

Stacel, Lori

From: Klopsch, Norbert S.
Sent: Friday, July 16, 2021 12:31 PM
To: Jacques, Robert
Subject: RE: [REDACTED] R3

[REDACTED] R3

Norbert S. Klopsch
Oakwood City Manager
(937) 298-0600

From: Jacques, Robert
Sent: Friday, July 16, 2021 11:39 AM
To: Klopsch, Norbert S. <Klopsch@oakwood.oh.us>
Subject: [REDACTED]

[REDACTED] R3

Robert F. Jacques, Esq. | Law Director
City of Oakwood | 30 Park Avenue | Oakwood, Ohio 45419
T: (937) 298-0600
F: (937) 297-2940
Jacques@oakwood.oh.us | www.oakwoodohio.gov



Stacel, Lori

From: Klopsch, Norbert S.
Sent: Friday, July 16, 2021 12:33 PM
To: Stacel, Lori
Subject: RE: 2.72 Mill Press Release

Thanks

Norbert S. Klopsch
Oakwood City Manager
(937) 298-0600

From: Stacel, Lori
Sent: Friday, July 16, 2021 11:15 AM
To: Klopsch, Norbert S. <Klopsch@oakwood.oh.us>
Subject: 2.72 Mill Press Release

Norb,

Attached is the press release.

Thanks,
Lori

Lori Stacel | Secretary to City Manager/Clerk of Council
City of Oakwood | 30 Park Avenue | Oakwood, Ohio 45419
T: (937) 298-0600
F: (937) 297-2940
stacel@oakwood.oh.us | www.oakwoodohio.gov

Stacel, Lori

From: Klopsch, Norbert S.
Sent: Friday, July 16, 2021 12:33 PM
To: Spitler, Doug
Subject: RE: Loop Detector at Patterson and Schantz

So we need to remove the broken wire laying in the street?

Norbert S. Klopsch
Oakwood City Manager
(937) 298-0600

From: Spitler, Doug
Sent: Friday, July 16, 2021 11:28 AM
To: Klopsch, Norbert S. <Klopsch@oakwood.oh.us>
Subject: RE: Loop Detector at Patterson and Schantz

Norb,

That was a patch that we did with our asphalt program. The loop is a system loop, probably used for counting through the obsolete Aries software. I recommended to Tom that we NOT replace the system loops (there is another one for eastbound at the same intersection) since we have no way to communicate with the loops. When we perform our citywide traffic signal project, we can replace the loops to run with that system.

K. Douglas Spitler, PE
City of Oakwood
210 Shafor Boulevard
Oakwood, OH 45419

From: Klopsch, Norbert S.
Sent: Friday, July 16, 2021 10:02 AM
To: Spitler, Doug <spitler@oakwood.oh.us>
Subject: Loop Detector at Patterson and Schantz

Doug,

The loop detector at the corner of E. Schantz and Patterson appears to be damaged. Did we do the asphalt patch at that corner, or was that Vectren (or someone else) ?

Norb

Norbert S. Klopsch
Oakwood City Manager
(937) 298-0600

Stacel, Lori

From: Klopsch, Norbert S.
Sent: Friday, July 16, 2021 12:34 PM
To: Jacques, Robert
Cc: Spitler, Doug
Subject: Retaining Wall Contract

Rob,

Is the contract ready for my signature?

Norb

Norbert S. Klopsch
Oakwood City Manager
(937) 298-0600

Stacel, Lori

From: Klopsch, Norbert S.
Sent: Friday, July 16, 2021 1:27 PM
To: Stacel, Lori
Subject: RE: Leave Early Today

No problem.

Norb

Norbert S. Klopsch
Oakwood City Manager
(937) 298-0600

From: Stacel, Lori
Sent: Friday, July 16, 2021 1:27 PM
To: Klopsch, Norbert S. <Klopsch@oakwood.oh.us>
Subject: Leave Early Today

Hi Norb,

Would you be okay if I left today at 4 versus putting OT on my timesheet for yesterday? I can always stay if needed and then just take a longer lunch next week.

Thanks,
Lori

Lori Stacel | Secretary to City Manager/Clerk of Council
City of Oakwood | 30 Park Avenue | Oakwood, Ohio 45419
T: (937) 298-0600
F: (937) 297-2940
stacel@oakwood.oh.us | www.oakwoodohio.gov

Stacel, Lori

From: Klopsch, Norbert S.
Sent: Friday, July 16, 2021 1:54 PM
To: Kyle Ramey
Cc: Healy Jackson; Kristi Hale (hale@wrightlibrary.org)
Subject: RE: Environmental Justice Academy Application Requirements

Thanks Kyle.

Norb

Norbert S. Klopsch
Oakwood City Manager
(937) 298-0600

From: Kyle Ramey <ramey.kyle@oakwoodschoools.org>
Sent: Friday, July 16, 2021 1:29 PM
To: Klopsch, Norbert S. <Klopsch@oakwood.oh.us>
Cc: Healy Jackson <healyjackson@gmail.com>; Kristi Hale (hale@wrightlibrary.org) <hale@wrightlibrary.org>
Subject: Re: Environmental Justice Academy Application Requirements

Done and sent to Healy

Dr. Kyle Ramey
Superintendent
Oakwood City Schools



On Fri, Jul 16, 2021 at 11:10 AM Klopsch, Norbert S. <Klopsch@oakwood.oh.us> wrote:

Healy,

Attached is a draft of my letter. Please let me know if you have any edits.

I think one letter from a city official is enough and think Kristi is a good person to write the other letter... or maybe Kyle. It does not need to be long.

Inserted below is a suggested response to that question.

Norb

Norbert S. Klopsch

Oakwood City Manager

(937) 298-0600

From: Healy Jackson <healyjackson@gmail.com>
Sent: Thursday, July 15, 2021 11:52 PM
To: Klopsch, Norbert S. <Klopsch@oakwood.oh.us>
Subject: Environmental Justice Academy Application Requirements

Dear Norb,

My application to the Environmental Justice Academy requires two letters of recommendation. As you know, the deadline to apply is this Monday. I know it would be best to share my answers to the five essay prompts the application requires before I ask for letters of recommendation, but I haven't come up with the answers yet. I'm assuming you are willing to write a letter. Should I ask Kristi, or do you think I could ask Steve? (Could you draft one for Steve?) (After touring the library construction site yesterday, I feel guilty asking Kristi to do any extra work.)

I will write my essays on Saturday.

Here are the application directions for letters of recommendation:

Two Letters of Recommendation: 1) One letter from a person within the community you would represent as an EJ Academy Fellow, and 2) One letter from a person or organization familiar with your work in the community.

Both the application and letters of recommendation should be submitted at the same time. The letters of recommendations can be in any document format (Word, PDF, images, etc). If you have questions, please contact R5_EJAcademy@epa.gov.

Do you have any thoughts to share about how to answer this essay prompt?

