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Biking in Indianapolis: An Ethnographic Analysis of Obstacles and Solutions

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Abstract

Indiana is known as the "Crossroads of America" for its historic investment in vehicle infrastructure. This focus on automobiles has shaped Indianapolis's urban landscape, to the dismay of many cyclists. Based on semi-structured interviews with a range of stakeholders in the Indianapolis cycling community, including urban planners, bike commuters, IndyGo employees, city government officials, and bike advocates, this project identifies and evaluates the current barriers that prevent Indianapolis residents from riding their bikes. These obstacles, which include infrastructural, safety, and social factors, make it more difficult than it ought to be to bike in Indy.

For my thesis project, I researched Bike Indianapolis's Neighborhood Rides and Bike Guide partnerships, as well as Bike Party and other independently organized rides, which allow cyclists to build their skills and enthusiasm for biking. Additionally, I interviewed stakeholders with different areas of expertise, who had numerous suggestions about what would help further Indianapolis's transition towards greater bike-friendliness, providing solutions to several of the challenges that riders face.

The project captures a moment in Indianapolis's history through the viewpoint of people passionate about cycling. Further, the solutions and suggestions in this paper can be used as a model for improving the city's bikeability. My passion for cycling and my position as an intern for Bike Indianapolis make me cautiously optimistic for a brighter future of biking in Indy.

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1. Introduction

1.1 The State of Biking in Indianapolis

The 20th century brought with it a heightened emphasis on automobile infrastructure across the nation, and Indianapolis was no exception. The 1916 Federal Highway Act paved the way for road and highway expansions throughout the United States. Shortly after the 1956 interstate highway system approval by Congress, Indiana governor Harold W. Handley committed the state to a $1 billion construction of 932 miles of highway, solidifying the state's identity as the "Crossroads of America" (Glass 2018). This emphasis on individual mobility through automobiles is a large reason why today, in Marion County alone, there are almost 27 million vehicle miles traveled each day, putting this region just above the average vehicle miles traveled per capita in America (INDOT 2020). Given the established network built for individual vehicles, it is not surprising that taking an automobile is the most common method of commuting to work. 85 percent of Indianapolis residents drive by themselves to work, and 10 percent more carpool (Indy DMD 2018).

The prevalence of car infrastructure, though, does not mean that the city is devoid of ways to navigate by bike. Indianapolis boasts many nationally recognized trails, one of which is the Monon Trail, connecting the northern suburb of Carmel with downtown Indianapolis. This 25-mile-long trail serves many Central Indiana residents, and researchers found that traffic counts range from "12 users per hour on weekdays in Greenfield in September to 168 users per hour on weekends in Indianapolis in September" (Lindsey & Nguyen, 2004, p. 214). The Indianapolis Cultural Trail is another one of the city's greatest assets in terms of bike infrastructure. This eight-mile-long trail

connects six different cultural districts downtown. In 2015, this trail allowed for 47,654 rides at its lowest trail counter in Fletcher Place and 214,829 rides along Alabama Street (Majors & Burow 2015). There are also several arterial trails around the city, and this bike network is complete with 104 miles of bike lanes (Indy DMD 2018).

However, regardless of the numbers, biking in Indianapolis is still a second, third, or even fourth option to driving. The 104 miles of bike lanes in Indianapolis make up only 1.2% of the 8,175 road miles in the city (Indy DMD 2018). The effects of the historic investment in automobiles over other transportation options can be seen in evaluations of Indy's bike friendliness by national bike advocacy organizations. For instance, The League of American Bicyclists releases report cards for cities around the nation, ranking them based on "10 Building Blocks of a Bicycle Friendly Community" and giving out a rating of bronze, silver, or gold. This assessment found that Indianapolis has especially low rates of bike commuting, and the number of fatalities is exceptionally high (American League of Bicyclists 2019). Education pertaining to motorist awareness and bicycling skills, enforcement of safety and bicyclists' rights, and evaluation and planning of infrastructure are the city's lowest ratings and areas for targeted improvement. Overall, Indianapolis received a bronze rating for its bikeability; however, it meets the criteria for silver for having an "active bicycle advocacy group" which highlights a changing attitude by residents who hope to see more infrastructure.

PeopleForBikes is another national organization that "works to make biking better for everyone," and they also compared Indy's bikeability to other cities across the United States. Overall, they ranked Indianapolis in the 16th percentile of all cities surveyed and in the even worse 9th percentile among 104 "large cities" evaluated (PeopleForBikes

2021). This analysis ranked Indy's bike network, which is defined as access to transit, amenities, essential services, neighborhoods, and jobs and schools well below the national average. This organization also found that almost every single street in the Indianapolis area is characterized as "high stress," which is the antithesis of "bikeable." However, similar to the League of American Bicyclists, despite the discovered infrastructure woes, Indianapolis was given an above-average ridership and community score of 56, with the national average being 48 (PeopleForBikes 2021). This figure reflects the well-established biking community and high demand for cycling in the city.

Although there exists a large amount of literature on cycling and bike-friendly cities, there are very few studies specific to Indianapolis that extend beyond the Monon and Cultural Trails. Indianapolis-specific obstacles to cycling have yet to be researched, and there is a present need for different stakeholder input to guide Indy's transition to becoming more bike-friendly. Because every city has a different urban environment, there is no panacea to spur a cycling renaissance, and no two cities have the same barriers to cycling. Bell & Ferretti (2015) found that planners rarely consider all of the stakeholders when building cycling infrastructure, and more collaboration with urban designers, asset managers, and engineers is necessary to create effective cycle routes and structures. Brezina *et al.* (2020) argue that there is a difference in understanding the issues and solutions surrounding cycling between different levels of the community. Many administrators, for example, believe that they are already giving cycling the highest priority, but other stakeholders, such as city planners and actual cyclists see additional measures that could be taken.

This present study engages with multiple constituencies of the Indianapolis bike community to discover obstacles and solutions related to numerous levels of decision-making. More specifically, this study aims to address the primary research question: "What are the current barriers that prevent Indianapolis residents from cycling, and how can they be overcome?" Through qualitative, semi-structured interviews with different stakeholders in the bike community, as well as ethnographic methods of data collection from partner, group, and community rides, this study will add to the existing literature on cycling in cities and Indianapolis.

From my informants, I learned that there are a couple of forces that affect the built environment of a city, and they are often referred to as the "supply" and "demand" sides of infrastructure. On one hand, supply refers to the city's efforts to design, build, and modify the urban landscape from a top-down approach. On the other hand, demand is a bottom-up interest from cyclists, advocates, organizations, pedestrians, and citizens alike in utilizing and improving that infrastructure. The above-average ridership and community scores of Indianapolis highlight the prevalence of the "demand side" for making the city more bikeable. This groundswell of support and activism, combined with the ongoing city projects on the "supply side" suggests that Indianapolis is moving toward being a city with safer and easier biking despite the activity's historic marginalization; however, future developments must be made with intentionality and be based on best planning and infrastructure practices for all stakeholders.

1.2 Indy's Changing Attitudes

Perhaps in response to the issues found in its bike network, in recent years, Indianapolis has seen a change in its prioritization and planning of transportation

infrastructure. Timothy, a professor and urban geographer who I interviewed for this study, described the changing attitudes toward city planning and vehicle infrastructure:

> We're kind of in this paradigm shift that typically happens in academia every few decades where things change. So now it's a matter of educating the citizenry what they're missing and what can be. That's the supply side of the educators and the planners. People educating city hall and planners trying to get their projects through.

Timothy was my professor for a course that I took during my thesis research. In our class, we learned that "modernism" was the dominant paradigm throughout most of the 20th century. This architectural and urban style was characterized by single-use zoning, an emphasis on efficient use of space, and structure rather than the design of buildings. This design strategy also coincided with the suburban sprawl of the time and the widespread adoption of personal automobiles to travel between the increasingly distant housing developments and downtown city centers. Over the past decade in Indianapolis, there have been many intentional efforts to undo and replace many of the 20th century's automobile-centric transportation decisions. This shifting focus for the city has resulted in a greater emphasis on alternative methods of movement, one of which is biking.

In the past several years, improving cycling infrastructure in Indianapolis is and has been a consistent effort on the supply side. There are two primary plans informing and guiding bike route development: the 2018 Indy Moves Plan, a Marion County-specific plan with ten-year visions and goals, as well as the Indy Greenways Full Circle Plan, a comprehensive strategy focusing on eight facets of transportation. The city of Indianapolis used these two proposals as the inspiration for one of the most exciting current projects and proposals in Indianapolis: Proposal 290 - Circle City Forward Phase 3. This proposal passed unanimously through City Council on September 18th, 2021 and invests $25 million into Indianapolis trail connections and expansions. This project,

funded by budget holdbacks during the pandemic and American Rescue Plan funds, will finish the original Pogue's Run Greenway, extend the Pleasant Run Greenway south to connect it to the White River Trail and Eagle Creek, and create Westside connections between the Eagle Creek Trail to the B&O Trail and Speedway. On top of that, this plan will fund the design of many other bike infrastructure projects, including connections from the Grassy Creek Greenway to the Pennsy Trail and future Purple and Blue Bus Rapid Transit (BRT) lines, an East 21st street road diet (lane and width reduction), and an interurban trail on Madison Avenue, among others (See Appendix A for map of plan).

