

WIDE BIKE USE AND FEASIBILITY IN ANN ARBOR, MICHIGAN

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INTRODUCTION

The pedal powered machine is one of the most efficient and versatile machines in the world. Human power can be put to work in vehicles that can go over 83 MPH or can be put to work in moving large and heavy loads (Figure 1 and 2). Around the world the “work bike” or “wide bike” as I am calling it, is a very important tool for many people to get things done. This form of utility and mobility is especially useful for those living with low incomes. The wide bike uses very simple and easy to repair technology that is available everywhere on the planet making it inexpensive to operate and not dependent on outside energy input. If pedal powered vehicles were more readily adapted in the United States, it could be an important part of moving us to a less energy dependent future. The goal of this research is to both determine the feasibility of large human powered vehicles on our streets and to promote the possible adaptation of vehicles such as these now for those for whom it could make positive economic impact.

TIME AS AN ENERGY RESOURCE

As energy availability decreases and costs rise over time we will begin to look at other ways to conserve and replace fossil fuel energy. I propose that one of the ways to do this is to look at time more formally as a resource to be spent as an option versus others. There will be a point for which this way of thinking may make economic sense – as the relative value of time and energy shifts. This way of thinking may also be of value today in dealing with the issue of income disparity and productivity in the US. With the huge range of personal incomes that our population has, the time vs. money equation already plays out differently for each person and it is easy to see this at work in the way people make transportation decisions. For some speed is of the utmost importance - the mode of transport is chosen by how fast it can be accomplished and these people have the means to pay for it. For most of us, we make that mode choice based on a combination of speed and cost – with the car apparently providing the best all around value most of the time plus the occasional flight for long distances. For

those in our country with little money they must make their choice based on the lowest cost. What are the low cost options? The bus, walking, or a bicycle, and these options also happen to require the highest time input. In these transportation options time is the main resource spent. For many people these options provide a reasonable way to get ones body from point A to point B, but there is a severe limitation if you want to move goods or tools. That is a big problem if we want every member of our society to be productive with his or her resources (including the resource of time). So my question is, if time is a person's primary currency, how could greater transportation options support a productive use of that resource?

I believe that the wide bike provides a compelling answer to that question. Wide bikes are already used effectively around the world as pick up trucks, ambulances, buses, cabs, mobile homes, or many countless other uses. However wide bikes are strangely absent from the roads in the United States. My question is, if the "wide bike" concept is introduced into our current infrastructure – what will happen? What would be the perceptions and limitations of having large and slow human powered objects on our streets? Would car drivers respect this new form of transport? That is what I was about to find out.

ANN ARBOR'S ENVIRONMENT FOR BIKES

Ann Arbor is considered the 14th best city in the US for bicycling (America's top 50 bicycle friendly Cities). I have spent a bit of time on my two-wheeled bike in Ann Arbor and that comes as a bit of a surprise – it does not seem that much better than other places I have lived. Ann Arbor does claim to have a bike system and the "Ann Arbor Bikeway System" (AA Bikeway System Map) does contain many street upgrades and paths to accommodate bicycle travel. Roads are being converted to "complete streets" where possible and paths are being added along some of the major roads. I would take issue with the term "system" being applied in this case however. A system implies continuity and my discovery is that there are many points where the continuity of the system breaks down. This breakdown of the system can be difficult on a two-wheeled bike, but becomes more challenging on the wide bike, both because of its larger size and also the difficulty of maneuvering.

GOALS AND METHODS FOR THE RESEARCH OF WIDE BIKES IN ANN ARBOR

The goal for this project was three fold: First, to understand how people in cars react to the “wide bike” on the roads; second to understand what elements in the built environment help or hinder the use of the “wide bike”, and third to create a map that shows which roads work best for “wide bike” travel. In order to do this I created a prototype that meets the legal definition of a bicycle and yet is a size large enough to allow for a wide variety of creative uses and adaptations. I then rode the prototype around the major streets of Ann Arbor to record the feasibility of a vehicle of that size on the roads and what the hindrances may be to its success.

