection of Bloomington and 31st Street. Additionally, there is a relatively dense concentration of vacancies in the southeast corner of the neighborhood.

Our block-level map highlights similar trends. On Map 6, the darkest blue color indicates a vacancy rate between 11.01 and 16.67 percent. The lightest color indicates a vacancy rate under 2 percent. Blocks in the northeast and southeast corner of the neighborhood have the highest rates of vacancy. Blocks along Chicago Avenue to the west of the neighborhood show a high proportion of vacant owner-occupied housing as well; there is a nearly continuous row of blocks along this street with vacancy rates between 2 and 11.01 percent.

Housing Condition

The housing condition variable reflects the quality of housing stock on a scale of 1 ("Excellent") to 7 ("Poor"). The data for this factor were collected by the Minneapolis Assessor's Office, and are based on several exterior features, including the condition of the windows, foundation, siding, and porch. The roof is not factored into the score as the Assessor's Office assumes this feature will be replaced when it fails. The rating can be viewed in terms of the level of "deferred maintenance" on properties.

The data used for this project are from the most recent assessments for 2012. The block averages for housing condition in Powderhorn Park neighborhood are predominantly "Average," and all rating scores fall between "Average plus" (3) and "Average minus" (5). At the block level there is very little variation in the housing condition score, as depicted by Map 7. There is slightly more variation at the parcel level, with properties receiving a range of scores from "Excellent" (1) to "Poor" (7). This indicates that while there is a consistent average for the neighborhood there is some discrepancy from property to property.

An example of a block with "Average plus" housing condition

Value Retention between 2007 and 2011 by Parcel

Maps 8 and 9 represent the estimated market value of residential parcels in Powderhorn Park in 2007 and 2011. From these two maps it is clear that the neighborhood has undergone a dramatic change between 2007 and 2011. The brown colors represent lower estimated values, and the green colors represent higher estimated values. The categories for each color are the same for each year with the exception of the darkest green category. In 2007 the dark green represents houses with a value of $300,001 - $515,000, whereas in 2011 it represents homes from $300,001 - $978,000. This indicates that a few houses did increase in value between 2007 and 2011, because the category spans a greater variety of values. This contrasts with the overall trend of decreasing value in the neighborhood.

Overall between 2007 and 2011 most residential parcels lost value. We can see this trend clearly on the maps, as many parcels change color from green to brown—a decrease on the value scale—between 2007 and 2011. This trend is not entirely surprising given that 2007 was the height of the real estate boom, and in 2011 most housing markets were making a slow recovery from the economic recession. The overall picture that these maps portray is a story of widespread decrease in value throughout the Powderhorn neighborhood.

We further disaggregated this information into specific types of residential parcels. We then analyzed how much value each type of residential land use lost on average (see table below).

Value Retention by Residential Building Type

Building Type	Mean EMV Change	Standard Deviation
Double Bungalow	-25.5%	14.1%
Residential	-11.8%	11.2%
Townhome	-10.3%	2.9%
Triplex	-16.1%	37.0%

On average, townhomes and "residential" units lost the lowest proportion of value. Unfortunately, "residential" is such a broad category that it does not give us much information. Double bungalow homes lost significantly more value on average than the other residential land uses.

Value Retention between 2007 and 2011 by Block

When we change the unit of analysis from the individual parcel to the block level, all of the blocks in the neighborhood lost value (Map 10). The darkest brown color represents the most dramatic decreases in value, and the lightest brown represents the smallest decreases in value. These percentages represent the average change in estimated market value between 2007 and 2011 for all residential parcels in that block. The average block lost around 15% of its value over this time period. The south-central part of the neighborhood fared the best over the four-year period, whereas the northeastern part of the neighborhood fared the worst in terms of value retention.

Interestingly, Powderhorn Park, one of the major amenities of the neighborhood, did not greatly influence the blocks around it, which experienced a variety of decreases in value. The residential properties on the commercial corridors of Lake St., Bloomington Ave., and Cedar Ave. did not maintain their value as well as properties along the other commercial strip of Chicago Ave. Overall, Map 10 indicates the diversity of housing markets within the neighborhood, but also shows that none of the blocks gained value on average between 2007 and 2011.

A block that lost the least proportion of value between 2007 and 2011

Housing Market Index

In consultation with our neighborhood partner, the Powderhorn Park Neighborhood Association (PPNA), we assigned the four variables included in the Housing Market Index study the following weights:

- Vacancy – 8
- Value Retention – 8
- Condition – 8
- Owner-Occupancy – 6

PPNA decided to give owner-occupancy the least weight because many blocks in Powderhorn have a high percentage of rental units but not necessarily a weak housing market.

The final map, Map 11, shows the combination of the four weighted variables into the housing market index measure. Green colors on the map indicate blocks that had a relatively high combined score; brown colors represent blocks that had a low combined score. The map shows the overall housing market index score, from strong to weak, for each block in the neighborhood and gives us a more in-depth look at the different places in the area that are struggling and those that are doing well. The south-central part of the neighborhood is faring the strongest, whereas the northeastern part of the neighborhood, especially around Bloomington Ave. and 31st St., is not doing well. Along the major roads in the neighborhood, the housing market on Chicago Ave. is the strongest, whereas the housing market on Cedar Ave. and Bloomington Ave. are the most diverse by block.

Important Themes and Findings

The owner-occupancy rate is strongest in the southern portion of Powderhorn Park. The

vacancy rate is highest in the northeast and southeast portions of the neighborhood. There is very little variation in the housing condition, with a slight concentration of moderately higher-scoring blocks in the southwest portion of the neighborhood. Most of the neighborhood has an average ranking for housing condition, indicating that the quality of housing stock in Powderhorn Park is on par with that of Minneapolis at-large. Between 2007 and 2011, most parcels in the neighborhood depreciated in value, which is consistent with overall trends for the city of Minneapolis. At the block level, the entire neighborhood experienced an average decrease in estimated market value (EMV). This decrease was most pronounced in the northeast portion of the neighborhood, whereas the south-central portion of the neighborhood experienced less pronounced depreciation between 2007 and 2011.