Throughout the city, there are also many other bike infrastructure projects materializing. For instance, for the first time since its construction in 2013, the Cultural Trail will get expansions in two different areas. On the southern side of the trail, the route will extend from New Jersey Street to Capitol Avenue, connecting Southern Indianapolis neighborhoods as well as providing trail access to Lucas Oil Stadium. In the Northwest, the Indiana Avenue expansion aims to better integrate historically and culturally significant neighborhoods into the downtown community (Indianapolis Cultural Trail 2021). The 2-mile, $30 million project is expected to be completed in the spring of 2023, and it also includes trail maintenance, public art funding, and traffic-calming measures along the trail (Dwyer 2021).

These two major design and construction projects are symbolic of the city's awareness of the current paradigm shift in transportation. However, there is perhaps an even stronger demand side of the paradigm shift in transportation and biking in Indianapolis. Micah is a former governmental city planner, and he worked extensively on the canal trail project downtown. I met Micah at one of our first Wednesday night Near

Eastside community rides and in our interview, he explained the current attitudes toward transportation in the United States.

> You also have a culture shift on the demand side where there is a segment of America in the last several decades where they decided that they don't want to live in the car anymore. And there is a generational shift. Some good news here is that your generation, [Generation Z], is much less interested in automobiles than my generation was. My generation is less interested than the previous one who just assumed that cars were part of their world.

In the following pages, I highlight much of the demand side of this shift toward a more bikeable city. There are many different stakeholders all calling for improved safety, access, and education surrounding biking in Indianapolis. Commuters, volunteers, urban planners, government officials, bus drivers, and community residents alike all act as frontline advocates for better bike and transportation infrastructure. Andrew, a government official and transportation professional who I spoke with for this project noted:

> A lot of times people are just going to be angry curmudgeons the whole way through, and they have to be drug kicking and screaming. They're not going to be swayed by the safety aspect of infrastructure because they don't care. They don't care that it's safer. All that they care about is that they perceive it as it getting in their way. And so really the way forward is not to try to convince a broader section of the public that this is a good idea. But rather, start building a coalition of individuals who already think it's a good idea, and start building that groundswell and influencing local politicians to implement these policies as a good idea.

1.3 Case Studies of Bikeable Cities

There is ample research about cycling and urban planning, but very little of it is specific to Indianapolis. The studies that have been done in other cities can help Indianapolis identify its obstacles and begin to brainstorm solutions on many levels to both increase ridership and the infrastructure and education that allows for it. For example, many cities in Scandinavia are praised as the most bike-friendly in the world, which has led to much research in this region. Citizens of Copenhagen, for example, do not ride their bikes for environmental or economic benefits. Rather, because the city was

planned around cycling, it is the most convenient and fastest way to get around town (Scott 2020). Other studies echo these findings, claiming that the large-scale adoption of bikes in Scandinavia also has to do with the city's focus on high urban density and the accessibility and availability of safe infrastructure and parking (Giglio *et al* 2021).

Recently, other European cities have become desirable bike destinations known for their urban transformations. Berlin, for instance, underwent a "cycling renaissance" in the early 2000s that was driven by four primary considerations: the less expensive cost of cycling compared to other forms of transportation, the speed that riders could get places compared to cars, Berliners' growing awareness of environmental and health benefits of cycling, and the city's high density (Sheldrick *et al* 2016). These researchers noted that the timing of this cycling renaissance was also crucial to its adoption, for it came at a point where there was a high demand for biking and an uptick in the number of bikers on the road. The urban transformation in Berlin can act as a model for the ongoing Indianapolis conversion toward bike friendliness, as Indy is also in a position of increased ridership and demand for the policies that Berlin put into place.

Closer to home, Toronto is another city undergoing an urban redesign centered around bike riding. A study analyzing the use and patterns of newly built cycling facilities in Toronto's urban and suburban areas found that residents are 2.26 times more likely to cycle on streets with new on-street infrastructure than on streets without any facilities (Mitra *et al* 2021). Moreover, researchers found that ridership increased across socio-economic classes, with both higher- and lower-income groups cycling more than they had before. Consistent with the law of induced demand, Toronto can act as a case

study for Indianapolis, or any other aspiring cycling city, that simply building more bike lanes might act as a solution to improving biking.

Finally, several domestic cities have or are beginning to make room for bikes. In New York City, for example, implementing bike-share programs increased the prevalence of cycling and shifted modes of transportation in areas where docking stations are common (Yu *et al.* 2018). In Seattle, Washington, intentional government efforts to resurface roads, fill potholes, widen curb lanes, stripe lanes, and provide free bike-route maps have all contributed to increases in ridership (Putcher *et al* 2011). Additionally, from 1993 to 1997, the city installed 1,622 bike racks and added bike mounts to all city buses, and these efforts coincided with a 28% increase in peak morning cycling in Seattle's downtown from 1992 to 1995 (Putcher *et al* 2011).

When using other cities as potential models to guide bike network improvements, it is also important to recognize and control for other variables that differentiate urban areas. One major consideration for all transportation options, and especially walking and biking in a city, is the area's density. One way of measuring the density of the built environment is through intersection density, which is the number of intersections per unit area—usually a square mile. According to a 2010 study on the effects of street network design on biking, "increased street network density… was generally associated with more walking and biking," and "safety outcomes improve as the intersection density increases" (Marshall & Garrick, 2010, p. 114). Intersection density is a metric often used in academic evaluations of a city, and given the relatively recent interest in urban studies in Indianapolis, city density as a function of intersection density has not yet been

researched. Therefore, population density can be used as an alternate comparison to the researched cities.

Indianapolis has a low population density when compared to the aforementioned model cities. Indy's population is quite dispersed, with around 2,500 people living per square mile. Copenhagen boasts a density of about 18,000 per square mile, Toronto has around 10,750 per square mile, and Seattle comes in at just over 9,000 people per square mile (World Population Review). Therefore, Indianapolis efforts may also have to target this disparity in density alongside bike infrastructure and bike network improvements to reach its bikeability potential.

Different city planning methods and infrastructure improvements across the nation and world can act as case studies for Indianapolis or other areas hoping to improve their bikeability. However, other research has also pointed to potential bottom-up solutions to improving the bike-friendliness of a city. One of the driving forces in San Francisco's modern cycling resurgence were the monthly "Critical Mass" rides that began in 1992. Researchers found that these Friday night group rides started with hundreds and eventually grew to thousands of riders, which reversed the image of cyclists as lonely, second-class citizens and instead made riding out to be an expression of community (Putcher *et al* 2011). The study also argued that the Critical Mass rides throughout the city are a large reason for self-identifying commuters jumping from 1.0% in 1990 to 3.7% in 1997 and for the bike traffic increasing up to 80% on major corridors in the city.

These community rides have had a hand in many bike movements across the world, and research has found that in parts of Canada, they fall into two different camps.

First, several rides throughout the year act as mass rides of resistance against car culture. For instance, each year Toronto is a host city for the World Naked Bike Ride to protest the prevalence of automobiles and promote both cycling and body positivity (World Naked Bike Ride Toronto 2022). These rides create friction with motor vehicles and serve as an argument for more bike-friendliness. A bit different are the "tweed rides" through the city, which encourage local businesses, restaurants, families, and single riders of all ages to attend (Scott 2020). In both ways, attention is drawn to cycling, and riders engage differently with their communities. Indianapolis has similar rides of many scales that I will evaluate for their effectiveness in promoting bicycling later in this study.

In addition to research on specific cities and their urban development projects, general studies have been done to about best bike infrastructure practices. For instance, it is well-established that designated bike lanes significantly increase the likelihood that someone uses their bicycle (Krizek & Johnson 2006). Bike paths and bike lanes have also been shown to have a positive correlation with the number of people who commute to work (Buehler & Pucher 2011). I will also build upon this established research on bike infrastructure and add Indianapolis-specific recommendations from local and professional experts.

2. Motivations and Methods

Cycling has been my primary focus for the past year of my life. Last March, when I was drafting a proposal for this undergraduate thesis, I was advised to pick a topic that I wouldn't get sick of working on for my entire senior year. For me, that topic is bike riding. You see, I'm from Madison, Wisconsin, and one of my favorite workouts and pastimes is to bike from my house, all the way around one of the two lakes flanking the

isthmus, riding on the protected lanes and marked trails through the various suburbs of the city. Madison's population density is just over 3,300 people per square mile, which is comparable to Indy's (World Population Review). However, biking back home is easy. Biking in Indianapolis is not.

This reality became very apparent to me when I began riding around Butler University my freshman year. Four years ago, I was in the same spot as several of my informants: a new rider in Indy who primarily used the Monon Trail because of my lack of knowledge about the existing bike network. Having to cross Meridian and College on my way to the trail from campus was stressful, only to be rewarded with a busy trail with stop signs and street intersections every mile or so. Fast forward four years and the trek to and from the Monon is perhaps even more treacherous, with new potholes popping up monthly.

My passion for improving Indy's bikeability is primarily influenced by my near-seamless experiences riding around Madison's downtown. Nothing gives me more satisfaction than passing cars waiting at stoplights on University Avenue from the protected bike lane when I'm back home. Biking truly is one of the most fun and efficient forms of transportation when planned for, and this ideal is possible in Indianapolis. I wanted to see if other people shared my viewpoint, so I started getting involved in Indy's bike network and asking people questions.