1. What are the most critical environmental challenges facing your community and what do you believe can be done to resolve these challenges? Note: Environmental challenges may include “the natural environment” or “the built environment”. Oakwood is a landlocked and nearly fully developed city with very limited opportunity for new land uses. As such, the city is not faced with challenges and decisions traditionally associated with developing communities. Our challenges revolve around sustaining our environment, both natural and built. As a small suburb of 9,200 residents living in just 2.2 square miles, we enjoy a community environment that requires attention and care from all those who live in and pass through the city. That said, our citizens clearly recognize our role in maintaining and improving our Dayton region and critical importance of all local governments working together for the common good. I believe that the maintenance and improvement of our aging built infrastructure is currently our greatest challenge.

This experience is going to be an adventure.

Healy

Stacel, Lori

From: Klopsch, Norbert S.
Sent: Friday, July 16, 2021 1:56 PM
To: tania-cynthia.vanzuiden@montreal.ca
Cc: Kirsten Halling; francineunterberg@sympatico.ca
Subject: FW: Question sur nos villes voisines, Oakwood et le Vésinet
Attachments: Dayton_Stormwater_Vulnerability_Assessment.pdf

Tania, Please see below. Norbert

Norbert S. Klopsch
Oakwood City Manager
(937) 298-0600

From: Lindsay, Matthew <mlindsay@mvrpc.org>
Sent: Friday, July 16, 2021 1:36 PM
To: Kirsten Halling <kirstenhalling@gmail.com>
Cc: Klopsch, Norbert S. <Klopsch@oakwood.oh.us>; Martin, Brian O. <bmartin@mvrpc.org>
Subject: RE: Question sur nos villes voisines, Oakwood et le Vésinet

Good afternoon, Kirsten:

I hope you, Peter and the whole family are well. I am writing to provide you with some links to reports regarding Climate Change Impacts in Dayton or the metro area that your contacts in Oakwood's sister city MAY find useful. Most of these documents were developed through a partnership the City had with the University of Michigan and were produced right around 2013.

[Dayton Climate Impacts Executive Summary.pdf \(umich.edu\)](#)

[Climate Change Adaptation in Dayton OH.pdf \(umich.edu\)](#)

[Strategy for a Sustainable Dayton \(daytonohio.gov\)](#)

Plus the attached Storm Water Vulnerability Assessment (for which there doesn't seem to be a link).

We are not aware of studies specific to Oakwood or other surrounding cities in the Dayton Region. I hope this helps.

Matt Lindsay
(he/him)
Manager, Environmental Planning
Miami Valley Regional Planning Commission
mlindsay@mvrpc.org

937.531.6548 – direct

From: Klopsch, Norbert S. [<mailto:Klopsch@oakwood.oh.us>]
Sent: Thursday, July 15, 2021 5:46 PM
To: Martin, Brian O.

Cc: Lindsay, Matthew

Subject: RE: Question sur nos villes voisines, Oakwood et le Vésinet

Thanks Brian... you too.

Norbert S. Klopsch
Oakwood City Manager
(937) 298-0600

From: Martin, Brian O. <bmartin@mvrpc.org>

Sent: Thursday, July 15, 2021 5:45 PM

To: Klopsch, Norbert S. <Klopsch@oakwood.oh.us>

Cc: Lindsay, Matthew <mlindsay@mvrpc.org>

Subject: RE: Question sur nos villes voisines, Oakwood et le Vésinet

Norb,

I'm copying in Matt Lindsay to respond. I'm sure we have some if not all of the information they may be seeking. If they have started assembling a table, perhaps they would share it with you and Matt so that we can populate it with local/regional data.

Have a great evening!

Brian

Brian O. Martin, AICP
Executive Director
Miami Valley Regional Planning Commission
10 N. Ludlow St., Suite 700
Dayton, OH 45402

937.478.6965 – cell
937.531.6540 – direct office line
www.mvrpc.org

From: Klopsch, Norbert S. [<mailto:Klopsch@oakwood.oh.us>]

Sent: Thursday, July 15, 2021 5:37 PM

To: Martin, Brian O.

Subject: FW: Question sur nos villes voisines, Oakwood et le Vésinet

Hi Brian,

Please see below.

Does your staff have anything that would help our sister city friends?

Norb

Norbert S. Klopsch

Oakwood City Manager
(937) 298-0600

From: Kirsten Halling <kirstenhalling@gmail.com>
Sent: Thursday, July 15, 2021 5:33 PM
To: francineunterberg@sympatico.ca; Klopsch, Norbert S. <Klopsch@oakwood.oh.us>
Subject: Re: Question sur nos villes voisines, Oakwood et le Vésinet

Bonjour Norbert!

I hope you and your family are doing well. What a crazy time this has been!

I received the following e-mail chain that I am forwarding to you from Francine Unterberg, President of Outremont Sister City Association. In this letter, she is asking for any relevant information on a technical study of climate change and greenhouse gasses on the quality of life and longevity in our city. I am not sure that such a study has been done here in Oakwood (or in Dayton), but thought that you, as City Manager and an experienced engineer, would be the best person to contact to find out if, indeed, we have any statistics or data that we could share with our two sister cities for their comparative value. The person who is requesting that Francine contact us is the Outremont Liaison for the Office of Sustainable Projects and Development, Tania van Zuiden.

I am copying both Francine Unterberg and Tania van Zuiden on this e-mail so that you can reply more easily to this chain. Thank you so much, Norbert, for taking the time out of your busy schedule to give us some answers.

Merci mille fois!

Kirsten Halling

De : francineunterberg@sympatico.ca <francineunterberg@sympatico.ca>
Date : mercredi, 14 juillet 2021 à 4:22 PM
À : kirstenhalling@gmail.com <kirstenhalling@gmail.com>
Objet : TR: Question sur nos villes voisines, Oakwood et le Vésinet

Hi Kirsten,

I hope you and your family are well and are all vaccinated ! I hope that all our friends are well too and that we will be able to reconnect once we overcome this pandemic.
I received the following e-mail from the Outremont administration. I am sur someone in the City of Oakwood is working on these very actual problematic. Do you know the person to contact ?
I have already received an answer from Le Vésinet.

I hope you and your family will enjoy the summer.

Francine Unterberg

De : Tania-Cynthia VAN ZUIDEN <tania-cynthia.vanzuiden@montreal.ca>
Envoyé : 22 juin 2021 12:28
À : francineunterberg@sympatico.ca
Objet : Question sur nos villes voisines, Oakwood et le Vésinet

Bonjour Madame Unterberg,

Je prends le temps premièrement de me présenter à nouveau, même si on s'est déjà vues à quelques reprises. Je suis nouvellement agente de liaison au Bureau de projets et développement durable et je travaille conjointement avec Maude Heroux, Fanny Charrette-Gagnon et Zineb Alaoui.

Si je vous contacte aujourd'hui, c'est qu'on aimerait solliciter vos contacts avec nos villes jumelles, Oakwood et le Vésinet.

L'arrondissement d'Outremont effectue présentement un bilan des gaz à effet de serre (GES) selon une approche cycle de vie et nous aimerions donc avoir des comparatifs. Nous nous sommes donc dits qu'il serait intéressant de voir si nos villes voisines avaient déjà entrepris une telle démarche et si oui, si nous pouvions avoir accès aux données recueillies.