When these variables are compiled, the resulting Housing Market Index (HMI) indicates that the south-central portion of the neighborhood has the strongest market whereas the northeastern portion has weaker market trends. The results of the HMI generally reflect the patterns exhibited by the independent variables. In conclusion, the housing market in the southern portion of the neighborhood has greater stability and strength on average than the rest of Powderhorn Park, and the northeastern portion of the neighborhood is in most need of stabilization resources or support.

Conclusions & Recommendations

Application of Findings

These findings can be applied to increase the diversity and vitality of the local housing market of Powderhorn Park into the future. An awareness of which sections of the neighborhood are struggling the most since the recession can enable PPNA to target its projects accordingly. The results of this study might be useful in planning community outreach initiatives to connect residents with foreclosure prevention or housing rehabilitation resources. Alternatively, our neighborhood partner might use this information to initiate strategic partnerships with private and nonprofit organizations to improve the strength of the local housing market. Our maps might suggest, for example, that foreclosure relief and housing construction, renovation, or repairs be targeted in the northeast corner of Powderhorn Park (particularly along Bloomington Ave).

Further Extensions of our Housing Market Analysis

Statistical Methods

We completed correlation and regression analyses to determine the influence of particular variables on housing market strength in Powderhorn Park. First, we ran a multiple-regression analysis to understand the influence of vacancy, owner-occupancy, and housing condition on the 2007 to 2011 average EMV change per block. This analysis showed that these three variables together explain 19.45 percent of the variation in the average change in EMV by

block.[1] The owner-occupancy rate of a block has the *smallest* influence on the average estimated market value change.[2] A single-variable regression analysis shows that owner-occupancy rate predicts only 3.7 percent of the variation in average EMV change per block, and this is not a statistically significant result. Thus, housing condition and vacancy information are better predictors of the strength of a block-level housing market than tenancy characteristics.

Owner-occupancy also does not have an influence on the percentage of vacant property per block. Only .22 percent of the variation in vacancy can be explained by a block's owner-occupancy rate, and this is not statistically significant. Percent owner-occupancy does have an influence on average housing condition ratings per block. The moderate-level correlation between these variables indicates that as owner-occupancy rate increases, average condition rating per block improves. The owner-occupancy rate per block predicts 11.2 percent of the variation in average condition rating.[3] This being said, the range of average condition ratings was very small, with most houses receiving between a 3 ("Average plus") and 5 ("Average minus"), so any improvement in housing condition according to the tenancy of a block is small.

Our analysis also shows that there is a relationship between average EMV change and average condition rating. There was a moderate positive correlation between EMV change and condition, indicating that as the average condition rating improves, average EMV change per block increases.[3] Indeed, 9.87 percent of the variation in average EMV change was predicted by the average condition of housing on the block.

There is a moderate negative correlation between average EMV change and vacancy rate, indicating that as EMV increases the rate of vacancies decreases.[3] Further regression analyses indicate that 8.73 percent of the percentage of the variation in vacancies by block can be explained by the average change in EMV on that block.[4] This relationship might be interpreted the other way, too; if we reverse the independent and dependent variables, 8.73 percent of the variation in average change in EMV can be explained by the percentage of vacancies per block.

In summary, the results of these additional statistical tests confirm, not surprisingly, that those blocks that lost the most value during the economic recession now have a higher rate of vacancy in Powderhorn Park. Owner-occupancy rate on a given block does not predict its ability to retain value over time, but it does have a hand in determining the average condition rating for a block. Just as our maps can help PPNA target their outreach and resources, these additional data help us better understand the variables that influence the strength of a local housing market.

Developing the HMI

Our Housing Market Index has focused solely on owner-occupied properties. However, we

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[1] Significance: p <.05
[2] P-values for each variable: Owner-occupancy (.290), Condition (.020), Vacancy (.006). Significance: p < .05.
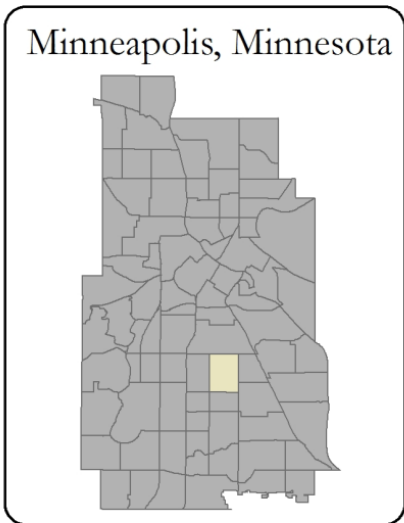[3] Significance: p <.05
[4] Significance: p <.05

acknowledge that rental properties also play a significant role in the strength of the local housing market, particularly in mixed-use neighborhoods like Powderhorn Park. Further extensions of the HMI methodology should focus on analyzing the strength of the local rental market, as well as how characteristics of rental properties influence the overall and block-level HMI. Some potential indicators of rental market strength might include: net absorption (increase or decrease in occupied rental space), rental housing vacancies, condition information, or value retention for rental property. Because much of these data are not publicly available, further extensions of the HMI analysis may wish to pursue a survey of area landlords on this information (i.e. their rental price, unit vacancy information, etc.).

Future HMI studies should focus more intently on local housing affordability as well as foreclosure trends. According to the City of Minneapolis' records, the foreclosure total in Powderhorn Park reached a high of 92 in 2008, and has since been on the decline. The Powderhorn Park neighborhood had 52 houses in foreclosure in 2011, the lowest foreclosure total since 2006 (City of Minneapolis, 2012). Data on the number of foreclosures on a given block over time might provide an additional lens through which to examine the influence of the recent recession on both owners and renters in Powderhorn Park.