Ethnographic principles that I employed throughout my data collection included open-ended interviews with informants, immersion in the field to conduct participant observation, and content analysis/coding of qualitative data (Ventres & Frankel 1996). This qualitative study used ethnography as the guiding lens for data collection, and I

supplemented my field experience by following Indianapolis transportation accounts and topics on Twitter. Following social media allowed me to stay up to date with current events and problems in the Indy biking network. Finally, I researched and collected relevant local government reports and transportation publications as part of my literature review to familiarize myself with Indy's current and historic transportation strategies and how they compare to other big cities in the United States and abroad.

Setting and my position

Ethnographic research is performed through the lens of the investigator, which makes it important to understand the relationships and positions that informed my viewpoints and analyses. I performed all research within the Indianapolis metropolitan area, either in person or over Zoom. All informants were current Indianapolis residents at the time of interview. My research position as both a student at Butler University and as an intern for the nonprofit organization Bike Indianapolis informed much of my sampling and perspectives for this study.

As an intern for Bike Indianapolis, I organized and led community rides around Indy four days a week. Between one to ten riders attended these weekly low-stress, community rides in different areas around the Indianapolis Metropolitan area. Throughout these routes, I conversed with the other riders, asking them about their riding habits and their perspectives on cycling in Indianapolis. My position as an intern also led me to neighborhood development meetings and city council presentations.

My personal interest in cycling also led me to field sites like Bike Party, a critical mass ride on the first Friday of each month, as well as one-on-one rides with coworkers and individuals within my bike network. Beyond the community rides for Bike

Indianapolis, my connectivity to the Indianapolis bike scene added an additional dimension to participant observation.

Interviews:

For this study, I performed 18 open-ended, semi-structured interviews with different stakeholders in the Indianapolis biking community. These interviews were primarily conducted to determine the different obstacles and challenges to biking in the city. There were no informants who declined to be interviewed or failed to respond.

Questions for informants were based on their expertise, occupation, and appropriateness. Follow-up and clarifying questions were also asked. Stakeholder interviews ranged from 15 minutes to 85 minutes. (See Appendix B for list of interview questions)

Additionally, I evaluated the Bike Guide program, a riding program that partnered a novice with an experienced rider, as a potential solution to overcome the discovered obstacles. I reached out to 13 bike guides who had completed their ride partnership with their novice rider, and eight responded. Six of these eight were interviewed, and two declined to be informants for this study. Bike Guide interviews ranged from 25 minutes to 75 minutes. Interview questions were meant to measure both novice rider progress and the program's logistics. All interviews were recorded, either through Zoom or through Voice Memos and were transcribed by hand. These transcriptions of informant responses were then coded into prominent themes and analyzed to be accurately organized and reported.

Participant Observation and Field Notes

As an intern for Bike Indianapolis, I became very connected to the Indianapolis bike network. Primary field sites included the locations of my four community rides, as well as the three Bike Party large-group, community rides I attended from August to December. Immediately after spending time at each field site, I recorded observations and reflections of riders, ride behavior, and conversations I had with participants in a field note journal for future coding and analysis. I also collected pictures over a five-month period.

Participants

Throughout my data collection, I met many diverse people with different interests and expertise. These included three urban planners, one government official, three cyclists of varying skill and experience, one bus driver, and one cycling advocate by profession.

Additionally, I interviewed eight bike guides and one novice ride partner, and four of these informants were also interviewed as stakeholders in the biking community. In total, ten informants were men, seven were women, and one was non-binary. I took several measures to preserve anonymity in this study. In all the research materials and in this report, I used pseudonyms for each of my informants. Additionally, no specific personal identifiers are used to protect the identities of interview participants. In the following table, the first stakeholder characteristic listed for each informant is considered each informant's primary role for this study.

Informant Pseudonym	**Stakeholder Role**
Luke (M)	Urban Planner, Cyclist
Timothy (M)	Urban Planner, Professor

Micah (M)	Urban Planner, Government: Department of Metropolitan Development, Cyclist
Andrew (M)	Government: Department of Metropolitan Development, Cyclist
Liam (T/T)	Bike Advocate, Cyclist
Joseph (M)	Cyclist, Ride Leader
Carson (M)	New Cyclist
Walt (M)	Cyclist, Postal Service Driver
Winston (M)	Bus Driver, Cyclist
Caroline (F)	Cyclist, Bike Guide
Natalie (F)	Cyclist, Bike Guide
Samantha (F)	Cyclist, Bike Guide, Ride Leader
Kate (F)	New Rider (paired with Tyler)
Tyler (M)	Bike Guide (paired with Kate), Cyclist
Madison (F)	Bike Guide
Lydia (F)	Bike Guide
Nancy (F)	Bike Guide
Dean (M)	Bike Guide, Bike Advocate

3. "Living in Indy? Love the Experience. Biking in Indy? It has its Challenges."

Several obstacles might prevent cyclists of many different skill levels and purposes from riding in Indianapolis. Based on content analysis of interviews, but also from participant observation and personal experience as a cyclist in Indianapolis, I identified four major categories of obstacles to cycling that emerged as prominent themes: our built environment, cycling safety, social factors, and targeted problems and solutions.

3.1 Our Built Environment

3.3.1 (Lack of) Bike Infrastructure Poses Problems

Perhaps the most obvious place to start when discussing the obstacles to biking in a city is the current infrastructure, for that is the most tangible and concrete aspect of a city's bikeability. In the fall of 2021, I first met Andrew, a transportation planning administrator for the city government of Indianapolis. He commutes to work on his bike, and he cycles recreationally in his free time. I met Andrew over a couple of drinks at Centerpoint Brewing with Bike Indianapolis coworkers and other cycling enthusiasts for a city council celebration of Proposal 290, the project that invests $25 million into Indy trails and greenways. When I later interviewed him over Zoom, he explained to me how poor cycling infrastructure deters new and unfamiliar riders. One focal point for Andrew was the "awful" New York Street bike lane that he uses to commute to work. He joked that he knows where every single bump, crack, and pothole is so that he can avoid these hazards. Andrew went on to admit that "if someone were just starting out on a bike, it would suck, and [the New York bike lane] would absolutely drive them away from it."

The key takeaway from this is that poorly maintained or underdeveloped bike infrastructure deters new riders. However, I also found that it can prevent experienced cyclists from riding through an area, making it an obstacle for bikers of all skill levels and purposes. Winston is a gentleman in his early 20s who I met during my Wednesday night Near Eastside neighborhood rides. We've ridden together many weeks, and we've run into each other at many bike advocacy events. He works as an IndyGo bus driver, and because he drives so often as part of his job, he commutes almost everywhere by bike. Despite his tremendous experience and familiarity with Indianapolis by bike, Winston

will still completely avoid parts of town where bike infrastructure is underdeveloped. Frustrated, he said that he "completely avoid[s] the Westside because the infrastructure is horrible, and the streets are poorly designed. Especially far north, like 86th to 96th. The infrastructure is just not good up there."

It is generally agreed upon in the biking community that the Southside and the Westside are unpleasant areas to ride because of their lack of bike lanes, paths, and trails. Liam is another rider who frequently comes to our Wednesday night Near Eastside rides. I met Liam first through Bike Indianapolis advocacy events, and we have remained close ever since. They are in their early 20s, and they are pursuing a master's degree in urban design. Liam echoed Winston's statements, saying that almost half of Indy isn't navigable by bike.

The lack of bike infrastructure in an area prevents both new and experienced riders from navigating these places. However, I also discovered that not all bike infrastructure is created equal, and some bike paths encourage ridership more than others. Winston commutes to work downtown from the Near Eastside, and he explains that while he's riding, "the infrastructure goes to crap a little bit." When he finally gets downtown, "the bike infrastructure goes from protected to painted, so it can be frustrating dealing with cars." Especially problematic on his route to work is "that section of Michigan right by Mass Ave when it turns to 'sharrows,' and a lot of cars get frustrated when you're in their lane." Sharrows are a particularly contentious form of bike infrastructure in the cycling community. They are simply painted arrows on the street above a clip-art bike that remind drivers that bikes can use the full lane. We will see that the lack of traffic

separation is a weakness of this marking strategy, but they can come in handy for initial bike network developments.

Winston's analysis of his ride to work suggests that there is a hierarchy of effectiveness and safety for bike infrastructure, with protected bike lanes at the top, painted lanes following, and sharrows at the bottom. Bike infrastructure that does not separate bikes from traffic, like sharrows also plays a role in preventing riders from maneuvering through certain areas.

Besides physical routes for bikers—trails, bike lanes, and paths—many riders and planners find that signage for bikes, another key feature of bike infrastructure, is lacking. Timothy, the urban geographer and professor, has lived in the Indy area for six years, and one thing that he has noticed is that "Indy has much older streets, and they're not signed very much for bicycles." He focuses on the Monon Trail, describing how it's "hairy" getting through some of the intersections because of a lack of signage for vehicles that cyclists and pedestrians are crossing, especially at the 86th street crossing. This subtle yet important aspect of bike infrastructure creates additional stressors for cyclists in Indy by creating easily avoidable risks.

