# **Innovation Village Neighborhood Assessment**

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## **Executive Summary**

As a part of the Fall 2016 PALS partnership, the URSP688L: Planning Technology class has partnered with the Mount Royal Community Development Corporation (MRCDC) to gain a better understanding of key demographic and social trends within an area of western Baltimore which has been designated as an Innovation district. The coalition of members that comprise *Innovation Village* are looking at ways to support growth and development, while preserving the existing neighborhoods and ensuring the preservation of affordable housing for long term residents. The goal is to create a diverse and dynamic community which keeps much of the existing flavor of its neighborhoods, while continuing to attract and retain new residents.

As a part of this class, two groups were tasked with assessing the neighborhoods within Innovation Village to identify spatial trends which might highlight specific areas within the district where there are opportunities for future investment and development. Our group (group 2) focused on assessing neighborhood opportunity by examining the change in socioeconomic conditions between 2000 and 2014 to see what trends or patterns might be revealed. GIS Mapping has been an increasingly important and valuable way of evaluating spatial data to visualize neighborhood conditions. We used this tool to conduct our research, focusing on evaluation of demographic patterns that show spatial relationships between age, education, rates of homeownership, retail spending habits, crime, and poverty.

## Background

The Innovation Village in West Baltimore is the first Innovation District in Baltimore, Maryland. It is made up of a number of neighborhoods including: Mondawmin, Bolton Hill, Penn North, Druid Heights, Mid-Town Belvedere, Sandtown-Winchester, Mount Vernon, Parkview, Madison Park, Coppin Heights, Easterwood, Upton, Woodbrook, and Mid-Town Edmondson. The mission of the Innovation Village is to "strength[en] Central West Baltimore economically through entrepreneurship, innovation and inclusive growth for all."<sup>1</sup> To support this mission, the Innovation Village has a network of over 50 partners that include educational institutions, community based organizations, companies, and national organizations. One of the anchor institutions in the Innovation Village Network is the Mount Royal Community Development Corporation (MRCDC). MRCDC seeks to create an inventory of neighborhood sociodemographic data, and use it to determine the potential driving forces of poverty, neighborhood blight, crime, and demographics dynamics.

MRCDC has engaged in a partnership with the University of Maryland's Center for Smart Growth's *Partnership for Action Learning in Sustainability* (PALS) program to utilize the skills of the UMD faculty and students to help support their efforts.

## Research

Initially, MRCDC requested the evaluation of some basic demographic variables such as age, education, income, and racial statistics. Upon further review and discussion, we adjusted our research and mapping to focus on several variables which we believe have an impact on the neighborhood's overall stability and potential for sustainable and equitable growth. By mapping these variables, demographic and social trends became evident. These patterns and trends are relevant to MRCDC and other members of their consortium to shape their goals for development and to support a stable community within Innovation Village.

## **Research Questions**

 Where do we see concentrations of key populations (members of the workforce, millennials, and more educated households) within Innovation Village? Has there been a change in where these households are located between 2000 and 2014? How does this compare with Baltimore City?

<sup>&</sup>lt;sup>1</sup>"Innovation Village: Baltimore's First Innovation District," accessed September 27, 2016, http://www.innovatebaltimore.org/#home-section.

- 2. Are there higher rates of homeownership vs. renters within Innovation Village? Have there been any notable shifts over the past 14 years? Any potential trends? How does this compare with Baltimore City?
- 3. Where do we see the highest concentrations of poverty and crime within Innovation Village? Which types of crimes are we seeing? Has there been a significant change in any particular area overtime? How does this compare with Baltimore City?
- 4. What are the retail spending habits of residents within Innovation Village? Do these habits point to certain needs within the community for additional services or amenities?
- 5. Based on the sociodemographic and spatial trends shown in Innovation Village, can we identify potential locations of opportunity and challenge where additional educational, safety, or other types of investment or intervention may help to stabilize the community?

## Variables Used in Maps & Analysis Approaches

In order to map the following variables, we downloaded raw data from the 2000 Decennial Census and American Community Survey (ACS) 2014 5 year estimates, reorganized and cleaned the data using Microsoft Excel, and then mapped the data using ArcGIS.