Serait-ce donc possible pour vous de me mettre en contact avec des personnes de ces deux villes?

N'hésitez pas si vous avez des questions de suivi ou si vous désirez en discuter davantage.

Merci beaucoup à l'avance pour votre aide.

Je vous souhaite une belle journée,

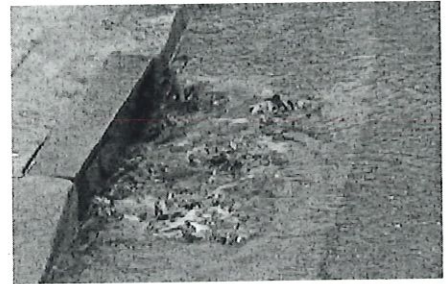
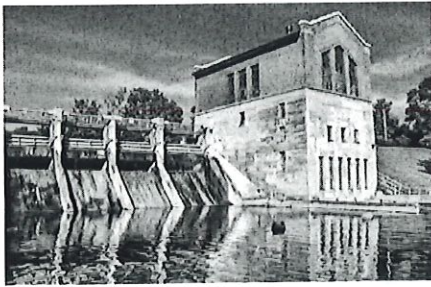
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Tania van Zuiden
Agente de liaison
Bureau de projets et développement durable

Arrondissement d'Outremont
543, chemin de la Côte-Sainte-Catherine
Outremont (Québec) H2V 4R2

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PREPARING FOR CLIMATE CHANGE



CLIMATE CHANGE VULNERABILITY ASSESSMENT FOR STORMWATER

CITY OF DAYTON

EXECUTIVE SUMMARY

The climate in Dayton is changing, and these changes are causing immediate threats to our citizens, our health, our economy, and our community's overall vitality. We know that over the last several years we have experienced a 0.9°F increase in average annual temperature, with spring experiencing the greatest amount of warming (a 2.2°F increase). Nighttime temperatures are rising, and the number of cold days (< 32°F) are declining. Annual precipitation is changing too: in the last several decades Dayton has experienced a 28.5% increase in annual precipitation, with the greatest change happening in fall (53.3% increase, amounting to roughly an extra 3.8 inches). In addition, we have seen an increase in the frequency and intensity of severe storms, with the City experiencing a 71% increase in the total volume of rainfall in extreme precipitation events (most extreme 1% of storms) annually. These are just some of the changes that have led to serious impacts to our community's infrastructure, economy, social networks, cultural identity, and safety. These impacts are likely to be more extreme as the climate continues to change.

In light of this, the City of Dayton has decided to plan for climate change, making sure we are considering what changes are projected to take place in the future and integrating that information into how we, as a City, operate. Guiding this work is a commitment to ensuring the health, safety, and general welfare of all Dayton's residents – especially the frontline communities that are already experiencing a disproportionate share of the impacts associated with a changing climate. This Stormwater Vulnerability Assessment is one important component of our City's efforts to create a more equitable and resilient community for all Dayton residents – ensuring every resident is prepared for the current and future risks associated with a changing climate.

Within the pages of this report, readers will find more information about how changes in weather and long-term climate have already impacted Dayton and details about projected changes in climate relevant to the City. Further, the report provides insights into what those changes might mean in terms of on-the-ground impacts to our stormwater systems, an assessment of Dayton's overall stormwater-system vulnerability to these changes, and which segments of the community may be most vulnerable. Finally, this report provides some initial suggestions on what we, as a community, can do to prepare our stormwater system and those it serves for climate-related impacts.

At a high level, we anticipate that climate change will exacerbate or create the following major impacts in Dayton:

- More heavy precipitation events will lead to greater stress on our stormwater conveyance system.
- Increasing temperatures. We currently experience an average of 10.7 days with a temperature greater than 90°F, but this is expected to increase to between 52 and 86 days greater than 90°F.
- We will have to adapt to more localized flooding events.

In response to these projected changes and local impacts, the City of Dayton has initially identified the following actions:

- Increasing capacity and monitoring stormwater conveyance infrastructure.

- Emphasizing the use of green infrastructure practices.
- Managing tradeoffs between open-loop geothermal heating/cooling and stormwater infrastructure capacity.
- Continue monitoring our levee system and protecting our sourcewater from contamination.
- Ensure equitable implementation of solutions.

Implementing these and other actions to effectively and efficiently address our community's climate and socio-economic vulnerabilities will require an "all hands on deck" approach. That is why we invite you to join us as we move forward with creating a more resilient, thriving, and sustainable Dayton for all.

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1. WHAT IS A VULNERABILITY ASSESSMENT

As the climate continues to change, communities across the U.S. and the world are asking, “How are these changes already affecting my community?” and “What local impacts might we experience from future changes in climate?” To help answer these questions, communities are using a tool called a vulnerability assessment. A vulnerability assessment helps stakeholders identify:

1. What changes in climate are projected to happen and what those changes could mean in terms of **local impacts**,
2. The level of **exposure** the community has to potential changes,
3. How **sensitive** the various city and community systems are to projected changes in climate, and
4. What **capacity** those systems have to adapt.

Exposure: The presence of people, livelihoods, species or ecosystems, environmental functions, services, and resources, infrastructure, or economic, social, or cultural assets in places and settings that could be adversely affected (IPCC, 2014).

Sensitivity: The degree to which a system or species is affected, either adversely or beneficially, by climate variability or change. The effect may be direct (e.g., a change in crop yield in response to a change in the mean, range, or variability of temperature) or indirect (e.g., damages caused by an increase in the frequency of coastal flooding due to sea level rise) (IPCC, 2014).

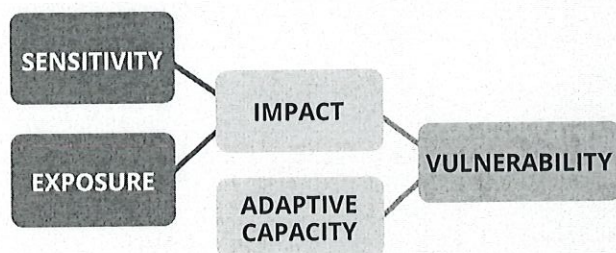
Impact: Effects on natural and human systems such as lives, livelihoods, health, ecosystems, economics, societies, cultures, services, and infrastructure (IPCC, 2014).

Adaptive Capacity: The ability of systems, institutions, humans, and other organisms to adjust to potential damage, to take advantage of opportunities, or to respond to consequences (IPCC, 2014).

Vulnerability: The propensity or predisposition to be adversely affected. Vulnerability encompasses a variety of concepts and elements including sensitivity or susceptibility to harm and lack of capacity to cope and adapt (IPCC, 2014).

Figure 1 provides a graphical depiction of how exposure, sensitivity, impacts, and adaptive capacity all combine to create vulnerability.