THE PROTOTYPE

The Michigan Vehicle Code defines a bike as: *“Bicycle” means a device propelled by human power upon which a person may ride, having either 2 or 3 wheels in a tandem or tricycle arrangement, all of which are over 14 inches in diameter.* (Michigan Vehicle Code). This leaves things pretty wide open – with no width, length, or height given. I choose therefore to build a prototype with the dimensions of what I would consider average for a wide bike - 48” wide and 78” tall. Since my intension in doing this research is to open up the possibility for lower income people to create an option for themselves at a low cost, I made the prototype of an old three-speed granny trike and found materials. It was constructed in a low-tech method with little planning – simulating the conditions that others may use to make a bike and giving a similar appearance (Figure 3 and 4).

RIDING THE PROTOTYPE – RECORDING THE CONDITIONS

I rode the prototype wide bike around the Ann Arbor area over a course of three days. Below I explain the process of generating the map, the primary issues surrounding the use of the bike, and a summary of the overall findings.

MAPPING THE ROADS

I wanted to categorize all the major streets of our city so that in planning a route from point A to point B a “Wide Biker” could be sure to have a safe passage through town. Please refer to the “Wide Bike” map (Figure 5) below. Each color represents a specific situation on the road as would be experienced by a wide biker. My focus was on the usability of the major streets of the city – so that wide bike use and car use could come from the same

mental/visual understanding of how to move around the city. The city of Ann Arbor has already produced a bicycle system map (AA Bikeway System Map – Figure 6) that is also color coded, but the system relies heavily on neighborhood side streets to create a network of routes. It ignores the larger streets that do not have bike paths or lanes – leaving them uncategorized. It is my feeling that citizens prefer to use larger streets for more direct travel and therefore will end up using them if they are safe. My underlying assumption is that all small streets will be safe for travel on the wide bike because of the slow speed and low traffic volume of those streets. Please refer to the “Wide Bike” map (Figure 5) below as I explain the meaning of the color-coding.

* Green represents a distinctly separate space on a path or wide sidewalk for the bike to travel. Good examples of this are on Huron Parkway and Plymouth Road.

* Blue represents an “on road” bike lane that is wide enough to fit the wide bike (48”) Good examples of this are on Dexter and Platt south of Packard. Even though traffic is steady on those streets the rider can travel without much worry about traffic flow.

* Purple represents a road that has enough room for traffic to adjust to getting around the bike without causing trouble for other drivers – either by having a small bike lane and cars being able to shift to the left. Or by having a large center turning lane that could be used to go around the bike. Examples are West Stadium and Pontiac Trail. Purple also represents a road in which traffic is slow enough to allow the wide bike to **join** traffic flow. Any number of streets downtown fit this description including Main Street. Most neighborhood streets would also fit in this category.

* Yellow indicates places to avoid with the wide bike. Yellow represents situations where the cars speed, visibility, or ability to go around the wide bike may produce dangerous situations in traffic.

* Red indicates a road situation that does not support the wide bike in any way. These roads have heavy traffic flow and move at fairly high speeds. Some have sidewalks intended for walkers and regular bikes – but in many places the sidewalk is not big enough to support the wide bike. Examples are Huron and Jackson Road, North Main, and much of Geddes.

SIGNAGE INCONSISTENCY

The signage for bicycles in Ann Arbor has been placed in the hopes of “creating” a system, not to indicate a system that was already there. Because of this there is great inconsistency as signs are applied after the fact to a wide variety of variable situations. In addition, the desire for a contiguous “system” leads the signage to instruct the rider to at times jump back and forth between the road and sidewalk and for the cars to alternate apparently “having the road” and “sharing the road”. This leads to a general feeling of confusion and mistrust of what the signs are saying – both from the perspective of the bikes and the cars. There is not always a correlation with what the signs are telling you to do and what can really happen in that space. It does cause problems when your bike lane suddenly disappears and you are in busy traffic (Figure 7). There are many mixed messages. My personal favorite is the painted bike lying in the middle of the road that cars drive over daily – it becomes a kind of catharsis for drivers frustrated with bicyclists and an ominous threat to any biker that may get in their way (Figure 8).