1. Age Data with a focus on working- age adults and millennials:

Sources: Sex By Age -- Census 2000 Data(SF1-P012) & ACS 2014 Data (2014 B0-1001)

- a. % of residents who are workforce age per block group (2000 & 2014)
- b. % of residents who are Millennials per block group (2014 only)
- 2. Education Attainment Data:

*Sources*: Sex by educational attainment for the population 25 years and over -- Census 2000 Data (SF3-P037) & ACS 2014 Data (B15003)

- a. % of residents with high school diploma and above per capita (2000 & 2014)
- b. % of residents who with college degree and above per capita (2000 & 2014)

3. Housing Ownership Data:

*Sources*: Occupancy Status and Tenure -- Census 2000 Data (SF 1-H003 & SF 1-H004) & ACS 2014 Data (B25002 & B25003)

- a. % of households occupied by renters per capita (2000 & 2014)
- b. % of households occupied by owners per capita (2000 & 2014)
- 4. Crime Data:

*Sources*: Baltimore Police Department Crime Reports (https://data.baltimorecity.gov/Crime/Crimes-By-Neighborhood/2nh2-stru)

- a. Violent Crimes per capita (2011 & 2016) \*\*Heat Map
- 5. Poverty Data:

*Sources*: Poverty Status by Age -- Census 2000 Data (SF 3-P087) & Poverty Status in the Past 12 Months by Household Type by Age of Householder -- ACS 2014 Data (B17017)

- a. % Households in Poverty (2000 & 2014) \*\*Heat Map
- 6. Neighborhood Assessment Index using Z Score:

*Sources:* Sex By Age Census 2000 Data (SF1-P012) & ACS 2014 Data (2014 B0-1001); Sex by educational attainment for the population 25 years and over Census 2000 Data (SF3-P037) & ACS 2014 Data (B15003); Occupancy Status and Tenure Census 2000 Data (SF 1-H003 & SF 1-H004) & ACS 2014 Data (B25002 & B25003); and Poverty Status by Age -- Census 2000 Data (SF 3-P087) & Poverty Status in the Past 12 Months by Household Type by Age of Householder -- ACS 2014 Data (B17017)

a. Total Z-score of variables by block group (2000 & 2014)

In addition to the data listed above, we used ArcGIS's online Community Analyst function to map several additional business/spending variables which we believe may be useful to the members

of Innovation Village. We imported the Innovation Village shapefile we had created in ArcGIS to ArcGIS online, and pulled reports in the following areas:

- 7. Retail Spending amount by Block Group (2016)
- 8. Major Shopping Centers (2016)
- 9. Total number of Businesses (2016)

## Analysis

## Age: Percentage of Population that is a "Workforce Age" (Ages 18-64)

MDRC is looking to attract and retain a strong base of young residents and working families to the neighborhoods within Innovation Village. In our research and analysis, the first age demographic we looked at was the percentage of the population in the workforce (defined as ages 18-64). The maps were created using data from the 2000 Decennial census and the 2014 American Community Survey 5 year estimates. We downloaded the "Sex by Age" reports from 2000 and 2014 and used Microsoft Excel to reformat the data and calculate the population that falls within the ages of 18-64 as a percentage of each census block group. This allows us to see



where the greatest concentrations of working age individuals are located within the city.

#### Figure 1

The 2000 map shows a high concentration of workforce age residents just north of the inner harbor and surrounding John Hopkins University. Over the next 14 years, the map shows a significant increase in the workforce age population in the areas surrounding the inner harbor and stretching north up towards John Hopkins University and surrounding Morgan State University. There are significant increases in this demographic in areas surrounding neighborhoods with major anchors such as higher education institutions and arts districts.

This zoomed in view of Innovation Village shows the change in the population of workforce age residents within the District. Within the Innovation Village district, there is a significant increase in the workforce population, especially in the areas surrounding MICA, Bolton Hill and Mount



## Vernon, and Mondawmin.

#### Figure 2

## Age: Percentage of Population that are Millennials (Ages 18-24)

Although young people historically move to Baltimore to go to school, many leave the area once they've completed their education or are ready to start families. Since 2000, the city has seen an overall decrease in population and even a clearer decrease in the number of school age children living in the city.<sup>2</sup> The city and members of Innovation Village are working to increase the city's population and to attract millennials (residents age 18-24) to stay in Innovation Village long term<sup>3</sup>. We looked at where millennials are currently concentrated within Innovation Village

<sup>&</sup>lt;sup>2</sup> "Baltimore," accessed December 14, 2016, https://en.wikipedia.org/wiki/Baltimore.

<sup>&</sup>lt;sup>3</sup> Ian Duncan, "Census Data Maryland Suburbs show growth, Baltimore Stalls," March 24, 2016, accessed December 14, 2016, http://www.baltimoresun.com/news/maryland/bs-md-maryland-census-numbers-20160323-story.html.

and how this compares to Baltimore City. As one would expect, the highest concentrations of millennials are located near sites of higher education, entertainment, and employment centers.



#### Figure 3

In order to keep millennials as residents of Innovation Village, other factors such as the quality of public schools, neighborhood safety, access to employment and transportation will be critical to ensuring young residents stay in the area.

## Educational Attainment: % of Population with a High School Diploma and Higher



#### Figure 4

The 2000 map of Baltimore shows the northern part of Baltimore as the area with the highest percentage of people a with high school diploma and higher. The Inner Harbor of Baltimore also shows a higher percentage of people with a high school diploma and above. In the central part of the city, the percentage of people with a high school diploma and higher was the lowest. Over 14 years later, there was a general increase in the number of people with a high school diploma and higher, with the most significant increases in the Inner Harbor and eastern parts of the city.