This study has also left the issue of housing affordability unaddressed. A booming housing market for owner-occupied property might be both beneficial and negative for different sets of residents. If there is turnaround in EMV over the next few years, this may mean higher property taxes for many Powderhorn homeowners. A strong local HMI might be helpful for homeowners that can capitalize on the value of their home, but this might also mean an increase in rental prices in the neighborhood as well. Future iterations of the HMI should take a critical and contextual look at what a strengthening or worsening HMI means for the lives of different residents within the neighborhood itself.

On a final note, continuing to track changes in owner-occupancy, vacancy, housing condition, and estimated market value over time in Powderhorn Park will provide additional insights into the housing market for the neighborhood. A regular HMI assessment would facilitate continued efficiency in the allocation of resources to those portions of the neighborhood that are least stable, while maintaining stronger areas of the local housing market for years to come.

Map 1: Reference Map

Powderhorn Park, Minneapolis

PHILLIPS

E Lake St

POWDERHORN PARK

Columbus Ave S

E 31st St

Elliot Ave S

10th Ave S

Powderhorn Ter

E 32nd St

E 32nd St

Powderhorn Park

Bloomington Ave S

E 33rd St

18th Ave S

CORCORAN

33rd 1/2 St E

Powderhorn Lake

E 34th St

CENTRAL

Cedar Ave S

E 35th St

Chicago Ave S

11th Ave S

13th Ave S

15th Ave S

16th Ave S

20th Ave S

E 36th St

Elliot Ave S

12th Ave S

14th Ave S

17th Ave S

Longfellow Ave S

19th Ave S

Park Ave S

E 37th St

10th Ave S

E 38th St

BRYANT

BANCROFT

0   0.25   0.5 Miles

Minneapolis, Minnesota

Road

Park

Water

Powderhorn Neighborhood

Surrounding Neighborhoods

Map 2: Land Use, 2012

Land Use in Powderhorn Park, 2012

LAKE ST.

CHICAGO AVE

CEDAR AVE

Powderhorn Park

Powderhorn Lake

38TH ST.

	No Use Designated		Double Bungalow		Apartment
	Residential		Triplex		Vacant Land - Commercial
	Commercial		Townhouse		Vacant Land - Residential

Skyler Larrimore, April 24th, 2012, Projection: UTM, 15N, Sources: MetCouncil, ESRI
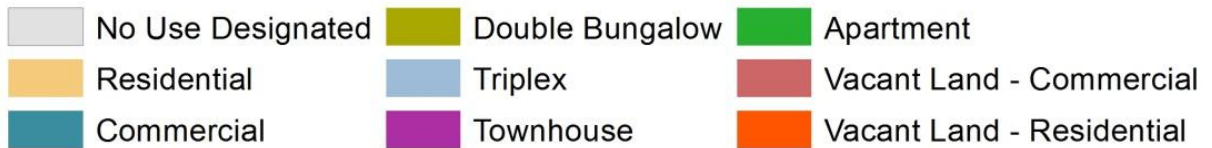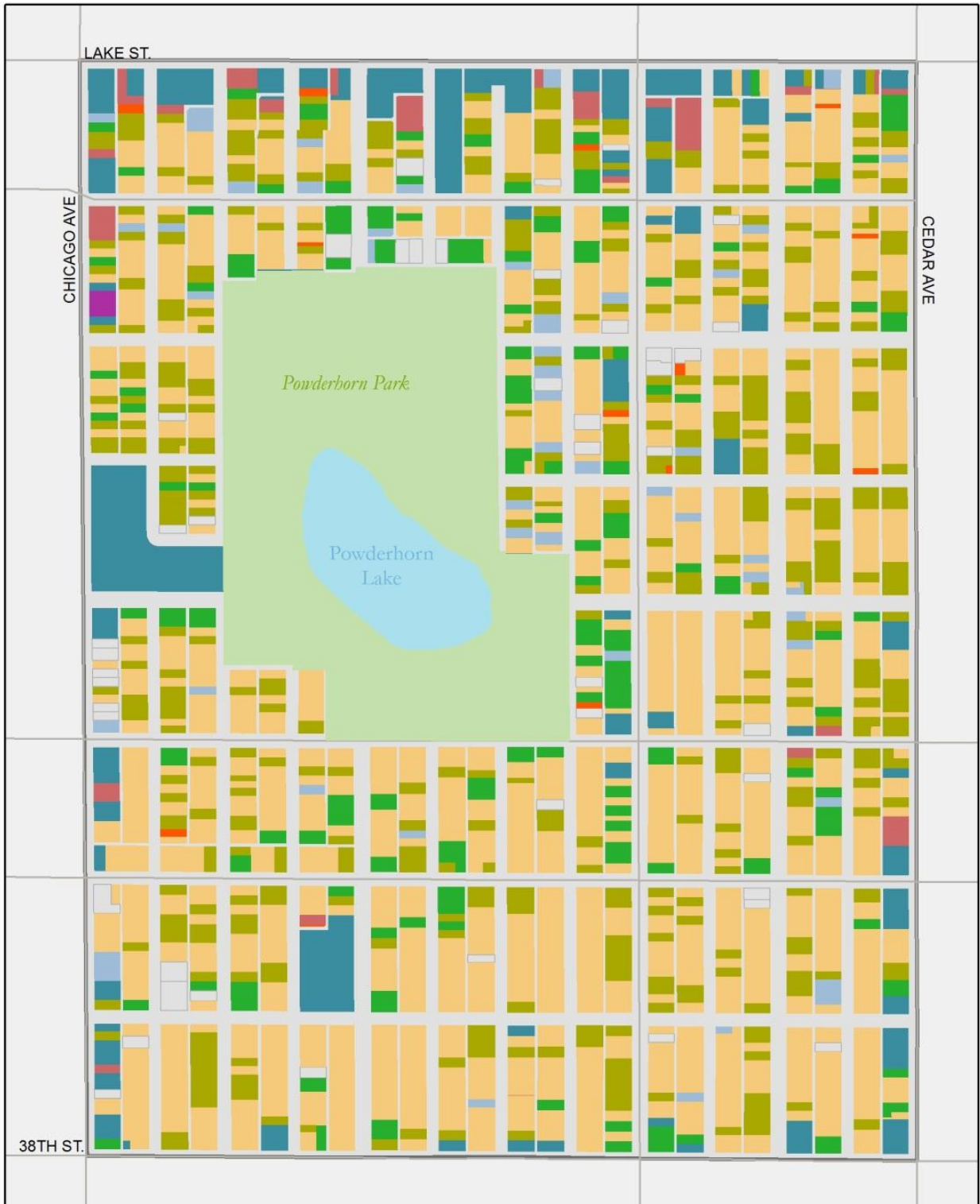
Age of Commercial and Residential Structures in Powderhorn Park