SPACE INCONSISTENCY

This is really the major problem for the wide bike and goes along with the fact that the system is retrofitted. The space that is provided varies greatly – even along one route, which essentially lowers the ability to travel there to the lowest common denominator. For instance let's take Maple Street (Figure 9) the only major north south route on the west side of town. It provides a generous bike path between Dexter and Jackson roads - but no possibility of safe passage either north or south of it. So the idea of moving through this area becomes very difficult. You also see that problem coming north on South Main (south of downtown on the same map). A wide bike path brings you to the intersection, but then in every other direction - north, west, or east - there is no safe place to travel. There is no way to reconcile this problem except to know where you are going and to avoid those areas that the wide bike cannot pass.

OBSTICLES AND CURB CUTS

The bicycle environment is designed around a standard width two-wheeled bicycle and not set up for a three-wheeled bike that is 48" wide. So there are obstacles that cause problems with either the height or the width of the bike – poles set too close to one another (Figure 10) and low trees in particular, but thankfully these occurrences do not happen often and there is usually a way to get around them. The greatest problem I encountered on the wide bike is the diagonal curb cuts (Figure 11). The bike has a high center of gravity and upon going over the curb cut would shift to one side – losing contact with the pavement. The wheel would spin and then would abruptly shift to the other side and do the same thing - scary and awkward especially in an intersection. One major recommendation to the city of Ann Arbor is that going forward all curb cuts should be perpendicular to the line of travel. Of course this would not be an issue on the first place if the bike was accommodated on the road at all times, but since the sidewalk is used so often as the place for bikes it is a needed change.

WIDE BIKE RIDABILITY IN ANN ARBOR – OVERALL FINDINGS

So what did I learn from my time riding the roads? - I learned that in the places that are possible, the city of Ann Arbor has worked to try to accommodate the bicycle with bike lanes, bike paths, and bike signage. That accommodation was set up with a standard bike in mind; however there is usually a generous amount of space for a single bike and therefore the wide bike usually has the room it needs to pass safely through. The effective result is that a wide biker can pretty much get anywhere he needs to go within the area bounded by the highways around Ann Arbor – it may however not be a direct route. Looking at the map you will notice that there are many RED roads on the map – areas not safe to pass through with a wide bike. These represent the major obstacles to the wide bike in this system and definitely need improving for broad adaptation of this mode of travel. There are ways of getting around these obstacles although it could mean significantly longer routes.

Outside of route access the other main issue is one of safety. I was initially very concerned that this large and sluggish vehicle would put the rider at additional risk of accident. Strangely I have come to think that the size and slowness of the wide vehicle is actually an advantage over a standard bike. Its visibility and slow movements give

cars advanced warning of its presence and lots of time to anticipate a response. The vehicle also has the same visual presence as a car so when operating in a “car like” mode (as bicyclists are told to do in traffic) it is easier to hold that place in traffic because of its car like size.

The main drawback that I experienced on the roads is that since cars are unfamiliar with an object such as this on the street, they may do things that put the rider or other vehicles at risk - especially in an instance of impatience.

My way of combating this was to try to be as courteous as possible – moving out of the flow of traffic when possible – avoiding a situation of impatience. I found that if I did this and drivers could tell that I was trying to stay out of the way, the drivers around me gave me the time and space when I needed it.

My overall conclusion is that despite its imperfections, Ann Arbor, from both a built environment and driver perception standpoint, is largely “wide bike” friendly. I felt respected on the road and in most situations had the space I needed to be safe.

EPILOG - WIDE BIKE PRECEDENCE IN ANN ARBOR

In doing this research I also wanted to find out if there were others successfully using the “wide bike” model in Ann Arbor and in what method they were applying that model. I discovered three unique examples.

DAVE ASKINS HD HAULING

Dave lives on the west side of Ann Arbor near downtown and has chosen not to own a car. He bought a 6 foot trailer for his bike to move things when necessary and found it to work very well (Figure 12). He decided to supplement his income by starting a small delivery service within the city limits. This service would serve two functions - to put a little extra money in his pocket each month and get him out on his bike regularly – rain or shine, snow or sleet. His service focuses on bringing packages to the post office which he carries in plastic bins. The service works for both him and the customer because there is very little overhead costs involved - the customer gets a great deal and he keeps all of the charges for himself. This becomes a great example of the low cost wide bike model being more cost and price efficient than the standard gas powered one. (Ann Arbor's Workman Biker)