Within the Innovation Village boundary, there is also a general increase in the percentage of people with a high school diploma or higher over the past 14 years with the exception of Upton and Mount Vernon neighborhoods. In fact, some areas within these neighborhoods show a decrease in the percentage of people with a high school diploma and higher. Most of the increases in the educational attainment occurred towards the eastern part of Innovation Village. A specific region with the Druid Heights neighborhood went from a range between (41- 60%) to (81 -100%) of its population with a high school diploma or higher. The presence of Enoch Pratt Free Library<sup>4</sup> with its numerous training programs may be a contributing reason for this increase within the Druid Heights neighborhood.

<sup>&</sup>lt;sup>4</sup>Enoch Pratt Free Library, "Pennsylvania Avenue Branch," accessed December 14, 2016, http://www.prattlibrary.org/locations/pennave/.

### Educational Attainment: % of Population with College Degree or Higher



#### Figure 6

In general, the percentage of people with a College Degree or higher also increased over the 14year period, with the greatest increase seen in the Inner Harbor of Baltimore. It follows the same spatial pattern as maps of the working age and millennial population. There is also a slight increase in the percentage of residents with college degrees in the northern part of Baltimore. Based on the 2000 map of Baltimore educational attainment, the northern part of Baltimore originally had a very high percentage of its population with a bachelor's degree or higher so in 2014, there is not a significant change in this northern part of Baltimore.



Within Innovation Village, the following neighborhoods saw an increase in the percentage of population with a Bachelor's degree or higher: Bolton Hill, Mid-town Belvedere, Reservoir Hills and ParkView/Woodbrook. Counter to the larger trend, there was a decrease in the percentage of population with a Bachelor's degree or higher in Madison Park neighborhood while the neighborhoods surrounding it either shows no change, or an increase in the educational attainment of its population.

	2000 % of High School Diploma and above	2014 % of High School Diploma and above
Innovation village	63.8%	78.3%
City of Baltimore	68%	81%

	2000 % of Bachelor's Degree or higher	2014 % of Bachelor's Degree or higher
Innovation village	18.5%	28.2%
City of Baltimore	19%	26%

Figure 8

## Housing Ownership Data: Percentage of Owner vs. Renter Occupied Housing





Since 2000, Baltimore has seen a reduction in its population. At the same time, it has seen an increase in vacant housing. The most vacant housing is seen in central Baltimore (See Appendix

for Map of Vacant Housing in Baltimore). The northern part of Baltimore around Highway 83 has retained its population over time.



#### Figure 10

The percentage of occupied housing in Innovation Village has also reduced over the past 14 years. The Parkview/Woodbrook, Mondawmin, Penn North, Upton, Coppin Heights/Ash-Co-East, Easterwood and Sandtown-Winchester neighborhoods have the highest percentage of vacant housing of all the neighborhoods within Innovation Village (See Appendix for Map of Vacant Housing in Baltimore, Innovation Village). In contrast, Bolton Hill, Madison, Mount Vernon, Seton Hill, Heritage Crossing and Midtown Belvedere have been stable and thus maintained the same percentage range of occupied housing over the past 14 years. The Reservoir Hill Neighborhood has seen the greatest increase in the percentage of occupied housing within Innovation Village.

	2000 % of Owner Occupied Housing	2014 % of Owner Occupied Housing
Innovation village	28.4%	27.02%
City of Baltimore	50.3%	47.2%



#### Figure 12

In addition to looking at occupancy and vacancy, we looked at who was occupying the housing (owners vs. renters). In general, there has been a slight decrease in the percentage of people within Baltimore who are homeowners over the past 14 year and there was a slight increase in the percentage of people in the city of Baltimore who are renters. (See Appendix for Map of Renter Occupied Housing in Baltimore)



Within Innovation Village, there has been a reduction in the percentage of owner occupied housing over the past fourteen years. The Mondawmin, Coppin Heights, Madison Park and Easterwood neighborhoods saw the highest loss of owner occupied housing over time. However, the Druid heights and parts of the Bolton Hill neighborhood saw an increase in the percentage of owner-occupied housing. The neighborhoods with the highest rate of renter occupied housing are Upton, Madison Park and Reservoir Hill. (See Appendix for Map of Renter Occupied Housing in Baltimore, Innovation Village)

	2000 % of Vacant Housing	2014 % of Vacant Housing
Innovation village	19.6%	25.8%
City of Baltimore	14%	18%

## Crime Rates: Arson, Assault, Burglary/ Robbery, Homicide, Larceny/Theft, Rape

Crime is a critical statistic to consider when studying the economic viability of a neighborhood. If people don't feel that a neighborhood is safe, they are highly unlikely to want to live there, no matter how affordable the cost of living may be. The Innovation Village is geographically situated in a near-ideal spot to be considered a target for economic growth, but persistent fears about crime rates have been stifling its opportunity for many years. This warrants an in-depth look at how crime density stacks up, both within the different neighborhoods of the Innovation Village, as well as how it compares with the rest of Baltimore, and how it has changed over the past five years. This data may show cause for optimism, or it may show areas which will need to be improved before redevelopment can begin in earnest.