3.1.2 Disconnected Trails:

Trails are another important facet of Indy's bike network. The use and role of trails in Indy's bike network are contested topics for different stakeholders in the cycling community. Across the board, stakeholders believe that trails are an overwhelming strength of Indy's bike network where they exist. Andrew, the government planning professional, believes that Indy has a very good trail system compared to many other American cities:

> When it comes to other mid-sized cities like us, we do really, really well. We have a very strong trail system that follows a lot of really densely populated core routes—the Monon is one—and they follow our parkway system.

This is a very popular opinion. Winston commented that "the greenway network is pretty good—already better than most cities [he's] been to," and Luke, an urban planner and the walk and bike coordinator for a nonprofit organization that promotes active living through transportation infrastructure, found through his work that "regardless of your views on how things should be infrastructure wise, people are very into trails."

However, despite the praise that existing trails deserve, stakeholders of all backgrounds also believe that there is room for improvement. In order to become a viable transportation option, Winston, the IndyGo driver and everyday cyclist, believes that the Indianapolis trail network needs to be more extensive and connected. He thinks that the biggest weakness of Indy's trail system is its lack of connectivity to neighborhoods in the city. Unfortunately, people must drive their bikes to the greenways in their areas because they aren't well connected to where people live:

> They pull up and they'll bike the greenway, then they'll pack up and drive home. I think if the connectivity of the system was better to neighborhoods, then you'd see a lot less cars in greenway parking lots, which would be a good thing.

Andrew, the government planning professional, points out that one reason for Indy's lack of current trail connectivity is because of the metropolitan area's size and land use. He pointed out how Indy has "80% the land area of Los Angeles, with one-third of the population. So that makes it really hard to get the trail network to reach all the places it needs to go." Luke loves trails for leisurely riding and commuting, but he also agrees that "the weakness of our trail system is that they're not everywhere...The lack of it in different spaces is the biggest weakness." He continued to say that for example, "our Southside friends have been advocating for years to get on the Monon. A lot of times, the

grid on the Southside is not conducive or connected at all, so it is hard." Luke agrees that the Monon Trail is a great movement tool for cyclists, but not everyone in the city has access to it, so it is not as useful as it could be.

Despite the popularity and use of trails in Indy, some cyclists and urban planners warn against putting too much emphasis on them when developing Indy's emerging bike network. Luke warned against neglecting other bike infrastructure, such as bike lanes, in favor of trails because the goal is not to keep riders off of the road and on trails:

> You shouldn't rely on trails to get you everywhere. Trails are kind of a highway of our communities. Because of that, it's very important to prioritize and continue to prioritize street infrastructure that provides infrastructure for bicycles.

It might seem counterintuitive, but over-emphasizing trails can become problematic for cyclists trying to take shorter trips to nearby locations such as grocery stores, doctor's offices, churches, bars, or coffee shops. These rides are often more efficient when bikes can take the same routes that a car would, just within designated bike lanes or marked roads. Infrastructure and cyclists shouldn't be solely reliant on trails.

Finally, the trails that are well-connected in Indy and serve as effective mobility routes sometimes end up being so congested that they cannot effectively serve their purpose. Natalie is an experienced cyclist who moved to Indy from Pittsburgh last year. She and I met for tea at a community café in town, and she told me that the Monon Trail does a good job "actually get[ting] people to the destinations they want to go." However, Madison, another experienced rider and bike guide who has lived in Indy for 14 years, disagreed, saying that because of the Monon's connectivity compared to other trails in Indy, it is often over-utilized. Her frustration was evident: "The Monon is way too crowded. And all of the people not paying attention to the world. And the dogs on retractable leashes. Ugh don't get me started on that." It is an unfortunate truth that

anyone cycling the Monon has faced—the trail is crowded, which turns off many riders who might otherwise use it as a useful tool for transportation. The mixed-use nature of the trail, combined with a lack of alternative options for efficient movement via bike contributes to the trail's congestion and popularity. These conflicting stakeholder accounts point toward an interesting issue: infrastructure should be well-connected and utilized, but not to the point of overuse, which ends up reducing its overall safety.

3.1.3 Walking, Busing, and Driving in Naptown

It is impossible to completely isolate and evaluate the bike infrastructure of a city without discussing the overall transportation infrastructure as well. Bike lanes, trails, and signage only make up a small fraction of a city's overall transportation framework, and connectivity to other robust transportation methods can be mutualistic for multiple forms of transit and movement.

Stakeholders from many different backgrounds agree that transit options in Indianapolis ought to work together with cycling to improve the accessibility and range of both. I met Micah at a Wednesday night community ride, and he had just retired from a decades-long career in urban planning. During our interview, he pointed out that "riding the bus with your bike gets you so many more places," and by combining the two, more areas of Indianapolis become accessible. When thinking of combined transportation options in Indy, the bike-bus connection is by far the most common, and it allows both bus riders and cyclists to go more places.

Many Indianapolis residents combine bus transit with biking, myself included. Walt is a young downtown resident who sold his car in favor of biking everywhere he needs to go. He says that the bike racks on IndyGo buses and the new Bus Rapid Transit

(BRT) lines make it very easy to combine transportation methods. He also notes how taking his bike on the bus "dramatically increases the range in which [he] ride[s], not just for pleasure, but also for work."

Urban planning experts like Andrew often emphasize the centrality of "multimodal" systems to building successful bike-friendly cities. As Andrew explained to me, a system that "emphasizes transit, biking, and walking" will be "a little bit more dense, more vibrant, more accessible for all ages and abilities of individuals." The reason why cities with robust pedestrian and transit infrastructure have greater density is that walking, biking, and busing are shorter-ranged transportation options than driving, which leads to more efficient land use. Imagine how much space a car takes up to move a single person on their commute to work. Now picture a bus, which is bigger than a car, but can carry around 50 people. Public transit is almost always more space-efficient, which can free up land area for placemaking. In a system that also emphasizes biking and walking, the transportation land use will be even more compact, as both methods are "human-sized" rather than "car-sized." Finally, Andrew pointed out that a car-centric society demands a lot of space for parking, which causes urban areas to be "pretty spread out, and people are going to have to go very far just to get basic things." In a world where available land is becoming increasingly scarce, privileging cars undermines future developments for creating "people-friendly" spaces, like public squares or parks that can help create community in a comfortable, low-stress setting. Thus, besides the benefits to cycling that mixed-transportation options boast, they are also more equitable due to their accessibility and ability to open space for human movement.

Although Indy is making steps towards a more multimodal system with BRT expansions, the metropolitan area is still dominated by individual automobile use in terms of its transportation infrastructure. As its stands, the lack of alternative transportation options creates unnecessary barriers to bike use. Samantha is a lifetime bike rider, and she has lived in Indy since 2000. In her free time, she leads several bike rides around the city. Samantha would love to ride her bike to work, or at least part of the way; however, the lack of reliable transit options in the city prevents her from doing so. She works by the airport, and she said that there is no public transport that effectively connects her home to the airport area. Samantha would love to abandon her car in favor of biking and transit riding, too, but what's inhibiting her from selling her vehicle is the fact that mass transit has not yet evolved to the point where it connects most parts of the city.

Beyond bus ridership and transit frequency, walkability is another main concern that Indianapolis struggles with. In his job as a city planner, Micah's one wish for the city of Indianapolis was to ensure that every street has a sidewalk where pedestrians can move comfortably. Indy is far from this ideal, as only 34% of all roads have at least one sidewalk on either side (Indy DMD 2018). He told me that this investment "means fixing sidewalks where they need fixing and building them where there are none." This undertaking can also positively affect bike safety and use as more sidewalks will allow pedestrians to "reclaim" roads and be more present at intersections. In this scenario, walking traffic would increase, lessening the disparity between drivers and pedestrians. This should manifest as drivers becoming more aware of the road users sharing their space, resulting in greater feelings of safety for all.

While it might seem counterintuitive, Indy's lacking transit network and underdeveloped pedestrian friendliness actually affect its bikeability in significant ways. Insufficient bus access and frequency have been found to restrict the range with which Indy cyclists can ride, and the lack of sidewalks in the city reduces its pedestrian friendliness, opening the door to a car-centric city that discourages other, denser forms of movement like biking.

3.2 Safety

3.2.1 Cars and Crashes

"Cars. Cars. There are so many cars… That seems to be most people's biggest obstacle—riding on the road with traffic," exclaimed Caroline, a long-time Indy resident and active bike guide. Her comments joined the chorus of the most common complaint I heard: the prevalence and speed of cars made current riders fear for their safety and new riders hesitant to begin riding. Samantha echoed these concerns and told me that when she lived on 86th street, she could not even ride on the street outside of her house because "the traffic was too fast." The four-lane road forced her to ride on the sidewalk, which informs her belief that "there are times when the volume of traffic just doesn't mix with biking." Ironically, Caroline's forced relocation from the street to the sidewalk can end up perpetuating the very same safety concerns between cars and bikes. As riders feel pushed to sidewalks on high-stress streets, driver perceptions of cyclists change, and it can become harder for them to predict where riders will be when they sometimes use the road and other times use the sidewalks.