TOM BARTLETT – CONFERENCE BIKE

On any nice Ann Arbor evening you may find Tom Bartlett riding around downtown on his 6 foot wide - 7 person Conference bike (Figure 13). He invites people to jump on and join the fun – charging them \$5 for a ride around downtown. It is a novelty experience, not practical for anything except fun, but the bike does reinforce the potential of human power to move heavy things and the idea that there could be other modes of transport on the street. (Bicycle Built for Seven)

MR. B'S JOYBOX EXPRESS

Mr. B's Joybox Express is a 4 piece jazz band that brings a piano, drum set, and guitars all on bicycles to do their performances (Figure 14). They have toured across Michigan with their custom made bike which becomes a small platform for the piano and amps. The main bike with equipment weighs over 500 lbs. and two “pusher bikes” can be attached to the back to aid in moving it. This group again extends the possibility of pedal power - demonstrating the potential to move large and heavy loads through simple gear ratios. (Pedal Powered Quartet)

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Figure 1 and 2



Figure 3 and 4



Figure 5

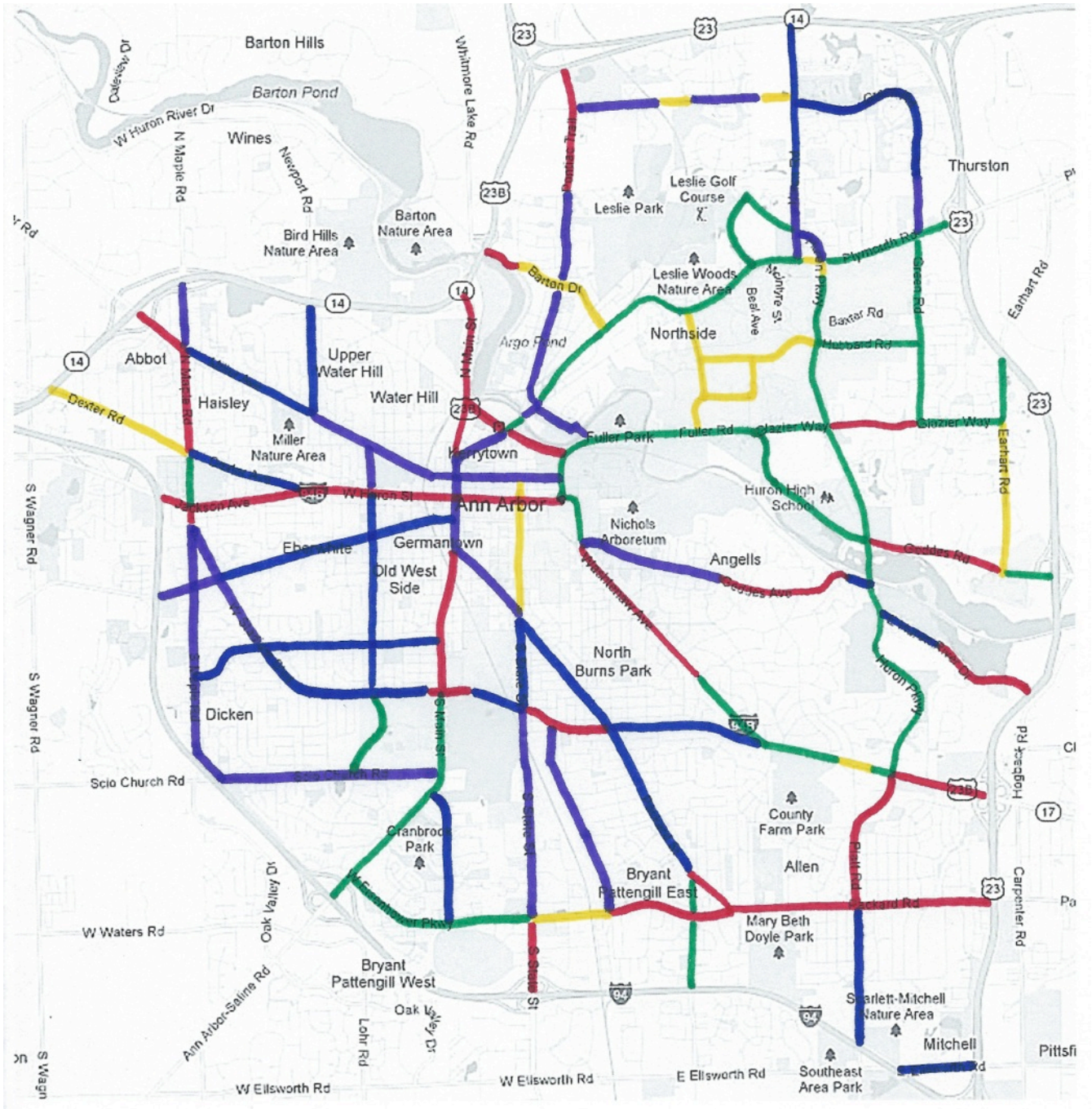


Figure 6

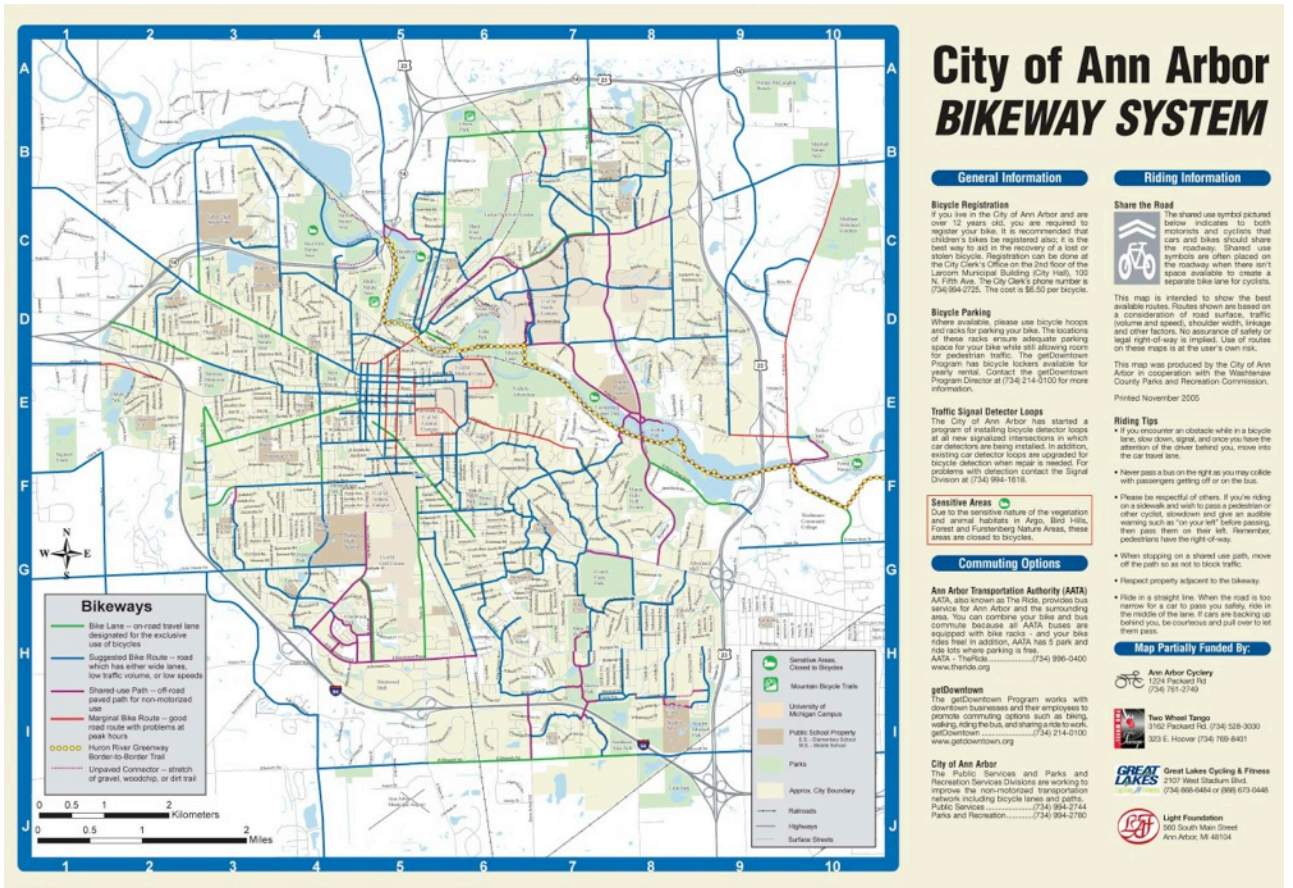


Figure 7



Figure 8



Figure 9

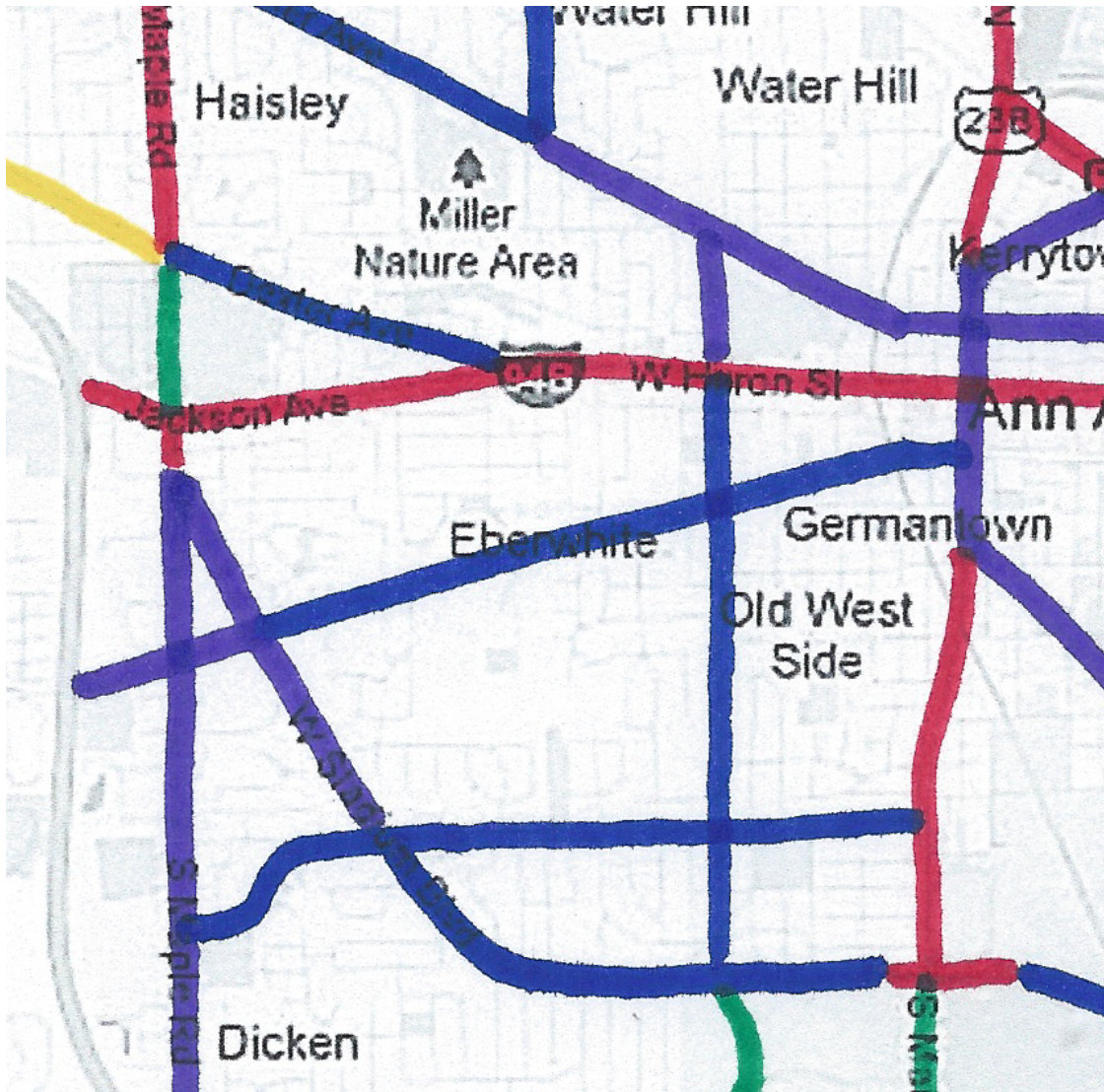


Figure 10



Figure 11



Figure 12



Figure 13



Figure 14