We chose to focus on violent crime, which can be broadly broken down into six categories: arson, assault, burglary and robbery, homicide, larceny and theft, and rape. There are certainly many other types of crimes, but we concluded that, when considering the economic viability of a neighborhood, these are the types of crimes that absolutely must be minimized in order to make a neighborhood safe.

### **Arson Maps:**



#### Figure 15

In 2011, arson was concentrated heavily in a large swath of land along the city's farther west side. In 2016, however, it concentrated, unfortunately, much more heavily in the near west side, including parts of the Innovation Village. It is important to note that this data does not include the fires of April and May 2015 related to the protests following the Freddie Gray trial<sup>5</sup>, as this data is only for 2011 and 2016. However, it appears that even a year later, arson remained a problem in Freddie Gray's home neighborhood and its surrounding area.

<sup>&</sup>lt;sup>5</sup> Joshua Berlinger, "Baltimore Riots: A timeline," April 28, 2015, accessed December 14, 2016, http://www.cnn.com/2015/04/27/us/baltimore-riots-timeline/.

### Assault Maps:



#### Figure 16

Between 2011 and 2016, assault appears to have increased in Baltimore between 2011 and 2016, but the areas where we see the highest concentration of crime have stayed the same in that time. We see the highest rate of assault downtown by the Inner Harbor, and in a densely-populated pocket of the city's east side. Downtown makes sense because whenever there is a high density of people, there is likely to be a higher concentration of minor crimes, such as assault<sup>6</sup>. The more surprising statistic is the east-side neighborhood, which is not a congregation point. This data may suggest other types of criminal or gang activity in these neighborhoods, or

<sup>&</sup>lt;sup>6</sup> Kathryn Stewart, "How Alcohol Outlets Affect Neighborhood Violence," accessed December 14, 2016, http://resources.prev.org/documents/AlcoholViolenceGruenewald.pdf.

maybe it is more heavily populated than other low-income neighborhoods in Baltimore. The rate of assault in Innovation Village appears to be similar (or with a slight increased rate) compared to that of the larger city, so it must be addresses in order to spur development in the area.



### **Burglary & Robbery Maps:**

Figure 17

Burglaries and robberies appear to have decreased citywide, except in the far southeast corner of the city, which has seen a huge increase from 2011 to 2016. The Innovation Village has largely held steady in this category, and may have actually experienced a slight decrease in burglaries and robberies, which would certainly be welcome news to anyone trying to draw residential development.

### Homicide Maps:



#### Figure 18

The homicide rate has risen in Baltimore in recent years. While 2016 has not been quite as deadly as 2015 was<sup>7</sup>, it has nonetheless been more violent in the wake of significant unrest in the city and its police force. However, it is interesting to note how concentrated the murders have been in 2016. Although the number of murders has risen sharply on the city's east side and in key neighborhoods of the west side, the rate has mostly held steady or even dropped elsewhere in the city. The Innovation Village has seen its homicide concentration stay fairly steady. Compared to the flare ups of violence elsewhere in the city, it seems calmer than it was in 2011. This may not be the best news, but it certainly could be far worse.

<sup>&</sup>lt;sup>7</sup> Justin George, "Is 300 homicides in Baltimore the 'new normal'?," December 9, 2016, accessed December 14, 2016, http://www.baltimoresun.com/news/maryland/crime/bs-md-ci-300-homicides-20161209-story.html.

### Larceny & Theft Maps:



#### Figure 19

Larceny and theft have risen sharply throughout the city between 2011 and 2016, and Innovation Village is no different in this trend. While these crimes have always been concentrated most heavily in the retail and nightlife districts of the Downtown Inner Harbor, they have also surged in the retail centers of the Innovation Village; so this is an area that should be of the utmost concern for law enforcement, as well as the city and community leaders.

### Rape Maps:



#### Figure 20

Rape has remained concentrated heavily in the city's southwestern quadrant, and seems to have reduced slightly everywhere else. Innovation village, is within the area where rapes have decreased, if only slightly, from 2011 to 2016. However, rape is a crime that often goes unreported<sup>8</sup>, and thus it has far fewer reported instances than most of the other crimes mapped in this report. Due to this smaller sample size, differences of just a few occurrences can have a large impact on visualization of the data, so any optimism related to a decrease in the rate of rapes in the Innovation Village should be expressed very cautiously.