LAKE ST E

CHICAGO AVE

CEDAR AVE S

Powderhorn Park

Powderhorn Lake

38TH ST

0   0.125   0.25 Miles

Year Built

Pre - 1901   1902 - 1911   1912 - 1919   1920 - 1934   1935 - 1952   1953 - 1964   1965 - 1978   1979 - 1994   1995 - 2009

Skyler Larrimore April 24th, 2012 Projection: UTM 15N Sources: MetCouncil, ESRI
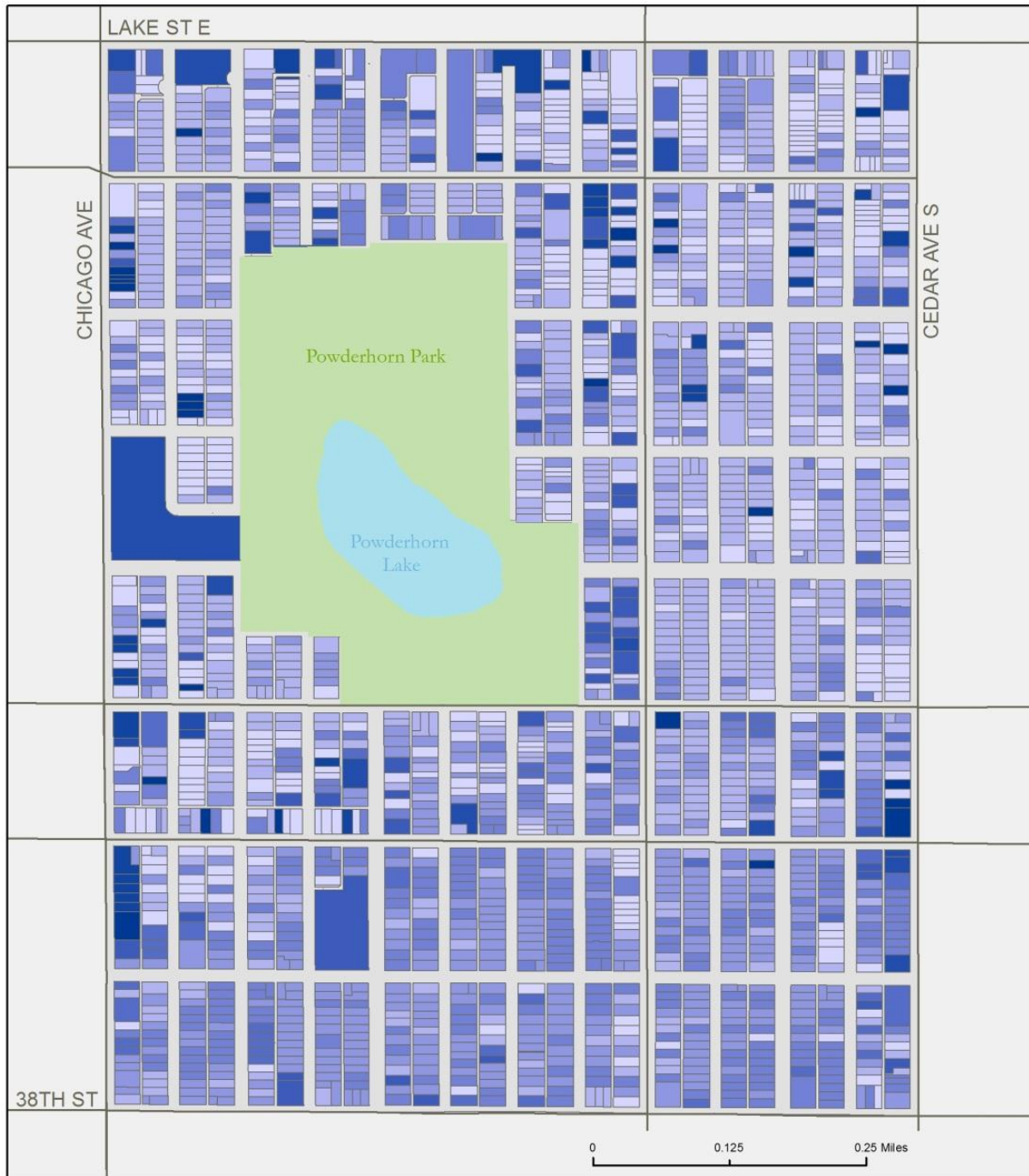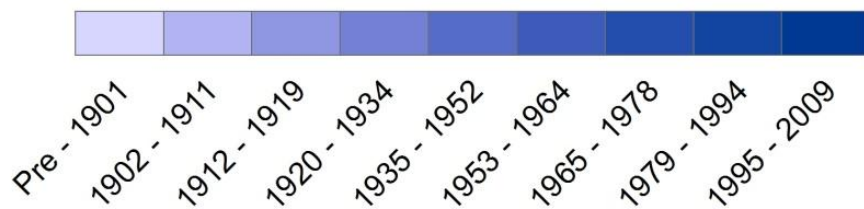
Map 4: Owner-Occupancy by Block, 2010

Owner Occupancy By Block, 2010

Phillips

E Lake St.