Car traffic not only affects perceived feelings of safety that can prevent bikers from riding, but it also marginalizes riders by making them (and other road users) feel

like they do not belong on the roads. Luke told me a story about his neighbor kids playing in the street earlier this summer, and they were scared off the street by an oncoming car that honked its horn. Here's what he had to say when he looked back on this event:

> There is a feeling that the streets are for cars and that's it, even when it's a neighborhood street and it's not an arterial busy road. That is an unintended reason why people don't bike...there is a cultural understanding that bicyclists are not road users or they don't have a right to the road, and are an annoyance, and that trickles down to a fear of getting hit.

Multiple stakeholders pointed out that cars seem to be the only consideration when building roads, which informs the mindset that roads are only made for automobiles. For example, Andrew explained that "the streets were not designed for bikes. They're not even designed for people walking. They're designed for people to get in and out of downtown really fast and get to their houses in the suburbs." Liam, an everyday commuter and bike advocate, pointed out that the one-way streets like Delaware and Pennsylvania are "very conducive to increased speed." Besides the one-ways to get people in and out of Indianapolis's downtown, other riders find issues with how high the speed limits are for cars on many different streets around the city, which increases the stress for bikers. Nancy is another lifelong biker who moved to Indianapolis last year. She has lived and ridden in other large cities, including Pittsburgh and Chicago, and she was very surprised to hear that school zones in Indianapolis are still so fast:

> School zones are 25 miles per hour! I have never lived anywhere where school zones aren't 15 except for Indianapolis. And they're wondering why kids keep getting run over.

Nancy is alluding to the couple of crashes around schools that occurred during my study, two of which resulted in the deaths of children.[1] This population becomes even more vulnerable around school roads when speeds are this high.

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[1]For further details on child crashes in Indianapolis https://www.wthr.com/article/news/crime/crosswalk-crash-hannah-crutchfield-irvington-george-w-julian-school-ritter-avenue-washington-street/531-e5e79b70-

A compounding issue that many cyclists point out is that speed limits often aren't treated as speed limits. Rather, they're regarded as "speed minimums," as Liam notices. They told me that "if the speed limit is 30, and you're not going at least 35, everyone behind you is pissed." The lack of speed enforcement throughout the city coupled with driver behavior leads to even higher speeds than posted on Indianapolis roads, making them all the more dangerous for cyclists and other users.

Are Indianapolis residents and riders justified in their fear of cars? The crash data says yes. According to the Indianapolis Metropolitan Planning Organization (MPO), in 2020, there were 39 recorded cyclist crashes with vehicles, 34 of which were incapacitating and five of which were fatal. This represents 42 and 50 percent increases across both respective statistics from 2019 to 2020 (IndyMPO 2021). Already by October 2021, there have been 58 cyclist crashes with vehicles in the year, resulting in 19 deaths (IMPD qtd. in Cooper 2021). Indianapolis crash data is not trending in a favorable direction for automobiles and cyclists alike, and many of the aforementioned characteristics of Indy roads are the driving force for this data. Urban planners like Andrew said that changes are "coming down the pipeline," but for now, street design, driver behavior, and the prevalence of cars make up "the number one thing…that prevent people from biking in Indy."

3.2.2 Women Riders

Throughout my open-ended interviews, several female riders commented on a difference in perceived safety that women feel on their bikes compared to men, which is an additional reason why women, specifically, feel hesitant to ride their bikes in the city.

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b707-4417-a74a-f1d62f00b189; https://www.wrtv.com/news/public-safety/child-struck-and-killed-near-21st-street-and-post-road-in-indianapolis

According to informants, women are a particularly vulnerable population when it comes to cycling and infrastructure use. Caroline started riding her bike when she was seven years old. She explains how a lack of infrastructure feels like an insurmountable obstacle to women cyclists' safety:

> I have friends on the Southside, and being a woman alone is a big obstacle, and not having a feeling of safety... On the Southside, I know coming up Madison Avenue can be kind of dangerous, and I haven't persuaded anyone on the Southside to start commuting to work.

Caroline's testimony suggests that women are especially vulnerable and affected by a lack of bike infrastructure. Several other women commented on what dangers they fear when riding their bike alone, one of which includes ridicule and catcalling from other pedestrians or road users. These sour comments make female riders feel unsafe and unwelcome, both on their bikes and on the road. For instance, Natalie told me about her friend who is clinically overweight, and people would yell about her "being a fat lady on a bike." Not only that, but she said that being a woman on a bike makes you vulnerable because "you're out there" as opposed to being surrounded by the four doors of a car. The fact that "women will get harassed in the street more in general" is a significant deterrent to women riders.

Kate provided an illustrative example of the mistreatment of women on bikes. Kate is a new rider in Indianapolis, and she just started commuting to work with a coworker earlier this year. She describes herself as "very small, petite, and very unassuming," which makes her "easy prey." When she shares a ride with her male coworker, she has no issue with comments from other road users. However, the behavior of others around her changes when she is on her own:

> I've noticed that when I've ridden my bike by myself or when I'm walking by myself, doing anything by myself or walking downtown by myself, the catcalling is just a lot. It

> gets to the point where I don't feel comfortable doing anything or going anywhere by myself.

Other women point to additional internal obstacles when it comes to cycling, describing themselves as intrinsically more safety-conscious than men, which leads to the lessened use of bikes in areas where infrastructure is underdeveloped. Natalie describes women as overall, "more safety-conscious, whether it's just normal safety being out in the world or it's just cycling in the streets." Caroline believes that, generally, "if you're kind of an introvert or shy, a lot of women just don't feel bold enough to just claim their space and be assertive." This can manifest itself as riding closer to the edge of the road or not riding one's bike at all.

Because the lived experiences of many women make them more aware and concerned about their safety, this group of riders has a harder time occupying shared space on the road that is not necessarily reserved for bicycles. This suggests that women are especially vulnerable on streets where bike lanes don't exist. Natalie gave a personal example, saying that even after all her years of riding, she still has to remind herself that it is legal to be in the middle of the lane: "I do not have to be hugging the curb. I deserve the space on the road. The cars can go around me."

These additional safety obstacles, as well as the still pervasive sexist and misogynist cultural norms that women must face, compile with the other social and infrastructural barriers to cycling in a city like Indianapolis, making it even harder for this vulnerable group to get out and ride.

3.3 Social Factors

3.3.1 Education, Misconceptions, and Uncertainties

At a more abstract level than physical infrastructure, a lack of education and misconceptions about cycling and Indy's bike infrastructure can deter individuals from taking the first steps toward riding their bikes. One problem is that many Indianapolis residents are not familiar with the trail system, an established strength of the city's bike network, or with existing bike lanes. Micah believes that "generally, the population doesn't know about our trails. If you are not physically active, you might've heard about our trails, but you don't generally know about the extensive network we have." He expands his statement to also say that not knowing what route options exist becomes a safety issue, especially if you don't know about the bike lanes you can ride in either.

Brand new riders in Indy like Carson demonstrate that there is often a learning curve that comes with riding around in a new place. Carson is a Butler student who brought his bike to campus for the first time this year, and he told me that he is less familiar with the rules of biking than he should be and that it is very hard to find information about what he can and can't do when riding: "I think it's scary for new riders to try to bike on the road. I don't know all the rules, and there's this weird culture of etiquette that's kind of gatekept."

Other stakeholders identified misconceptions about the time and fitness that many people use to justify vehicle use over biking. Luke noted how biking is actually much faster and easier than many novice or non-cyclists believe. He told me that "the knowledge of city by bike is lacking." Many non-cyclists believe short commutes on bikes take longer than they actually do. Luke advocates for replacing vehicle commutes

of five miles or fewer with bikes if physically able. This is a manageable distance for most riders, new and experienced, and with uninterrupted infrastructure, rides of this length could even be quicker than fighting traffic while driving.

Even experienced cyclists fall victim to these misconceptions that biking is harder or more time-consuming than it actually is. Tyler, a bike commuter since 2013, admitted that he sometimes favors a car over a bike when he thinks that there will be a time crunch, only to realize that the commutes are similar in length. One day at work, he knew he would have a late meeting that might push up against a post-job event, so he chose to drive in the morning. However, at the end of the day, he looked back and realized: "In reality, it really probably doesn't save me that much time—maybe 5-10 minutes."

Unfamiliarity with the Indy bike infrastructure that does exist unnecessarily restricts its use by cyclists of all ages, abilities, and purposes, and a lack of information for new riders poses an obstacle to getting them on their bike and making them feel safe on Indianapolis roads.

3.3.2 Funding and "Politics"

Infrastructural, safety, and social obstacles are not insurmountable. However, secondary barriers, like a lack of funding and initiative to improve biking conditions act as additional, administrative obstacles to the Indy's bike friendliness. During interviews, two urban planners pointed to funding as the primary factor preventing Indianapolis from being an idea city for biking. Micah reflected upon his time working as a governmental city planner to point out how the desire for bike infrastructure is there, but money is slowing its development. He thinks that money is the issue, not just for Indy, because "we

have so much more infrastructure than they have in other cities... If we just had more money, we'd have another lane like the one we have on Shelby [Street]."