<sup>&</sup>lt;sup>8</sup>Tony Gonzalez, "Study: Sexual assaults greatly underreported," November 19, 2013, accessed December 14, 2016, http://www.usatoday.com/story/news/nation/2013/11/19/study-sexual-assaults-greatly-underreported-/3648197.

## Poverty: Percentage of Households Under the Poverty Line

The 2000 poverty map for Baltimore City shows that the highest concentrations of poverty are located in areas to the east, southwest, and northwest of the Innovation Village. It also shows that poverty is concentrated in the central region of the Innovation Village.

The 2014 poverty map for Baltimore City shows that poverty is still concentrated in the aforementioned areas. However, concentrations of poverty within the Innovation Village has also spread to the southernmost part of this area.





In Innovation Village, poverty was concentrated within the neighborhoods of Penn North, Sandtown-Winchester, Madison Park, Upton, Heritage Crossing, and portions of Reservoir Hill, Bolton Hill, and Mount Vernon in 2000. In 2014, the poverty concentrations increased to include all of Reservoir Hill, Bolton Hill, Mount Vernon and portions of Mid-Town Belvedere.



These maps demonstrate that poverty is largely concentrated in areas surrounding the Innovation Village. The maps also indicate that, over 14 years, the poverty rate has increased and spread from the central neighborhoods of the Innovation Village to the southern neighborhoods—and portions of the western neighborhoods. These trends show some correlation to the crime data. Finally, it is interesting to note that the northeastern area of the Innovation Village, where the Mondawmin Mall is located, does not have concentrations of poverty either in 2000 or 2014.

## Neighborhood Assessment Index Map:

We created a neighborhood assessment tool using a number of variables we had evaluated independently. The maps for the neighborhood assessment index were created using Z-scores. Z-scores are a calculation that indicates how far above or below a data point is from the mean of

a data set. The Z-scores for poverty, ages 18-34 (millennials), workforce population (ages 18-65), and educational attainment for a Bachelor's degree or higher were calculated using the counts of these variables (by block group) from the 2000 Census and the 2014 American Community Survey (ACS) 5-year estimate. A total Z-score for each block group was calculated by adding the Z-scores for each variable (within each block group) together<sup>9</sup>.

The maps below show the total Z-scores for each block group. The data values are classified using the quantile (equal count) function in ArcGIS. This function "...assigns the same number of data values to each class.<sup>10</sup>" The lowest classification (lavender color) indicates block groups with a low, negative Z-score. The highest classification (dark purple) indicates block groups with a high, positive Z-score. The classifications between the highest and lowest classifications (light purple followed by plum) indicates the increase in Z-scores toward the highest classification.

The Neighborhood Assessment Map for 2000 shows that the area south of the central region of the Innovation village had very low Z-scores (indicating a low neighborhood assessment rate based on the measured variables), while the areas to the southeast of the Innovation Village had high Z-scores (indicating a high neighborhood assessment rate). The area northwest of the Innovation Village had moderate Z-scores (indicating a moderate neighborhood assessment rate). In 2014, there is very little change in the southeast area of the Innovation Village, as these block groups maintain high Z-scores. The area south of the central region of the Innovation Village slightly improved, as these block groups increased to moderate Z-scores. However, the area northwest of the Innovation Village decreased from moderate Z-scores, to low Z-scores.

<sup>&</sup>lt;sup>9</sup> Poverty, as a negative variable, was multiplied by -1 in order to weight it when it was added with the other variables. <sup>10</sup> Esri, "Classifying numerical fields for graduated symbology," accessed December 9, 2016, <u>http://desktop.arcgis.com/en/arcmap/10.3/map/working-with-layers/classifying-numerical-fields-for-graduated-</u> <u>symbols.htm</u>.



The central and southeastern regions within the Innovation Village follow the trends of their counterparts located outside of the Innovation Village boundaries. In 2000, the central region of the Innovation Village (which includes the neighborhoods of Sandtown-Winchester, Penn North, and Druid Heights) had low Z-scores. But in 2014, this region increased to moderate Z-scores. The southeastern region of the Innovation Village (which includes the neighborhoods of Bolton Hill and Mid-Town Belvedere) had high Z-scores in 2000 and maintained those high Z-scores in 2014.

The trend diverges with the northwestern region within the Innovation Village (which includes Mondawmin Mall). Here, the Z-scores in 2000 were moderate, but it improved to a high Z-score in 2014, unlike the block groups located in the northwest area outside of the Innovation Village boundaries.



In conclusion, high Z-scores, and thus high neighborhood assessment rates, are located in the southeastern region within and outside the borders of the Innovation Village. It is also located in the northwest region of the Innovation Village, around the Mondawmin Mall. The Z-scores for the central region of the Innovation Village (which includes the neighborhoods of Sandtown-Winchester, Penn North, and Druid Heights), shifted from low in 2000, to moderate in 2014. As with the poverty variable, larger trends that affect the areas around the Innovation Village may also impact neighborhoods within its boundaries.