E 31st St.

Powderhorn Park

Powderhorn Lake

E 35th St.

E 36th St.

E 38th St.

Bryant Bancroft

Chicago Ave. S

Bloomington Ave. S

Cedar Ave. S

Central

Corcoran

0   0.25   0.5 Miles

Powderhorn Owner Occupancy, By Block, 2010

9.5% - 25%	55.1% - 70%	
25.1% - 40%	70.1% - 93.75%	Surrounding Neighborhood
40.1% - 55%	No Data	

Niko Walkowiak   April 17, 2012   Source: U.S. Census Bureau, Met Council   Projection: UTM Zone 15N
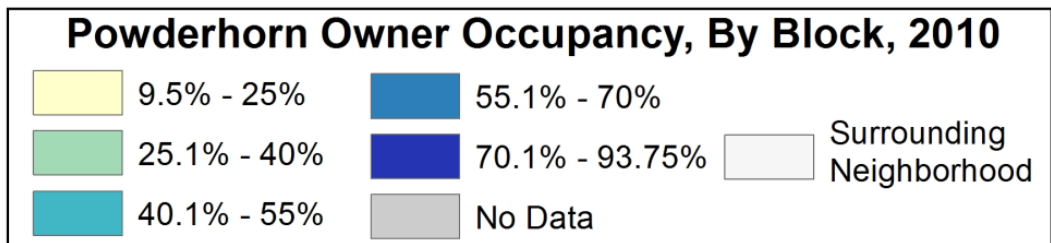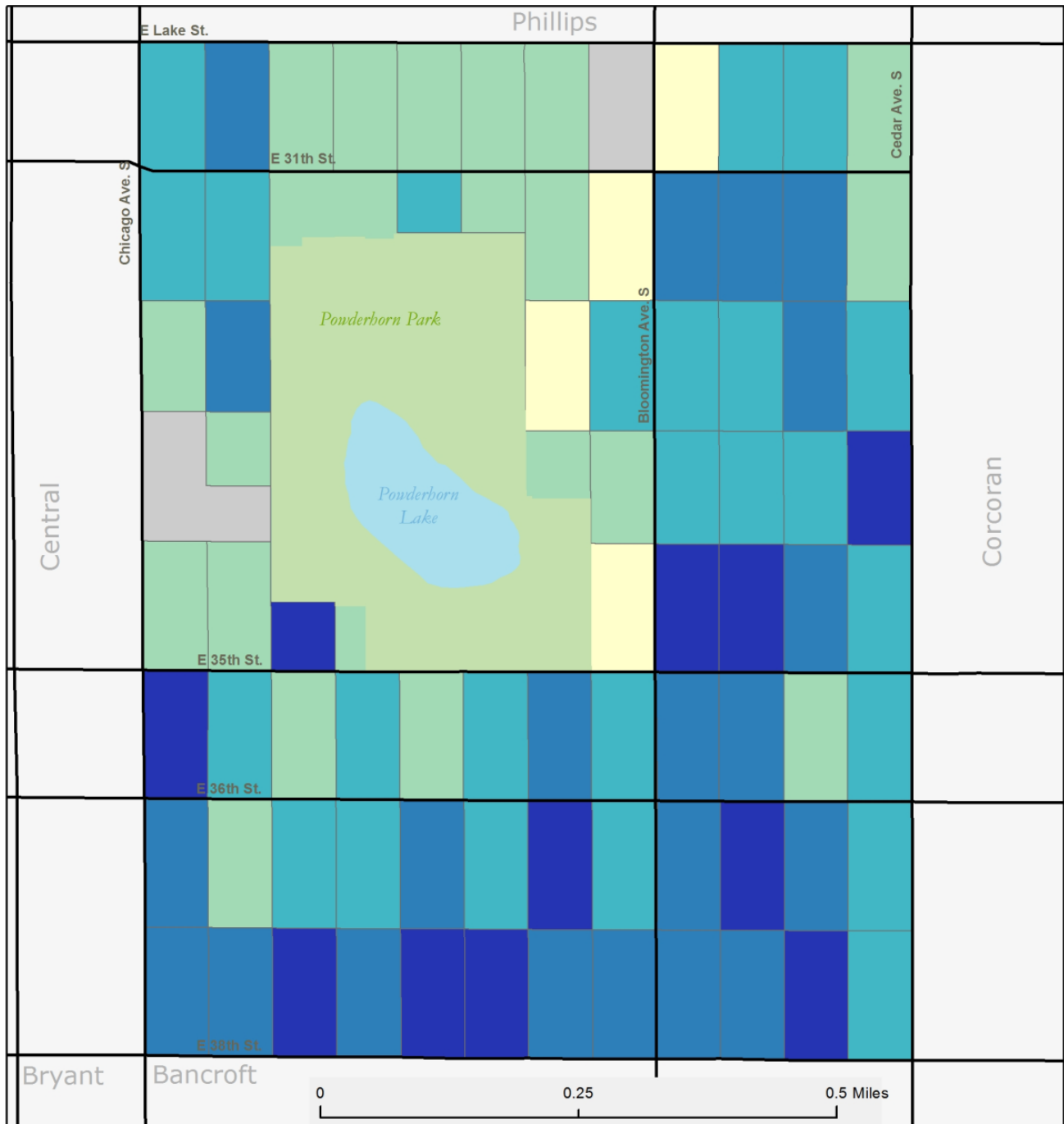
Vacant Parcels in Powderhorn Park, 2012