Figure 1: Graphical depiction of the various elements of vulnerability



Once completed, the results of a vulnerability assessment can be used to inform the types of actions a community should take to reduce vulnerabilities or seize on potential opportunities.

Currently, most existing vulnerability assessment guidance and tools have either limited or no discussion regarding the important role that a community’s social and economic characteristics play in determining local vulnerability. Because of the critical importance social dynamics play in shaping our local community, the City of Dayton partnered with fellow Midwestern cities, the Huron River Watershed Council, the Great Lakes Integrated Sciences and Assessment (GLISA), and Headwaters Economics to develop a revised vulnerability assessment template that assesses our community’s social, physical, cultural, economic, and environmental vulnerability to climate change. The document you are currently reading is a spinoff of this work, focused explicitly on understanding the vulnerability of Dayton’s stormwater system to climate change, socio-economic considerations, and local landscape features. We will use this document to help ensure that all our residents are safe, resilient, and thriving both today and in a climate-altered future.

2. SOCIO-ECONOMIC PROFILE OF DAYTON

Table 1: Section Summary¹

Population by age range	Age	Income	
<p>Population by age range</p>	<p>33.4 Median age</p>	<p>\$18,964 Per capita income</p>	<p>\$30,643 Median household income</p>

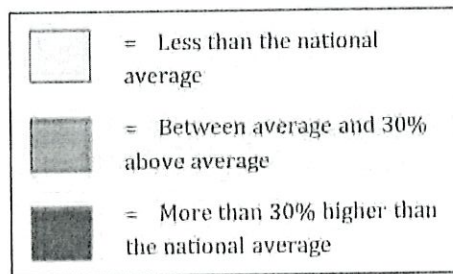
Dayton is a unique and diverse city. It is this diversity that makes us great. In 2017, 39.3% identified as Black or African American, 0.3% identified as American Indian, and 5.0% identified as "Other Races". Dayton is also home to immigrants from more than 100 countries.

In order to fully understand how the City of Dayton is resilient or vulnerable to climate change, we need to take a deep look at the social characteristics that make up our community. Using the Socio-Economic Data Mapper (Data Mapper) tool from Headwaters Economics, we analyzed ten characteristics that help explain our local vulnerability:

- A. Percent of population over 65
- B. Percent of population under 5
- C. Percent of community in poverty
- D. Percent of population with limited English proficiency
- E. Percent of non-white population
- F. Percent of households receiving public assistance
- G. Percent of households where mortgage is greater than 30% of household income
- H. Percent of disabled
- I. Percent of renters
- J. Percent of population without a high school diploma

Note for this section

For all maps in this section, tract color is relative to the national average and a 30% increase from average.



A. Percent of population over 65

As of 2017, the City of Dayton had 140,939 residents, 12.6% (17,699) of which were 65 years or older.² This is lower than the U.S. national average for residents over 65, which is 14.9%. Of this population, approximately 2,136 (1.5%) are 80 years or older. This figure is important because elderly populations are at increased risk of compromised health related to environmental hazards and climate change. In fact, age is the single greatest risk factor related to illness and death from extreme heat³ and the elderly are more likely to have pre-existing medical conditions or compromised mobility, which reduces their ability to respond to extreme heat and extreme weather events⁴ - which are both likely to become more frequent due to climate change. Finally, the increased likelihood of chronic disease,⁵ combined with the fact that older adults are more susceptible to air pollution, which is expected to become worse due to climate change, makes them a uniquely vulnerable population.⁶

All of these factors combined mean that the elderly require unique and/or additional services compared to younger residents. As such, understanding our community's age profile helps us determine the appropriate types of services and resources needed to ensure all of Dayton's residents are able to survive and thrive in a climate-altered future.

B. Percent of population under 5

As of 2017, 6.4% (9,080) of the City of Dayton's population was under 5 years of age. This is slightly higher than the national average (6.2%).⁷ Knowing what percentage of our residents are under the age of five and where they reside, is important because children's developing bodies are particularly sensitive to health problems and environmental stresses,⁸ including those associated with climate change. Children also spend more time outside and have faster breathing rates than adults, so they are more at risk for respiratory problems related to things such as ground level ozone, airborne particulates, and allergens;⁹ all of which can be exacerbated by climate change. Moreover, because their immune systems are not fully developed, children are more susceptible to

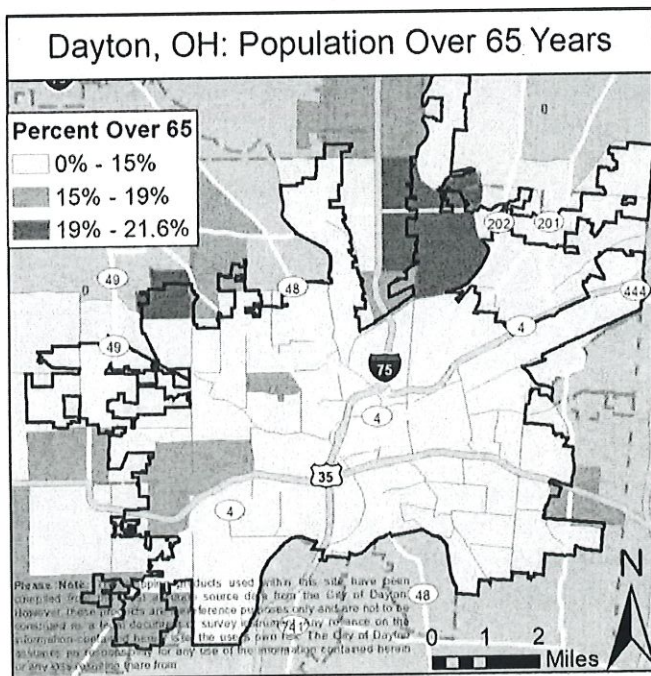


Figure 2: Census Tracts in Dayton where the population 65 years of age or older is higher than the national average (14.9% is the national average). Light red indicates an increase from the national average. Darker red indicates areas more than 30% higher than the national average.

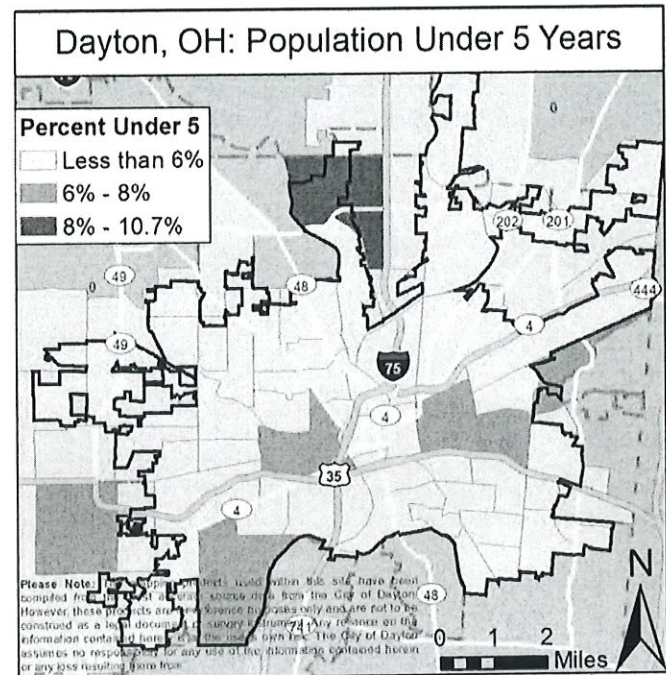


Figure 3: Census Tracts in Dayton where the population under 5 years of age is higher than the national average (6.2% is the national average). Light red indicates an increase from the national average. Darker red indicates areas more than 30% higher than the national average.

infectious diseases,¹⁰ including those that spread during natural disasters.