Timothy, the urban planner and professor interviewed, also shared the belief that funding is a preventative factor for the continued expansion of Indianapolis bike infrastructure. But he took it one step further, asking a rhetorical question about how the city government chooses to allocate money: "Are the political folks in charge at that time willing to allocate tax dollars?" That's where the "politics" of this comes in. Many cyclists do not see crumbling or lacking transportation infrastructure as the result of not having enough money. Rather, the politics of money allocation is the underlying issue. The question of how money can be best spent is up to policymakers at the city level, and bike advocates would like to see it redistributed toward improving both the bikeability and walkability of Indy. Andrew believes that Indy falls short, too: "Politics, politics, politics. That's the issue. Everything about our built environment is a policy choice...We can absolutely choose to no longer do what we have been doing if the political will were there."

The three urban planners interviewed, having worked with city governments, have pointed out the monetary and political obstacles to making Indy their ideal city for biking. Other conscious riders and activists outside of the planning profession echo many of their same concerns. Winston, the bike commuter and IndyGo driver, held a similar viewpoint telling me that the barriers are "mostly political." He has seen that many people want to be in Indianapolis because it is so car-friendly, so citizens and city counselors alike are afraid to change the urban environment "because they feel like this is just the way it is, and this is the way it's always going to be"

A compounding issue that developers, designers, and city counselors must consider is the fact that bike infrastructure cannot be overbuilt compared to other methods of transportation, for that would shift the balance of the system too far in the other direction. Andrew spoke to the importance of maintaining a stable transportation "ecosystem" by catering to "different modes of transportation" that "work together." He told me that if you invest too heavily into one form of transportation, "then the whole system starts to break down." That's generally what we've seen with Indy's investment in cars, which leaves other modes of transportation with a smaller slice of the overall transportation pie.

"We don't have enough money for sidewalks. We don't have enough money for streets. We have lots of potholes. We don't have enough money for bikes. So you have to take everything incrementally," echoed Micah. Because of Indy's historic investment in cars, other means of city movement have suffered. There are other transportation improvements that must be made in conjunction with bike infrastructure, and the underdevelopment of these alternative methods of transport also delays the expansion and improvement of bike facilities in the city. Micah's statement points out deficiencies in other areas of Indy's transportation network.

Even when money can be allocated, many of these alternative transportation and biking projects are just really expensive. Liam breaks down the numbers on the two-mile Cultural Trail expansion going on now. They say that "a two-mile expansion of the Cultural Trail is costing $30 million. It's gonna be a great expansion. The Cultural Trail knows what they're doing. It's gonna have bioswales, and it's gonna be a safe, wide trail. There's gonna be signage. I understand how the cost can get to that number."

So perhaps at an even deeper level, policy choices and values of the Indianapolis city government influence the (lack of) spending on Indy's built environment, leading to the deficiencies in alternative transportation infrastructure across the board.

3.4 Targeted Problems and Solutions

Finally, there were many isolated, "quality of life" issues that stakeholders pointed out that made it hard for them to ride their bike. These obstacles couldn't be grouped neatly into infrastructure, safety, or social factors, for they are largely situational and specific to areas of Indianapolis. The following obstacles are no less significant to bike ridership in Indianapolis, and their specificity makes them more approachable and solvable.

3.4.1 Infrastructure Maintenance & Planning

Indy's current and planned bike infrastructure is beneficial only to the point that it is safe and usable. Samantha, the rider who is looking for the first chance to sell her car, finds that the maintenance and lack of planning of the existing infrastructure make it unsafe and hard to use. She told me that Indianapolis has a great bike lane on Lafayette Road, "but it has so much debris in it that you can hardly ride in it." Not only that, but she told me that she was riding on Illinois street's bike lane over the summer, and she went airborne because of a very deep pothole positioned right in the bike lane. "A deep enough manhole in a bike lane doesn't work for bikes, so I would like to see us have better planning for the bike lanes here, as well," she says.

Trail maintenance is also an obstacle to the use of this infrastructure. Luke uses the Pleasant Run Greenway as an example of a trail that is "really tough," and he elaborates, saying that "the White River Trail has some rough spaces too, specifically

around 29th Street near Marian." One of my neighborhood rides utilized the White River Trail, and I echo these concerns. Cracks in the pavement outside of the zoo lead into potholes and random jersey barriers as the trail snakes under bridges heading south. Then the worst part I've ridden requires crossing South Harding Street, waiting for two sets of 30-second-long walk signs and crossing 12 collective lanes of traffic to get back on the trail. Many riders believe that trail maintenance falls second to trail development, which ends up creating unpleasant rides for trail users, unintentionally deterring bike use on these routes.

Bike infrastructure planning and maintenance extends far beyond what is in bike lanes, though. In my four years of biking in Indy, I have seen bike lanes interrupted by turn lanes, traffic lights, benches, trees, store advertisements, storm drains, gutters, snow, leaves, twigs, nuts, roadkill, construction, and an occasional lost tire. These all render existing bike infrastructure either more dangerous or unusable, which reduces the already insufficient amount of infrastructure around the city.

3.4.2 Snowplows

Walt, our everyday commuter, holds the uncontroversial opinion that it shouldn't be hard to bike in winter. However, snowplows complicate this reality by creating unnecessary stressors for cyclists in the snowy Indianapolis months, often rendering the city's bike infrastructure impassible:

> Snowplows...There is absolutely no consideration at all for snow removal being pushed into the bike lane. So it completely blocks the protected infrastructure that we do have from being used a good chunk of the year. There's a good 3-4 month period where it's more dangerous to use the protected bike lane than it is to just ride in the middle of the street, and I feel like that is a problem.

I wrote this thesis primarily over the winter, which allowed me to closely evaluate snowy biking conditions in Indianapolis. With Butler University as my primary riding

site, snow (and the city's approach to moving and clearing it) is, at times, a complete inhibitor to biking. Many sidewalks around campus did not get plowed, and many intersections were not navigable for pedestrians because of the resulting snowbanks. Bike lanes became unusable and instead were sites for snow deposits so that cars could drive uninterrupted. The Monon Trail did not get cleared for almost 24 hours after the snow stopped falling, rendering it unsafe and almost useless, except for those with snow tires. The lack of prioritization of clearing bike infrastructure during winter weather is symbolic of its status compared to major thoroughfares for cars, and snowplow movement of snow renders much of the already-lacking bike infrastructure unusable for a good part of the year.

3.4.3 Not All Bikes are Created Equal: Availability and Cost

During the COVID-19 pandemic, bike demand soared to the point where shops had trouble keeping bicycles in their stores. However, a few stakeholders pointed out that the recent bicycle boom had unintended consequences and actually created new barriers for aspiring riders. Walt also explained how the recent lack of bike availability made it hard for new riders to get a starter bike if they didn't have one. He said that "during the pandemic...many people wanted to get a bicycle, but the wait time was months." He also pointed out that Indianapolis does not have very many bike shops to supply bicycles. He identified only "a couple downtown, one in Broad Ripple, and one on the Eastside." This creates further access issues because the lack of bike shops in the Indy metropolitan area reduces bike supply and the number of resources that riders can look to for education and assistance.

Also on the demand side, the increased number of people wanting to bike throughout the pandemic made it expensive to buy one. Not all bikes are created equal, according to Liam, and the price of reliable bikes can sometimes be a deterrent: “Nice bikes are expensive. But if you go to Walmart and get a $100 bike, it’s a piece of shit bike. Good bikes tend to cost money.”

So, while it’s certainly exciting that demand for bikes has increased throughout the last year, this surge in interest has also had unintended consequences of excluding and pricing out new riders who might also want to ride the wave of bike popularity.

3.4.4 Abolish Magnetic Traffic Lights

Nancy has been an Indianapolis resident for just over a year, and one of her biggest daily obstacles is a stoplight that she faces on the corner of Talbot and 30th Street. She told me that this traffic light and similar ones around the city cause problems for her and others because they are activated by magnets, and bikes don’t have enough iron to change the opposite light to red. This stressor forces her to perform an “Idaho Stop,” where she goes through a red light when it’s clear. She says that this stressor can be alleviated either by changing the method by which the light changes colors, or by making this Idaho Stop legal, permitting bikes to go through red lights.

4. Solutions

4.1 Complete Streets and Best Infrastructure Practices

4.1.1 Gold Standard Bike Infrastructure

When thinking about how a city can improve its bike network, the most intuitive place to start is where cyclists ride. Unsurprisingly, solving lacking bike infrastructure requires building more places to ride comfortably and connecting the routes that already

exist. However, it is not always easy to determine whether money should be spent on a safer but costlier protected bike lane or a cheaper but more exposed unprotected lane. And where might sharrows be more space- and cost-efficient than both bike lane options? Should bike lanes be on *every* street? To make Indy a more bike-friendly city, best infrastructure practices must be at the forefront of planning and development based on many different stakeholder areas of expertise. It should be noted that some solutions for turning Indianapolis into an ideal biking city require radical transformations, and some are quite cost-intensive. However, intermediate solutions and recommendations could create incremental and practical change. This section of my study draws from many different Indianapolis experts to hopefully answer these questions and act as a guide for future projects and development.

One common theme that I heard over and over is that in an ideal city for biking, the network is "highly intuitive." Andrew explained to me that people should be able to go out and ride their bike because it's one of the easiest ways of getting around. Riders shouldn't have to "go onto Google Maps and calculate what route is not going to get them killed." Instead, riders and planners alike believe that cyclists should be able to get from point A to point B on a direct, non-convoluted route with infrastructure connecting the two locations.