LAKE ST E

31ST ST E

CEDAR AVE S

Powderhorn Park

Powderhorn Lake

CHICAGO AVE

35TH ST E

36TH ST E

BLOOMINGTON AVE E

38TH ST E

0   0.125   0.25 Miles
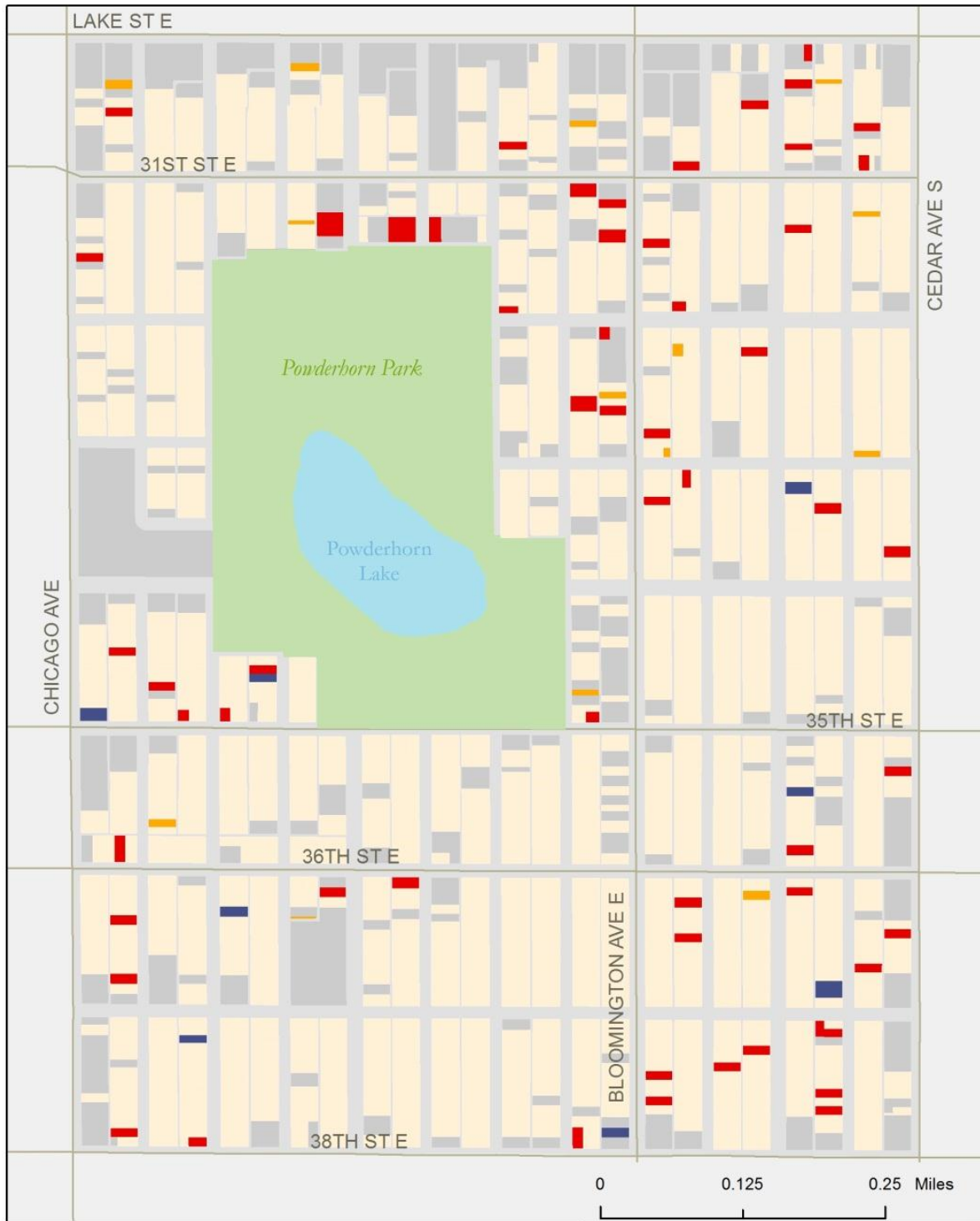
Vacant Residential Parcels and Lots, January 2012

🟥	Vacant	🟦	No Data
🟧	Vacant Lots	⬜	Occupied

Non-residential or Renter-Occupied

Surrounding Neighborhoods

*No Data: These addresses were not valid in our USPS Database.

Skyler Larrimore, April 24th, 2012, Projection: UTM, 15N, Sources: MetCouncil, U.S. Postal Service, ESRI