Focusing our efforts on reducing youth vulnerability makes sense for a number of reasons, including the fact that childhood lays the foundation for lifelong health, meaning that poor health during childhood can significantly increase the likelihood of problems throughout adulthood.¹¹ With the rising cost of health care in the U.S., ensuring that we have a healthy, productive community is pivotal to not only our wellbeing, but also our social structure and our economy.

As we seek to ensure our youth are resilient to climate change, we need to pay particular attention to youth that are living in poverty, as children living in poverty are less likely to receive high-quality health care, meaning that they may be especially sensitive to changes in climate and the ensuing health impacts.¹² Children living in poverty are also more likely to live in vulnerable areas, including areas that have poor air quality, limited transit options, and homes that are less resilient to changing weather patterns. As we move forward with building community-wide resilience, care must be taken to ensure that children, especially those in poverty, are prioritized.

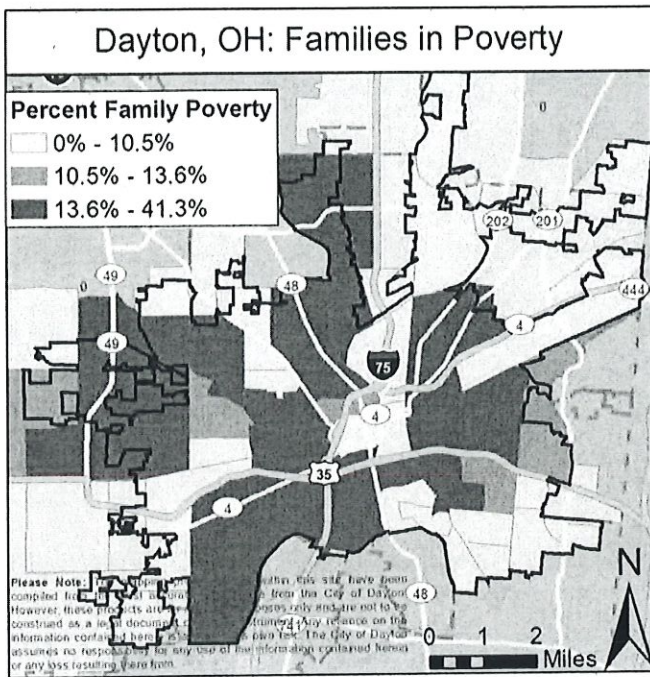


Figure 4: Census Tracts in Dayton where the number of families living in poverty is higher than the national average (10.5% is the national average). Light red indicates an increase from the national average. Darker red indicates areas more than 30% higher than the national average.

C. Percent of community in poverty

As of 2017, 42,382 City of Dayton residents were living in poverty; 21,110 were classified as living in deep poverty (meaning they earn less than ½ of the federal poverty level). This represents 32.7% of the City's population that is living in poverty and 16.3% that is living in deep poverty. In addition, data shows that 1.8% of the City's residents (2,395) are both living in poverty and over the age of 65. All of these numbers are significantly above US national averages.¹³

The above information focuses on the number of individuals living in poverty. In addition, we also analyzed the number of families living in poverty. As of 2017, 8,455 families (28.5%) in Dayton lived in poverty. Of these, 6,804 had at least one child residing in their household, and 5,014 were households with a single mother (16.9% of all households). This rate of family poverty is higher than the national average (10.5% for families in poverty and 4.8% for single mother families in poverty).

Understanding the percent and location of those living in poverty is critical because low income is one of the strongest predictors of compromised health as well as an individual's ability to recover from disasters.¹⁴ Moreover, we know that natural disasters disproportionately impact low-income people because of things such as inadequate housing, social exclusion, a diminished ability to evacuate, lack of property insurance, and more acute emotional stress.¹⁵ In addition, research has shown that low-income people are more likely to be overlooked during the emergency response period following a disaster.¹⁶ Low-income populations are also more likely to live or work in areas with greater exposure to environmental hazards, including working in jobs that require outdoor labor.¹⁷

Income inequality within a community is also associated with poor health outcomes. Residents in low-income neighborhoods tend to have higher incidences of asthma, depression, diabetes, heart conditions, and emotional stress compared to higher-income neighborhoods.¹⁸ Low-income households also have to make lifestyle compromises in order to make ends meet, such as choosing unhealthy foods, less food, substandard housing, or delayed medical care.¹⁹ Having limited income may also mean that it is simply too expensive to run fans, air conditioners, or heaters to manage

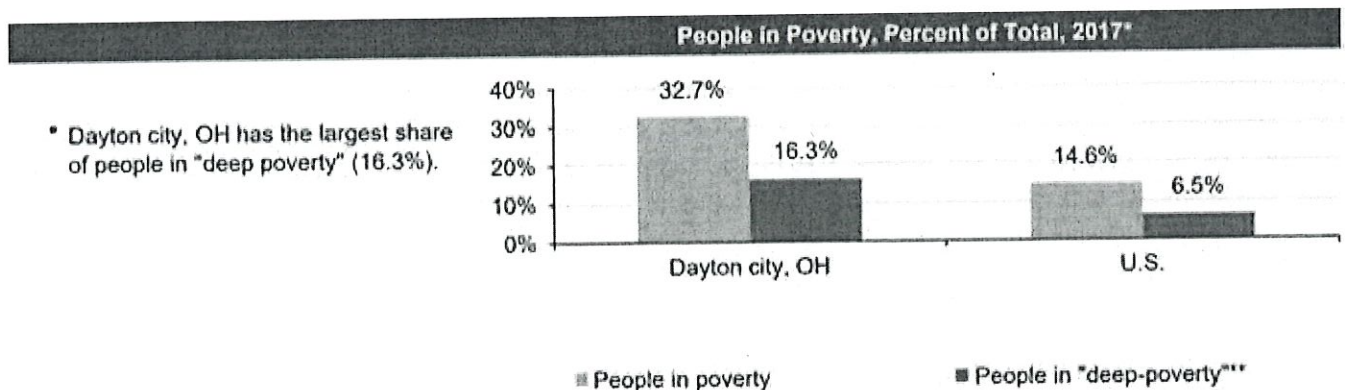


Figure 5: Percentage of residents living in poverty. This table was taken from the Populations at Risk Tool created by Headwaters Economics (accessible here).