### Retail Spending Habits in Innovation Village

The map for retail spending habits was created on Esri's ArcGIS online application. After inserting the Innovation Village shapefile, the variable for amount spent on retail goods was selected. This variable was measured using census block groups within Innovation Village in

order to be consistent with previous data in this report. The map below shows that in the majority of Innovation Village, a relatively low amount of money (\$0 to \$7,970,751) was spent on retail merchandise in 2016. Only in the neighborhoods of Bolton Hill and Mid-Town Belvedere were large amounts of money (\$14,704,207 to \$42,002,442) spent on retail merchandise in 2016.



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#### Figure 25

This follows the trends that were demonstrated in the poverty and neighborhood assessment index maps, where the neighborhoods of Bolton Hill and Mid-Town Belvedere were characteristically the wealthiest and higher ranking neighborhoods within the Innovation Village. Whereas the neighborhoods of Sandtown-Winchester, Penn North, and Druid Heights often suffered.

## Major Shopping Centers in Innovation Village

The major shopping centers map was also created using Esri's ArcGIS online. The Innovation Village shapefile was inserted into the program, and Esri generated a report mapping the major shopping centers located in and around the Innovation Village. The major shopping centers within the Innovation Village are Mondawmin Mall, with 540,000 square feet of Gross Leasable Area, and State Center, with 250,000 square feet of Gross Leasable Area.



Figure 26

## **Businesses Summary in Innovation Village**

The map and report for businesses within the Innovation Village was created using Esri's ArcGIS online. The Innovation Village shapefile was inserted into the ArcGIS online program and the variable for total businesses was selected. Then Esri's ArcGIS online program generated a map of the total businesses located in the Innovation Village as well as a report documenting the types of businesses located there.

The map shows that there is a low density of businesses (0 to 45 and 46 to 137) located in the majority of the Innovation Village. The only exception is Mid-Town Belvedere (where 317 to 1,214 businesses are located) and near the Mondawmin mall. The Esri business summary reveals that there needs to be more businesses focused on health and legal services within the Innovation Village. There also appears to be a need for additional education and childcare services here.



Figure 27



Innovation Area: 1.93 square miles

Prepared by Esri

Data for all businesses in area				
Total Businesses:		1,121		
Total Employees:		15,266		
Total Residential Population:		32,118		
Employee/Residential Population Ratio:		0.48:1		
	Business	ses	Emplo	vees
by SIC Codes	Number P	ercent	Number	Percent
Agriculture & Mining	2	0.2%	17	0.1%
Construction	36	3.2%	298	2.0%
Manufacturing	11	1.0%	126	0.8%
Transportation	11	1.0%	138	0.9%
Communication	16	1.4%	68	0.4%
Utility	1	0.1%	400	2.6%
Wholesale Trade	15	1.3%	163	1.1%
Datail Tendo Cummanu	285	25 496	2 041	13 496
Home Improvement	205	0.4%	16	0 196
Concern Movement	13	1 796	271	1 800
General Herchandise Stores	23	4 0%	289	1 0%
Auto Solies	16	1.4%	06	0.6%
Auto Dealers, Gas Stations, Auto Altermarket	34	2.006	204	1.000
Apparei & Accessory Stores	12	1.20%	294	0.200
Fortige P policies Places	13	9.204	43	0.3%
Eating & Drinking Places	52	0.270 5 104	205	1 204
Miscellaneous Retail	57	5.170	205	1.37
Finance, Insurance, Real Estate Summary	139	12.4%	545	3.6%
Banks, Savings & Lending Institutions	58	5.2%	100	0.7%
Securities Brokers	8	0.7%	45	0.3%
Insurance Carriers & Agents	9	0.8%	43	0.3%
Real Estate, Holding, Other Investment Offices	63	5.6%	358	2.3%
Services Summary	485	43.3%	6.378	41.8%
Hotels & Lodaina	3	0.3%	16	0.1%
Automotive Services	23	2.1%	139	0.9%
Motion Pictures & Amusements	20	1.8%	311	2.0%
Health Services	50	4.5%	793	5.2%
Legal Services	21	1.9%	141	0.9%
Education Institutions & Libraries	39	3.5%	2.137	14.0%
Other Service	329	29.3%	2.843	18.6%
Other Services		2313 10	2,015	10.0 /
Government	75	6.7%	4,998	32.7%
Unclassified Establishments	46	4.1%	92	0.6%
Totals	1,121	100.0%	15,266	100.0%
Source: Copyright 2016 Infogroup, Inc. All rights reserved. Esri Total Residential Population forecasts for 2016. Date Note: Data on the Business Summary report is calculated using Esri's Data allocation method which us	es census block groups to allocate business summary data to custom areas.			