Vacancy by Block in Powderhorn Park, 2012

LAKE ST E

31ST ST E

CHICAGO AVE

CEDAR AVE S

Powderhorn Park

Powderhorn Lake

BLOOMINGTON AVE E

35TH ST E

36TH ST E

38TH ST E

0   0.125   0.25 Miles

Percent Vacant Owner-Occupied Housing by Block, Jan. 2012

0.00% - 2.00%	5.01% - 8.00%	11.01% - 16.67%
2.01% - 5.00%	8.01% - 11.00%	Surrounding Neighborhoods
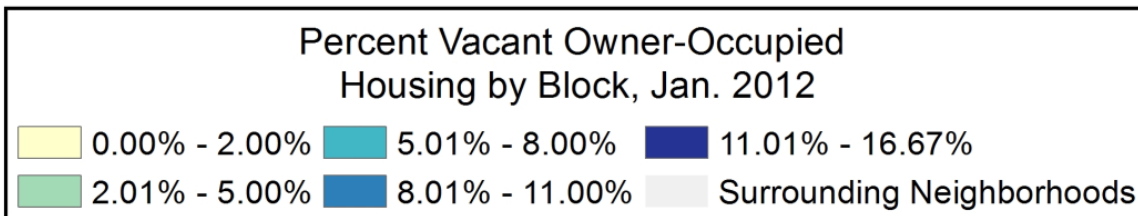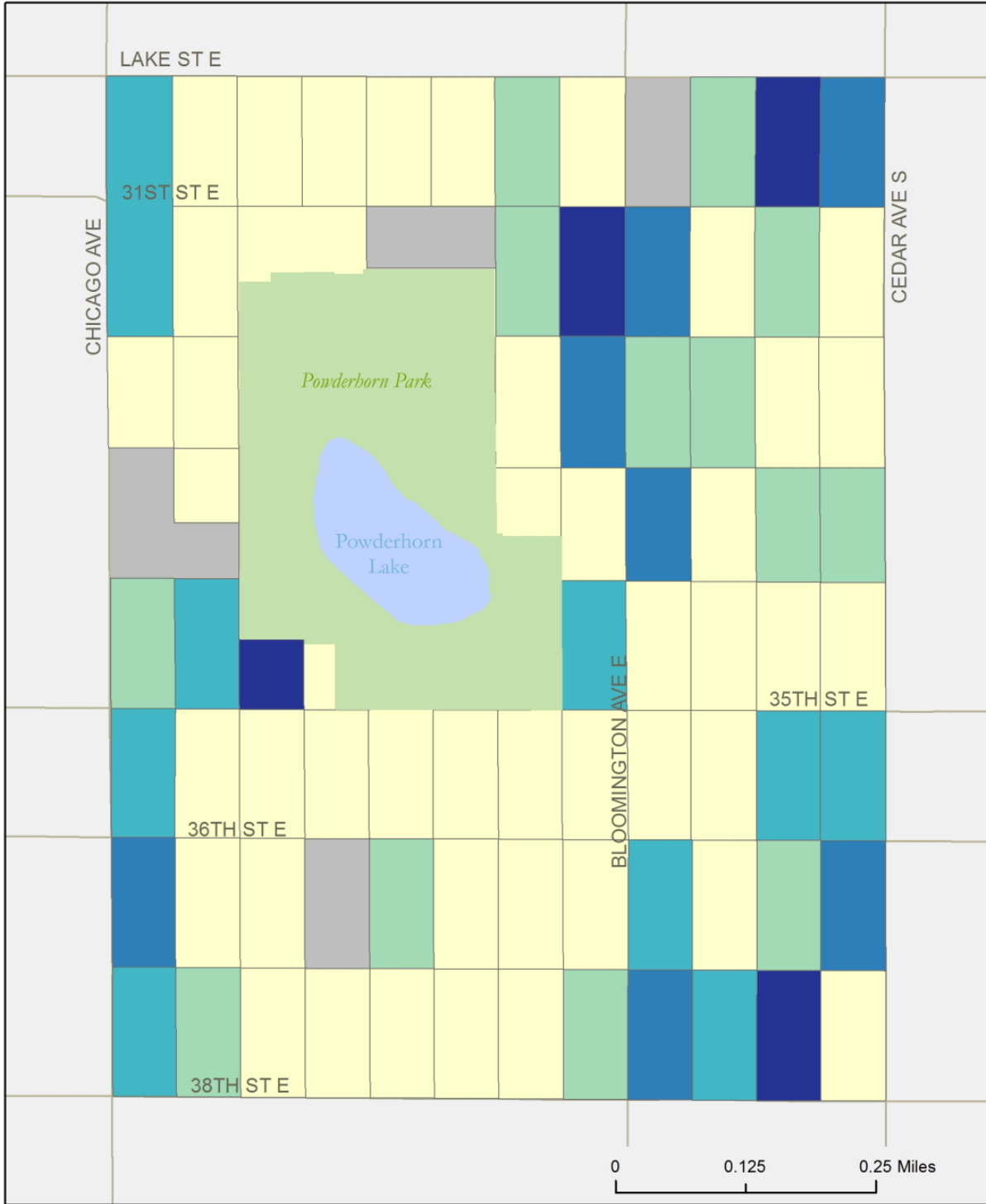
Housing Condition By Block, 2012

Phillips

E Lake St.

E 31st St.

Chicago Ave. S

Powderhorn Park

Bloomington Ave. S

Cedar Ave. S

Central

Corcoran

Powderhorn Lake

E 35th St.

E 36th St.

E 38th St.

Bryant

Bancroft

| 0 | 0.15 | 0.3 Miles |

Housing Condition (2012)

Excellent	Average Minus
Good	Fair
Average Plus	Poor
Average	No Data

Value of Residential Parcels in Powderhorn Park, 2007

LAKE ST.

CHICAGO AVE

CEDAR AVE

Powderhorn Park

Powderhorn Lake

38TH ST.

| 0 | 0.25 | 0.5 Miles |

Assessed Value of Residential Parcels, 2007

- $300,001 - $515,000
- $200,001 - $300,000
- $150,001 - $200,000
- $75,001 - $150,000
- $0 - $75,000
- Non-Residential Parcels
- Surrounding Neighborhoods

Charlotte Fagan April 24th, 2012 Projection: UTM 15N Sources: MetroGIS

Map 9: Value of Residential Parcels, 2011

Value of Residential Parcels in Powderhorn Park, 2011

LAKE ST.

CEDAR AVE.

CHICAGO AVE.

Powderhorn Park

Powderhorn Lake

38TH ST.