indoor living temperatures, not to mention that many low-income residences are located in high crime areas, meaning that residents may feel unsafe opening their windows.²⁰ Finally, low-income individuals are least likely to have health insurance, which further exacerbates their vulnerability to the negative health impacts associated with climate change such as deteriorating air quality, higher incidences of asthma, and increased allergens.²¹

D. Percent of population with limited English proficiency

According to the US Census Bureau, in 2017, 1.4% of the Dayton community did not speak English well (1,909 people). This is lower than the national average (4.5%).²² Understanding the percentage and location of people with limited English proficiency is important because many, if not most, aspects of life in the US require basic proficiency in English. For example, knowing about and then accessing emergency services, learning about poverty reduction programs, or accessing health care all necessitate basic English proficiency. Research has found that limited English proficiency can:

- Limit a person's ability to effectively act during emergencies;²³
- Make it harder to follow directions and interact with agencies, thereby limiting the amount of support available to respond to and recover from disasters of all types;²⁴
- Make it harder for people to get higher wage jobs;²⁵ and
- Result in isolation from other segments of the US population, and social isolation can be a serious health risk.²⁶

Because of these factors, it is important that we identify who within our population has limited English proficiency and work with trusted partners to ensure these populations have access to the information, tools, and resources they need to build resilience.

E. Percent of non-white population

As of 2017, 44.6% of the population in Dayton (62,842) identified as non-white. This is higher than the national average (27.0%). Of the total population of Dayton, 39.3% (55,410) identified as Black or African American, 3.9% (5,563) identified as Hispanic,²⁷ 0.3% (444) identified as

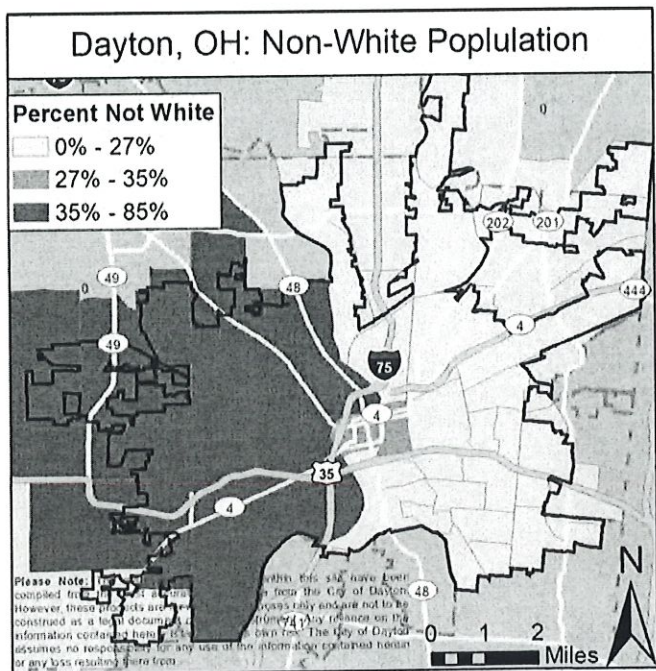


Figure 6: Census Tracts in Dayton where the population that identifies as non-white is greater than the national average (27%). Light red indicates an increase from the national average. Darker red indicates areas more than 30% higher than the national average.

American Indian, and 5.0% (6,988) identified as “Other Races”.²⁸

This information is important because race and ethnicity strongly correlate with disparities in health, exposure to environmental pollution, and vulnerability to natural hazards, including climate-related natural hazards.²⁹ More specifically:

- Research consistently finds race-based environmental inequities across many variables, including the tendency for minority populations to live closer to noxious facilities and Superfund sites, and to be exposed to pollution at greater rates than whites.³⁰
- Across races, the rates of preventable hospitalizations are highest among black and Hispanic populations. Preventable hospital visits often reflect inadequate access to primary care. These types of hospital visits are also costly and inefficient for the health care system.³¹ Relative to other ethnicities and races, Hispanics and Blacks/African Americans are less likely to have health insurance, but rates of uninsured are dropping for both groups.³²
- Compared to other races, Blacks/African Americans have higher rates of infant mortality, homicide, heart

Percent of Households Receiving Earnings, by Source, 2017*

* Dayton city, OH has the largest share of households receiving Supplemental Security Income (11.2%).

* Dayton city, OH has the largest share of households receiving cash public assistance (5.2%).

* Dayton city, OH has the largest share of households receiving Food Stamps/SNAP (29.3%).

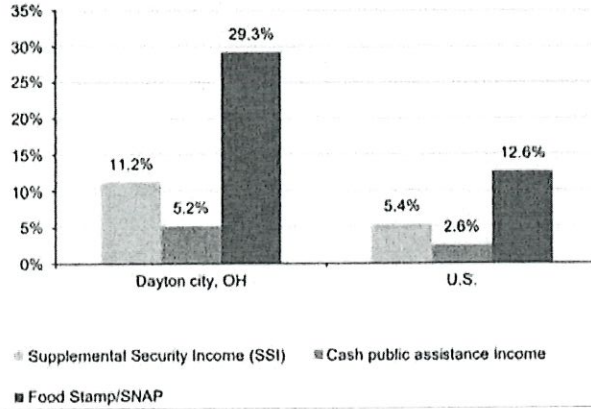


Figure 7: Percentage of households in Dayton and in the U.S. that receive three types of public assistance.

disease, stroke, and heat-related deaths.³³

- Hispanics have higher rates of diabetes and asthma, compared to other ethnicities.³⁴
- Minority communities often have less access to parks and nutritious food, and are more likely to live in substandard housing, all of which can negatively impact health outcomes.³⁵
- Minorities tend to be particularly vulnerable to disasters and extreme heat events. This is due to language differences, housing patterns, variations in the quality of housing, community isolation, and cultural barriers.³⁶
- Blacks/African Americans and Hispanics, two segments of the population that are currently experiencing poorer health outcomes, are an increasing percentage of the U.S. population and our local community.³⁷

Given these realities, it is important that the City of Dayton ensures that we effectively integrate the needs, perspectives, and lived realities of our population into our

efforts to enhance resilience.

F. Percent of households receiving public assistance

As of 2017, 16,910 households within Dayton (29.3%) received Food Stamps/SNAP assistance. This rate of Food Stamp/SNAP assistance is significantly higher than the national average, which is 12.6% of all U.S. households.³⁸ While this isn't the only form of public assistance, we have chosen Food Stamps/SNAP assistance as our indicator of public assistance because it is more widely known than the other types of assistance and, as such, there is a higher likelihood that at-need households are getting this assistance compared to the more obscure forms of public assistance.

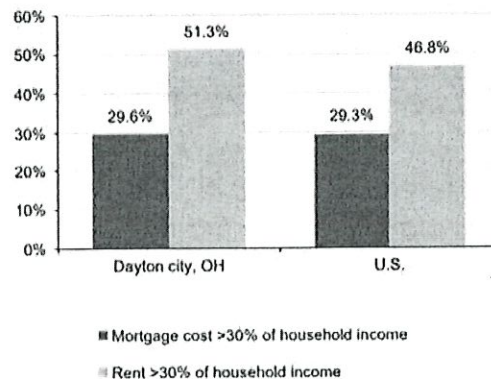
Understanding the percentage and location of residents receiving public assistance is important because this information is indicative of households living in poverty or households with insufficient resources. For example, in 2011, families receiving public assistance spent, on average, 77% of their household budget to meet the basic

Figure 8: Comparison of the percentage of households in Dayton and the U.S. that spend more than 30% of their income on rental fees or their mortgage.