How can this be put into practice? Liam told me that bike infrastructure, much like the way roads do for our vehicles, "needs to reach from everyone's front door to literally everywhere they could possibly need to go." Anyone can leave their driveway in Indianapolis and connect to a cross-country network of roads. There are uninterrupted car routes from coast to coast. Liam isn't necessarily calling for the same level of

international connectivity, but bike infrastructure should at least be on par with vehicle infrastructure *within* cities, starting with downtown and eventually extending to metropolitan areas.

Liam's vision is arguably an ideal espoused by many bike enthusiasts; however, it is generally agreed upon in the world of urban planners that a perfect bike network does not have a designated bike path on every single road. Instead, a bikeable city is strategic in how it connects all the places that a rider could want to go. Timothy, my professor and urban planner, notes that it might not be practical to install a bike lane on every road, especially on low-stress neighborhood routes. He explained to me that older neighborhoods often have effective traffic-calming measures built into their streets. These areas tend to have "the narrower streets and the parallel parking and sharing the roads with occasional cars." However, areas where suburbs begin feeding into downtowns require "a combination of bike boulevards and bike trails, but also places where they can blend the bikes onto other city streets"

What surprised me most is that when planning for bike traffic, it is not ideal to scatter bikes across every single road in a city. If you do, according to Timothy, the urban design professor, then "people don't have a sense of when or where they're going to encounter bicyclists." Instead, urban planners agree that "it is better to have bikes dedicated onto specific corridors and arteries through the city, especially to access busier denser places like downtown." Then, once bicyclists get to the busier downtown, "they have to have dedicated paths." In doing this, bike traffic patterns become more predictable for drivers, increasing rider safety both through the creation of new dedicated paths and by increasing rider visibility.

Finally, in addition to bike lanes, both protected and unprotected, trails are another key facet of an effective bike network. In Indianapolis, trails were very frequently applauded for their effectiveness as highways, but to be used to their full potential, many riders wished that they were better connected to other bike paths. Liam told me that if stakeholders give as much weight to bikes being transportation vehicles as they do to bikes being leisurely tools, then that will motivate planners to improve the effectiveness of trails. He encourages planners to keep in mind the following when considering land use and trail development:

> If you can bike on a trail, that's cool, but if you can't bike to the grocery store or to a restaurant or to your office, then it's not a form of transportation. If a trail goes out to the middle of nowhere and back, that's no good for anyone. What we need is bike infrastructure that takes people from one place to another, and that is a huge obstacle that we have to overcome.

Lastly, in terms of trail congestion, as alternative routes are developed, more bike lanes on streets are built and improved, and trails are connected, riders will have new paths to their destinations—ones that are hopefully more efficient. Improving the bike network of an area then attracts more cyclists, which can help create a positive feedback loop for both.

Understanding how to build an effective bike grid is one challenge, but another is knowing how to begin this shift toward building a bike-friendly city. Transitioning from our current, car-centric paradigm to one that focuses on cycling will take a lot of work, and it may seem like there is no good place to start. However, Timothy gave me a good blueprint for what a potential transition might look like. He told me that "planners are not a big fan of sharrows, but they could be an easy way to get started" by pointing out that in the future, developers "are going to dedicate one of the two lanes on this neighborhood street to biking." Through transitionary projects like the additions of signs and sharrows,

or the cheap addition of protection to a bike lane through bollards (short vertical posts) or jersey barriers (concrete or plastic dividers between lanes and highways), bike infrastructure developments can be both effective and cost-efficient. Simple actions like these that increase safety in any way are effective and productive first steps.

There is also the question of where to begin these transitions. Where would be the most effective place to start? Liam answered with his own question: “Can kids safely bike to parks and schools? Start with the bike infrastructure there. Especially with IPS’s new policy that they will not pick you up on the bus if you live a mile from the school or closer.” Focusing on giving children safe routes adds another layer of protection to this already vulnerable biker population, and it also has the added effect of priming a new generation of cyclists on safe and efficient routes.

Some might still be wondering how improving bike infrastructure on its own would increase ridership in a city without supplemental projects or programs. From my experience interviewing informants and observing the Indianapolis bike community, I have seen a very strong interest in biking for fun and commuting. However, these desires are oftentimes inhibited by the built environment of Indianapolis. For instance, Caroline told me that she really wanted to bike to work, but her husband thought that it would be too dangerous because much of her commute did not have dedicated bike lanes. Recently, though, Caroline told me that the city of Indianapolis installed bike lanes, “basically from [her] house to work” so there was no longer an excuse for them not to commute. This sentiment is shared by many informants and riders in Indy, and improved biking infrastructure would both allow those who want to ride more to do so, while simultaneously encouraging those who want to try it out to get out and ride.

4.1.2 Multimodal Transportation

Although many different stakeholders had ideas on how to improve bike infrastructure, they also recognized that it would be unrealistic to improve it in isolation. As Indy targets a transition away from cars towards one that is more friendly to all types of transportation, experts agree that the future is multimodal. Timothy put it best when he explained to me that "it's not just about biking. It's about walking and mass transit. The whole picture... It involves biking, but it's not just biking." Therefore, the best cities for biking are also ones that integrate this form of transportation "within the pedestrian planning and the mass transit." Expanding and bolstering all these systems at the same time seems like a daunting task with no good starting point. However, urban planners, advocates, and cyclists alike advocate for starting at the most human scale—walking—and working upwards from there. Liam, for instance, thinks that the best bike cities are even better walking cities because planners should "first and foremost build for pedestrians who are walking." After that, they should "build for bikes. And then build for public transportation." Once these interconnected systems are established, then the focus should shift to "building for nature and ecosystem resiliency," which includes planning space for nature, urban farms, and parks. And finally, after all of those developments, "and then build for cars."

Another obstacle that must be overcome in a strategic overhaul of transportation systems is space. Where can Indianapolis find the road area and path space to add or widen sidewalks, build bike lanes, or route trails? Based on his experience working in city planning, Andrew reassured me that the city, without a doubt, has enough room to accommodate other forms of transportation besides cars: "Indy's infrastructure is really

overbuilt for our population. Center township has lost 50% of its population since 1960, but our roadways are still designed as if 350,000 people still live within the 47 square miles of center township." Because of the late 20th century's suburban sprawl and "White flight," the departure of middle- to upper-income White residents, many people moved out of Indy's downtown in favor of the metropolitan suburbs. This leaves room for downtown areas to "take away a good chunk of lanes and re-allocate them to bikes and pedestrians with minimal impact."

In the next two sections, I will outline the best practices described by my informants for arranging other forms of transportation mentioned in a multimodal system—transit and cars.

4.1.3 Transit

Several stakeholders have a deep knowledge of the transit system and utilize it often, and a couple of informants described how more robust bus and train systems in Indy would increase the range and distance they can ride. This begs the question of how the transit system can be improved based on the suggestions of my informants and my personal experiences using the IndyGo bus system.

One of the greatest complaints that I heard about IndyGo buses is that the service is not well connected to other forms of infrastructure, like walking or biking. Luke says the bus system ought to "get people places quickly," and the best way to do this is to have "local routes that feed into the BRT systems that are proposed and happening throughout Indianapolis." More importantly, "that means being able to bike to those places too." Winston, through his experience as an IndyGo driver, gave me an example of what this might look like. He says that many of his riders don't necessarily live close to the bus line

but use biking as their “last-mile solution” to get to the stop. Then, they can mount their bike on the front of the bus (or inside of BRT buses) and continue their journey. This, he says, is what a good bike-bus connection looks like, and to create a more widespread and utilized bus system in Indy, bus stops ought to connect more closely to trails and bike infrastructure, creating an easy shift from one to the other.

Additionally, I learned from my interviews with bus riders and my urban design course that fast and frequent bus service is paramount for ridership. This is an area of improvement in Indy’s bus network that I have seen firsthand. When my roommate and I were brainstorming ways to get downtown for our first Bike Party, we quickly ruled out biking the hour-long round trip by bike because he was a newer rider. Instead, I decided to check the bus schedule to see when the IndyGo bus stopped through Butler University. I was very surprised that bus line 18, which runs north-south from Broad Ripple to downtown, only comes once every hour. In addition, the bus arrived over 10 minutes late at the only southbound stop on campus. Not everyone is able or willing to schedule themselves around a bus that arrives only once an hour, and it’s not hard to imagine that bus use would increase if riders could show up to a stop and catch a ride within 10 minutes. Unfortunately, my roommate and I had no other option, so we hopped on the bus with our bikes almost an hour before the start of the ride.

Thankfully, Indy’s BRT system is making improvements to the speed and frequency of buses, but as of now, only the Red Line has been constructed. The Red Line is one of many planned BRT routes that boasts 15-minute wait times between buses. The Red Line runs north-south for 13 miles through several neighborhoods and major employers. Unfortunately for me and my roommate, the nearest Red Line stop is off-

campus in Broad Ripple, which isn't the most convenient route, especially given the lack of bike infrastructure connecting Butler to that area. During research collection and writing, the Indy Purple Line, a 15.2-mile BRT route connecting Indianapolis to Lawrence, began construction, which is an incredible step in the right direction toward a better-connected transit system and a more multimodal city. As BRT continues to expand in the city, many of the efficiency and connectivity issues will resolve themselves. But for now, numbered IndyGo lines ought to feed into the currently existing Red Line, service each stop more frequently, and better connect to walking and biking infrastructure to see greater use.