0   0.25   0.5 Miles

Assessed Value Of Residential Parcels, 2011

$300,001 - $978,600

$200,001 - $300,000

$150,001 - $200,000

$75,001 - $150,000

$0 - $75,000

Non-Residential Parcels

Surrounding Neighborhoods

Charlotte Fagan April 24th, 2012 Projection: UTM 15N Sources: MetroGIS

Value Retention by Block from 2007-2011

Average Change in Estimated Market Value by Block, 2007-2011

- -23% to -19%
- -18.9% to -16%
- -15.9% to -13%
- -12.9% to -10%
- -9.9% to -6.50%
- No Data
- Surrounding Neighborhood

Charlotte Fagan April 24th, 2012 Projection: UTM 15N Sources: MetroGIS
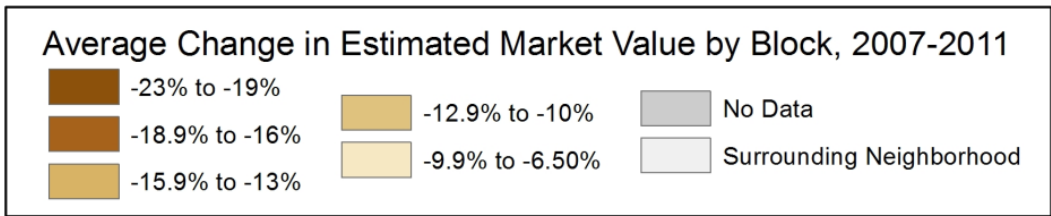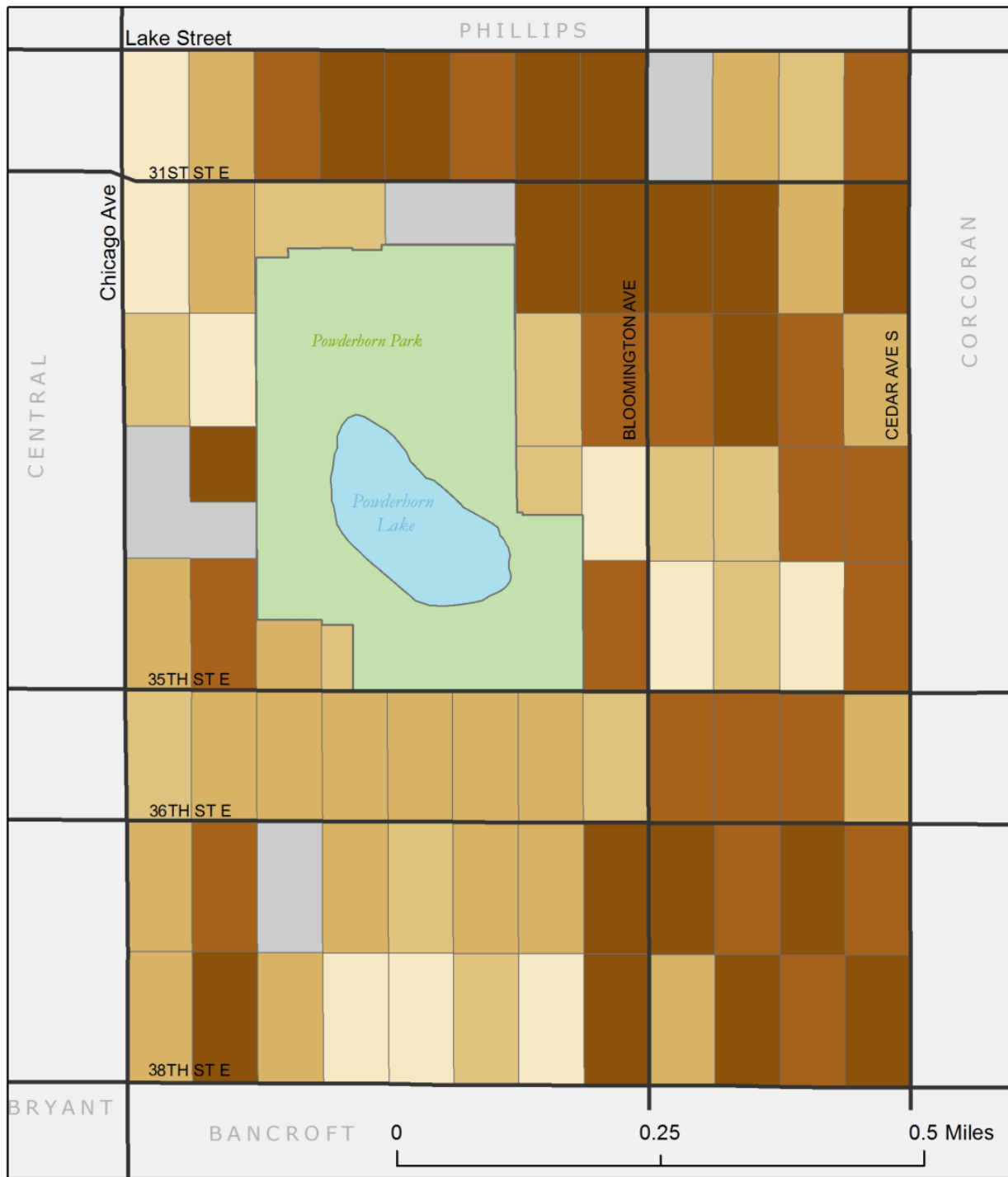
Map 11: Housing Market Index by Block

Housing Market Index by Block

Phillips

LAKE ST E

31ST ST E

Central

CHICAGO AVE

Powderhorn Park

Powderhorn Lake

BLOOMINGTON AVE

CEDAR AVE S

Corcoran

35TH ST E

36TH ST E

38TH ST E

Bancroft

0   0.25   0.5 Miles

Housing Market Index by Block

Strong   Average   Weak

No Data   Surrounding Neighborhood

Charlotte Fagan, Niko Martell, Skyler Larimore Projection: UTM 15N April 24th, 2012 Sources: Authors' Calculations