Housing Costs as a Percent of Household Income, 2017*

* Dayton city, OH has the largest share of unaffordable housing for homeowners, with 29.6% spending over 30% of household income on mortgage costs.

* Dayton city, OH has the largest share of unaffordable housing for renters, with 51.3% spending over 30% of household income on rental costs.



necessities of housing, food, and transportation,³⁹ leaving little to accommodate other important needs including disaster preparedness, response, and recovery.

G. Percent of households where mortgage is greater than 30% of household income

As of 2017, 4,807 households (29.6%) in Dayton were paying more than the sustainable 30% of household income towards their mortgage and 15,426 households (51.3%) were paying more than the sustainable 30% of household income towards their rent. Rental costs are slightly above the national average and point to a troubling sign regarding the affordability of housing in Dayton compared to the income being earned. The reason this is important is because the federal government considers families with housing costs that exceed 30% of their income to be “housing-cost burdened”⁴⁰ and therefore have less disposable income to spend on other necessities such as food, heating/cooling, transportation, healthcare, etc. Research also shows that those households living in affordable housing (those spending less than 30% of household income on housing) are more stable and less likely to move frequently. This can enhance community vitality and cohesion, an important

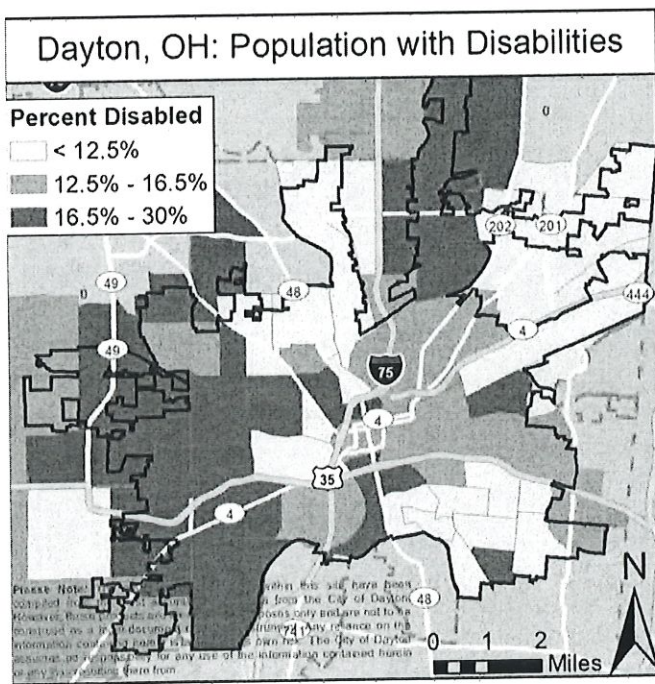


Figure 9: Census Tracts in Dayton where the population that has a disability is higher than the national average (12.5%). Light red indicates an increase from the national average. Darker red indicates areas more than 30% higher than the national average.

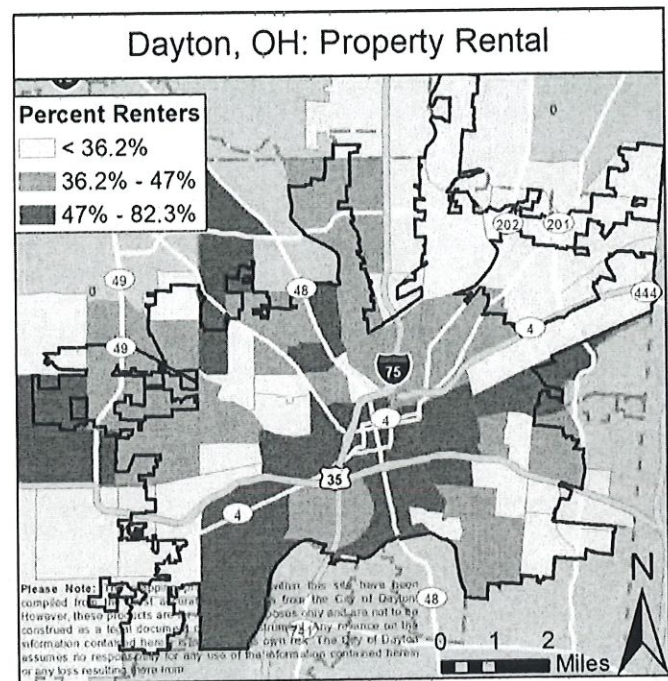


Figure 10: Census Tracts in Dayton where 36.2% or more of the housing units were rentals (36.2% is the national average). Light red indicates an increase from the national average. Darker red indicates areas more than 30% higher than the national average.

element of creating a more resilient Dayton. In addition, this stability is linked to several positive health outcomes in children and young adults, such as improved emotional and behavioral problems, fewer unplanned pregnancies, reduced drug use, and a lower risk for depression.⁴¹

As we work to ensure that Dayton is building resilience, we must be aware of the needs of all residents, including those with limited economic resources.

H. Percent of those with disabilities

As of 2017, 25,348 residents of Dayton were living with disabilities. This represents 18.4% of our total population; a figure higher than the national average of 12.6%.⁴²

People with disabilities are subject to a series of health complications that are often significantly heightened due to environmental conditions. For example, limited mobility and/or being bed ridden raises heat mortality,⁴³ limited mobility can significantly delay and/or prevent effective evacuation during times of disaster, and extreme weather events can disrupt one’s ability to get medical treatment, which can be disastrous for those with compromised health. These are only some of the heightened vulnerabilities faced by people with disabilities. Because of

Population with Less than High School Education, Percent of Total, 2017*

* Dayton city, OH has the largest share of people with less than a high school education (17.0%).

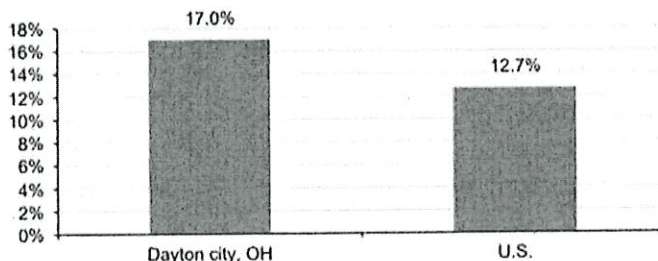


Figure 11: Comparison of individuals in Dayton and the U.S. that have less than a high school education.

this, Dayton is determined to incorporate the needs of this population in our attempts to create a more resilient community.

I. Percent of renters

As of 2017, 52.1% of housing units in Dayton were rentals; an additional 1.4% were mobile homes.⁴⁴ This rate is significantly higher than the national average of 36.2% for rentals, but lower than the national average of 5.7% for mobile home residences.