December 10, 2016

Figure 28

## **Recommendations & Future Research**

There are many challenges facing the neighborhoods within Innovation Village. Over the past 14 years, there are a number of areas that have seen significant increases in high crime and poverty. We see several areas with high vacancy rates and low levels of educational attainment. However, where there are these challenges, there is also an opportunity for development and growth. There are certain neighborhoods where we see improvements and continued stabilization. In the chart below, we have outlined a number of key challenges and opportunities throughout Innovation Village.

Neighborhoods	Challenges	Opportunities
Western Innovation Village (Mondawmin, Coppin Heights, Easterwood)	<ul> <li>Lowest educational attainment (within IV)</li> <li>Increased crime rate (arson, larceny, rape)</li> <li>Low level of retail spending despite location of the mall</li> <li>Small number of local businesses</li> </ul>	<ul> <li>From 2000-2014, Increased % residents in workforce age group + millennials</li> <li>Growing homeownership rates (but overall occupancy dropped)</li> <li>Increased Neighborhood Assessment Index</li> <li>Reduced poverty rate over 14 years.</li> <li>Mondawmin Mall as a retail anchor.</li> </ul>
Central Innovation Village (Penn North, Druid Heights, Midtown Edmonston, Sandtown)	<ul> <li>Increased poverty rate (2000-2014)</li> <li>High vacancy rates</li> <li>Increased crime rates (arson, assault, larceny, theft)</li> <li>Low level of retail spending + local businesses</li> </ul>	<ul> <li>Growing level of high school educational attainment try to engage in higher level training or education</li> <li>High Vacancy rate&gt;opportunity for redevelopment</li> <li>Increase from low to moderate Neighborhood Assessment Index over 14 years.</li> </ul>
Eastern Innovation Village	<ul> <li>Increased larceny and theft (2000-2014)</li> </ul>	<ul> <li>High % of residents in workforce age group</li> <li>Highest educational attainment within IV</li> </ul>

(Bolton Hill, Mount Vernon, Belvedere, Madison Park, Charles North)	<ul> <li>High occupancy rate (mostly renters)</li> <li>Reduced overall crime rate over time</li> <li>Highest retail spending and # of businesses</li> <li>Potential for State Center retail opportunities</li> <li>Maintained high Neighborhood</li> </ul>
	<ul> <li>Maintained high Neighborhood Assessment Index over 14 years.</li> </ul>

## Ideas for Future Research:

- Assessment of performance and graduation rates of elementary, middle, and high schools within Innovation District. We saw trends in graduation rates, but further analysis is needed to understand educational and skills attainment to better link residents with additional educational and employment opportunities.
- Given that we did not have the time to dig into the data in the context of other factors, further research is needed to better understand the reasons for the trends we saw in the data. One approach might be to complete an analysis of police patrol coverage compared to crime rates, success/failure of different types of policing strategies, and further analysis comparing employment, education levels and crime.
- Map key services (child care, health, education, employment training, libraries, social services etc.). These services are critical to attracting families to stay long term.

## Ideas for Future Investments or Initiatives:

- Use Coppin State, MICA, & other anchor institutions to draw more faculty and graduates to live, work, and "play" in the area.
- Promote existing city homeownership incentive programs.
- Invest in more educational and training initiatives and programs to increase the educational attainment and employment skills of residents in Innovation Village – with programs specifically targeting younger residents.
- Promote Small Business grants to open specific business/services that are missing within the Innovation Village boundaries.

- Strengthen the city's existing inclusionary zoning laws to ensure that affordable housing is preserved and created as new developments are built.
- Blend new and old building styles: historic preservation of old 'suitable' housing stock and infill development of townhomes (consider live-work townhomes to promote startups and entrepreneurship) that maintains similar neighborhood character as the older townhomes/buildings within each neighborhood.

## **Task Coordination**

Nicole:

- Took lead on designing and building Base Map template used for mapping
- Data Collection & Editing of Data for: Housing Ownership & Education
- Mapping Education & Home Ownership Data
- Final Report -- Contributing Writer & Editing
- Final Presentation -- Contributed Content

Alexandra:

- Worked with Nicole to design Base Map used for mapping
- Data Collection & Editing of Data for: Age and Education
- Edited Proposal #1; Drafted Proposal #2
- Mapping Age Data Millennials & Workforce
- Final Report Format Design & Contributing Writer & Editing
- Final Presentation -- Contributed Content

Jamesha:

- Drafted Proposal #1
- Editing of Data for: Poverty
- Mapping of Poverty Data & Neighborhood Assessment Index Map
- Mapping using ArcGIS Online for retail spending and, major shopping centers, number of businesses
- Final Report Contributing Writer
- Final Presentation Format Design & Contributed Content

Jack

- Downloading & Editing of Data for Crime & Poverty
- Creation of Crime Maps
- Final Report -- Contributing Writer
- Final Presentation -- Contributed Content

## **APPENDIX**

Figure 1: Percent of Population that is Workforce Age (defined as ages 18-64)



Figure 2: Percent of Population that is Workforce Age (defined as ages 18-64) -- Innovation Village





Figure 3: Percent of Population that is a Millennial Age (defined as ages 18-24)

## Figure 4: Percent of population with Bachelor's degree or above (2000 and 2014)



Figure 5: Percent of population with Bachelor's degree or above (2000 and 2014) – Innovation Village



## Figure 6: Percent of population with High School Diploma and above (2000 and 2014)



# Figure 7: Percent of population with High School Diploma and above (2000 and 2014) – Innovation Village



## Figure 8: Percent of Occupied Housing (2000 and 2014)





## Figure 9: Percent of Occupied Housing (2000 and 2014) – Innovation Village

## Figure 10: Percent of Owner Occupied Housing (2000 and 2014)







Figure 12: Percent of Renter Occupied Housing (2000 and 2014)





## Figure 13: Percent of Renter Occupied Housing (2000 and 2014) – Innovation Village

Figure 14: Percent of Vacant Housing (2000 and 2014)













Figure 21: Map of Baltimore Poverty rate (2000 – 2014)

Figure 22: Map of Poverty rate – Innovation Village (2000 – 2014)







Figure 24: Innovation Village Neighborhood Assessment By Z-Score (2000 – 2014)





Figure 25: Esri Custom Map showing Retail Spending of 2016 Retail Goods – Innovation Village

Figure 26: Esri Map showing Major Shopping Center – Innovation Village





Figure 27: Esri Custom Map showing 2016 Total Businesses by Block Groups – Innovation Village

Figure 28: Esri Business Summary – Innovation Village

Data for all businesses in area Total Eusinesses: Total Employees: Total Engloyees: Total Residential Population Ratio:  by SIC Codes Agriculture & Nining Construction Manufacturing Transportation Communication Uility Wholesale Trade Retail Trade Summary Home Improvement General Merchandise Stores Forditure & Nining Auto Altermarket Apparel & Acons y Note Altermarket Finance, Insurance, Real Estate Summary Banks, Savings & Lending Institutions	Busini Number 2 36 11 11 11 15 285 285 4 3 13 15 5 5 6 16 33 13 33 13 13 13 13 13 13 13 13 13 13	1,12 15,2¢ 32,11 esses 0.48: esses 0.2% 1.0% 1.0% 1.0% 1.4% 0.1% 1.3% 25.4% 0.4% 1.2% 4.9% 1.4% 3.0%	1 16 18 1 17 298 126 138 163 2,041 16 271 289 966 294	oyees Percen 0.19 2.09 0.49 0.49 1.19 13.49 0.19 1.89 1.99
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General Merchandise Stores Food Stores Auto Dealers, Gas Stations, Auto Aftermarket Apparel & Accessory Stores Furniture & Home Furnishings Eating & Drinking Places Miscellaneous Retail Finance, Insurance, Real Estate Summary Banks, Savings & Lending Institutions Securities Brokers	13 55 16 34 13	1.2% 4.9% 1.4% 3.0% 1.2%	271 289 96 294	1.8% 1.9% 0.6%
Food Stores Auto Dealers, Gas Stations, Auto Altermarket Apparel & Accessory Stores Furniture & Home Furnshings Eating & Drinking Places Miscellaneous Retail Finance, Insurance, Real Estate Summary Banks, Savigas & Lending Institutions Securities Brokers	55 16 34 13	4.9% 1.4% 3.0% 1.2%	289 96 294	1.9%
Auto Dealers, Gas Stations, Auto Aftermarket Apparel & Accessory Stores Fundure & Home Furnishings Eating & Drinking Places Miscellaneous Retail Finance, Insurance, Real Estate Summary Banks, Savinga & Landing Institutions Securities Brokers	16 34 13	1.4% 3.0% 1.2%	96 294	0.6%
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Finance, Insurance, Real Estate Summary Banks, Savings & Lending Institutions Securities Broken	57	5.1%	205	1.3%
Banks, Savings & Lending Institutions Securities Brokers	139	12.4%	545	3.6%
Securities Brokers	58	5.2%	100	0.7%
Texaster Context 8 Annata	8	0.7%	45	0.3%
insurance carriers & Agents	9	0.8%	43	0.3%
Real Estate, Holding, Other Investment Offices	63	5.6%	358	2.3%
Services Summary	485	43.3%	6,378	41.8%
Hotels & Lodging	3	0.3%	16	0.1%
Automotive Services	23	2.1%	139	0.9%
Motion Pictures & Amusements	20	1.8%	311	2.0%
Health Services	50	4.5%	793	5.2%
Legal Services	21	1.9%	141	0.9%
Education Institutions & Libraries	39	3.5%	2,137	14.0%
Other Services	329	29.3%	2,843	18.6%
Government	75	6.7%	4,998	32.7%
Unclassified Establishments	46	4.1%	92	0.6%
Totals	1,121	100.0%	15,266	100.0%