The median home value in Dayton is currently \$67,897. This figure represents a decrease in home value of \$21,011 based on average home values in 2010.

Understanding what percentage of our population owns a home is important because home ownership contributes to well-being and stability. Home ownership also improves mental health, including increasing self-esteem, creating a heightened sense of control over one's living situation and financial security.⁴⁵ On the flip side, the financial stress associated with losing one's home is heightened by people's attachment to place and their neighborhoods.⁴⁶

In terms of renters, studies have repeatedly shown that renters pay a larger proportion of their income in rent. Rental rates have increased over the past 25 years with no sign of abatement.⁴⁷ This financial burden is exacerbated by the fact that rental homes are typically not well maintained with conditions such as dampness, mold, and exposure to toxic substances or allergens heightened for those residing in rental units.⁴⁸ Because of this, renters may pay even more to heat, cool, or make their rentals more accommodating, further exacerbating the financial impact associated with renting.

J. Percent of population without a high school diploma

As of 2017, 14,954 people in Dayton did not have a high

school diploma (17.0%). This is higher than the national average (12.7%),⁴⁹ a troubling statistic because high school completion is a common proxy for overall socio-economic circumstances. In particular, lack of education is strongly correlated with poverty and poor health. For example:

- People without a high school degree are more than twice as likely to live in inadequate housing compared to those with some college education.⁵⁰
- Thirty-eight percent of Americans without a high school degree do not have health insurance, compared to 10 percent with a college degree.⁵¹
- The rate of diabetes is much greater for those without a high school degree. Incidence of this disease is more than double the rate of those who have education beyond high school.⁵²

Cumulative Socio-Economic Vulnerability

Combining the findings from each of the previous sections, we were able to create a map denoting some of our most socio-economically vulnerable neighborhoods (Figure 12). This figure identifies all the Census Tracts where the City of Dayton has higher than the national average for all of the following variables: percentage of families in poverty; percentage of people with disabilities; percentage of households that rent; percentage of population under the age of five; percentage of population over the age of 65; and percentage of population that is non-white. To estimate vulnerability we assigned vulnerability numbers to each factor based on the increase from the national average as follows: if it was higher than average but less than 15% above average it was assigned 1; if it was between 15% and 30% higher than average it was assigned 2; and if it was more than 30% higher than average it was assigned 3. Vulnerability scores were calculated in each tract for each of the socio-economic factors, then the scores for all factors were added together in each tract to provide the total socio-

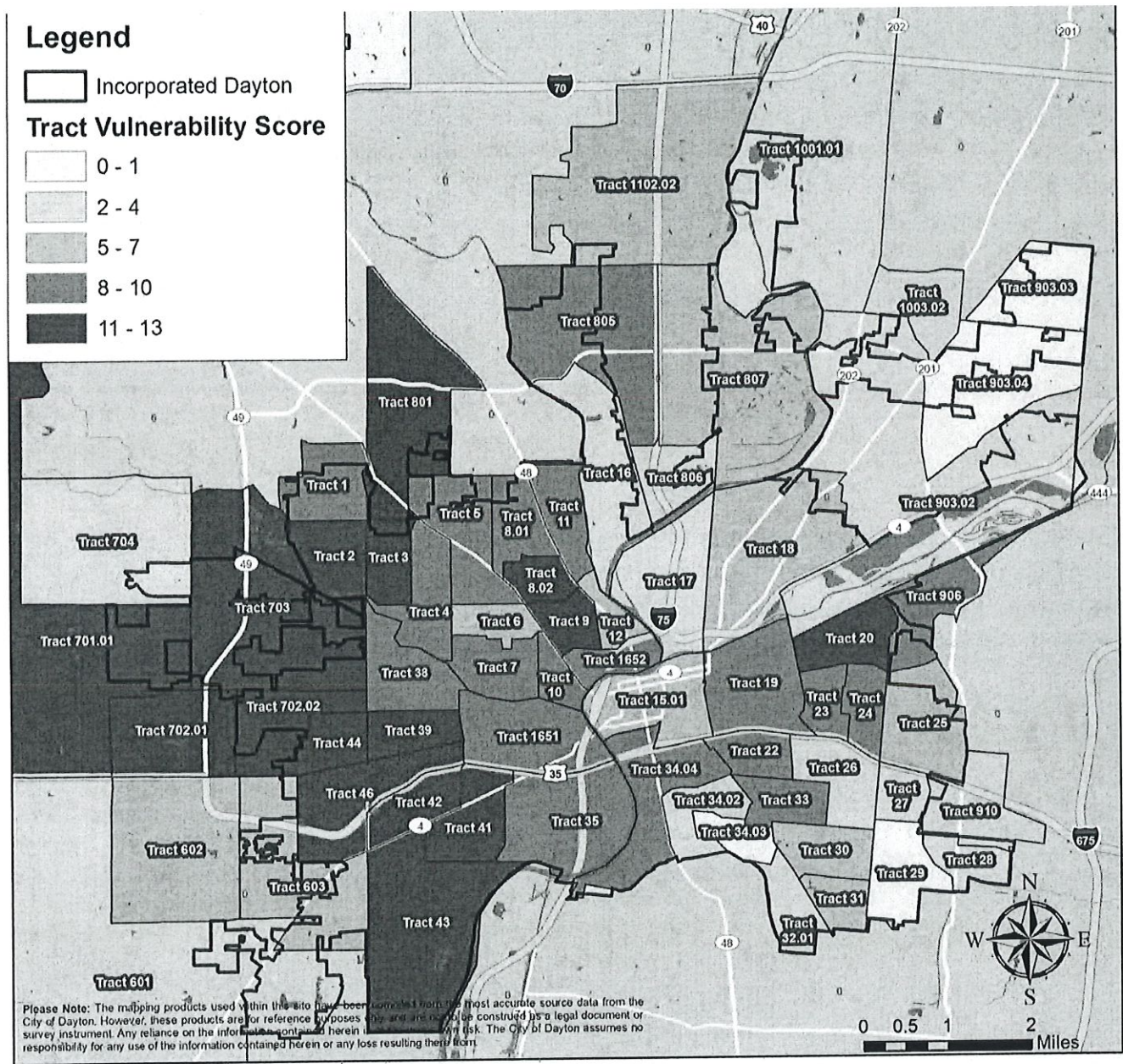


Figure 12: Census Tracts within the City of Dayton that have the highest overall socioeconomic vulnerability. The map highlights all of the Census Tracts with high averages relative to the rest of the City for: percentage of families in poverty; percentage of people with disabilities; and percentage of population that is non-white.

economic vulnerability score for that tract.

This analysis shows a notable pattern, with areas of higher socio-economic vulnerability located in the western portion of the city, with several other vulnerable tracts in the eastern portion of the city, along the Mad River. This pattern is driven by strong spatial trends in non-white population, percent of families in poverty, and populations with disabilities.

In the next section we highlight our exposure to historic,

current, and projected futures changes in weather and climate.