Finally, one negative stereotype associated with bus riding, as identified by Micah, is that buses are for low-income people only. He quickly said that this shouldn't be the case, stating that "everybody should be using them," and that if the city can work to remove this stigma, then ridership, and therefore service, will improve.

4.1.4 Cars

Although individual automobiles have generally been painted as the "enemy" to cycling and other forms of transportation, they are essential to a multimodal system. Liam admitted that "you do have to have space for cars—that's the unfortunate thing." However, just as pedestrians have sidewalks and bikes have trails as reserved spaces, the car's should be restricted as well. Micah acknowledged that spaces like the interstate "are not going to be bike friendly," but they are necessary and important for movement, nonetheless. In planning for a multimodal city friendly for biking, cars ought to be limited to spaces where they are truly needed and useful and kept away from infrastructure based on other forms of movement.

One trap that many governmental officials fall into when planning for vehicle infrastructure is the phenomenon of induced demand. Micah explained this counterintuitive occurrence to me in our interview: “Studies show that the more lanes you build on a highway, the more they will all fill up. No matter what.” This is contrary to what many decision-makers believe, but the mechanism behind induced demand is that more lanes encourage more cars to drive on them, which often results in more traffic. Perhaps the most famous example of this phenomenon can be seen in Los Angeles’s Highway 405, infamous for hours-long traffic jams despite having 14 lanes in some sections. Adding lanes to highways just encourages greater use of them, but removing lanes motivates road users to find different routes and/or transportation options.

One-way roads are another thing to avoid when planning for car traffic in a pedestrian-friendly city. Indianapolis has a couple of infamous ones, such as Michigan Street, New York Street, and Pennsylvania Street, which are used to get people in and out of downtown very quickly. However, Liam says that a consequence of such rapid movement is that these streets are very unfriendly to other forms of transportation and are therefore inequitable forms of car infrastructure. Instead, Liam advocates conversions of these streets to two-ways, which would help slow down traffic, making them “more bikeable themselves.”

In truly pedestrian-friendly cities, city centers are designed for people at the human level and exclude cars completely. For instance, in my hometown Madison, Wisconsin, State Street is the main hub for activity, with local stores, restaurants, and activities lining both sides of the street. This street is completely blocked off to cars and only allows public bus access, which makes it a very popular destination for walking,

biking, skateboarding, rollerblading, running, and more. Liam wants to see things like this in Indianapolis, saying that in the mile square around the center of downtown, there are a "ridiculous amount of cars in that space." For example, they point out how driving through Monument Circle is the most inefficient way to get around given the amount of merging and pedestrian traffic. Liam longingly imagined what the city would look like "if we just closed off a bunch of streets to car access downtown," specifically targeting Massachusetts Avenue as a starting point. In his ideal city, leaders and planners would "think that people should be here instead of cars," and the number of bikes would increase because "they would become the accepted form of transportation in that space."

4.2 Transparent Communication Between Stakeholders

Besides the visible, concrete infrastructural obstacles to biking in Indianapolis, all three of the urban planners I interviewed explained that communicative barriers and differential areas of expertise between stakeholder groups can result in less-than-ideal projects. For example, one of the most important collaborative processes in urban planning occurs between the professional planners and the community members who are being affected by construction, modification, and expansion. Geographers, planners, and architects are well-versed in principles of urbanism; however, all the urban planners interviewed agreed that a portion of the decision-making process should be deferred to the residents of the target area, for they are the local experts of their land. Unfortunately, this collaboration does not always receive sufficient attention in development processes, which leads to conflicts in infrastructure and planning.

Timothy gave me an example of what it might look like when designers and residents work together:

> Planners are the experts for how things get done, so you don't expect the citizenry to have much expertise in those sorts of things. But you do expect a 60-year-old woman who is used to walking this path down to her favorite store to know what's going on in that route. She can tell the planners who have no idea what's happening locally.

For instance, "she can tell planners that teenagers gather over there, smoking and stuff, and that creates an unsafe environment." This might inspire the planners to create a space for teens or leverage principles of urban design to illuminate the area, making it safer.

As part of my internship, in late August 2021, several of my Bike Indianapolis coworkers and I attended a development open house hosted by the city of Indianapolis regarding the construction and expansion of Morris Street, an arterial road on the Westside. The presentation was meant to showcase the changes that would make Morris Street a "complete street," and the Department of Public Works announced that the project was 90% planned. The renovation would create more green space by bringing out curbs, and the sidewalk along the street would be widened for over a mile. When it came time for the Q&A session, though, many neighborhood residents voiced their opposition to the plan as it stood.

One gentleman, who I later learned was the president of the area's neighborhood association, led the discussion and was very vocal about his concerns about the plan. Specifically, I remember him saying that the department "had a plan to make things pretty, but not to provide the functionality we need for our neighborhood." Nods and whispers of approval came from all around the room, and someone pointed out that this "complete streets" project made no use of the multi-use trail from the Eagle Creek Greenway. Other residents were concerned about how traffic flows would be affected, and they worried that a mile-long closure of Morris Street would send semi-trucks and other large vehicles through their neighborhood during construction. At the end of the

meeting, the planning team giving the presentation could tell they still had work to do based on the feedback from the community they served. According to Timothy, "if planners are doing their due diligence, planners will take all of that feedback with them. A lot of things do get thrown out, but you want to find the stuff that people are showing consensus on."

This collaborative effort between planners and their constituents is mandated for each project, but there are many ways to go through this process. Some planners go door-to-door, and others host public forums, like the one I attended. However, intentionality and actual consideration of public participation are crucial to the planning process. Luke explained to me that getting community feedback often runs counter to the goals of politicians and developers who hope to see quick and measurable progress. He said that getting feedback is "really hard work" and "extremely slow work," but also noted that it is "moving at the speed of trust and communication." Often, city goals to fix things quickly, as we can see with short-term pothole solutions, are incompatible with the urban design process. Transparent communication between all stakeholders involved in a project is "worth it in the long run," according to Luke, but too often one stakeholder or another is not willing to put in the time to do so.

Luke's testimony points out another communicative barrier that exists between planners and city elected officials: they often have different goals when it comes to infrastructure. Micah told me that oftentimes Indy's decision-makers overvalue car infrastructure because they don't know the ins and outs of the current new urbanist paradigm that emphasizes multimodal transportation and pedestrian friendliness. Additionally, elected officials are focused on short-term outcomes to appeal to mostly

car-driving constituents. This creates a compounding focus on immediate progress rather than long-term planning. Micah went on to tell me that he's not even sure what city councilors know or have planned for bike infrastructure because he understands that the Parks Department and the Department of Public Works take the lead on these issues.

The solution to these issues? Unsurprisingly, Luke calls for better communication between everyone involved in making the city better for biking. Internal communication between planning teams combined with external communication between the city and advocates and neighbors "is what affects the environment in the long-term." Micah told me that one of his best accomplishments in his tenure as a planner for the city of Indianapolis was hearing people say that he was "easy to approach." Through transparency, exchange of expertise and education, and common identified goals across all stakeholder groups, infrastructure can best reflect the needs and desires of those using the space.

4.3 Building Skills and Safety

There are two main programs at Bike Indianapolis that center on building biking skills and increasing confidence. The Bike Guide and Neighborhood Ride programs are two projects working to address identified obstacles to riding in Indianapolis, and through participant observation and specific examples, I evaluated their effectiveness in overcoming Indy's barriers to biking.

4.3.1 The Bike Guide Program

The Bike Guide program is a Bike Indianapolis initiative that matches new riders in Indianapolis with trained, experienced cyclists. The "new rider" does not necessarily have to be someone who has never ridden a bike. Participants who signed up for the Bike

Guide program also included people who once were avid cyclists but haven't ridden in several decades. Some individuals were experienced riders who were new to the Indy area and looking to increase their familiarity with the bike network. In all cases, both the new rider and the bike guide filled out a brief survey, and they were paired together based on their location, riding preferences, and goals. The pair then scheduled four rides together, and the bike guide coordinated route planning and communication.

This partner riding program acted as an effective solution to many of the safety and social obstacles to bike riding in Indianapolis because the experienced cyclists provided informational resources to improve education and safety; they also offered comfort and encouragement to help motivate their partners to ride.

4.3.1.1 Bike Guides as informational resources:

Perhaps one of the greatest assets a bike guide can provide for their ride partner is their knowledge of bike functionality and their experience riding. Sometimes, an inexperienced cyclist won't get out and ride because of a knowledge deficit about their bike and the rules of the road, a lack of proper equipment needed to cycle safely, or because their bike needs a tune-up.

A ride partnership between Natalie, a bike guide, and Gretchen, an aspiring cyclist, demonstrates how bike guide knowledge of bike safety can help hesitant riders overcome their fears of cycling. In our interview about a month after they stopped riding together, Natalie told me that Gretchen learned how to ride her bike as a kid and recently came upon a bike when she won it from her job's wellness initiative. Now in her 60s, Gretchen hoped to take up cycling once again, but she didn't feel confident enough to

start pedaling again on her own since it had been so long. She signed up for the Bike Guide program with the hopes of getting back to cycling more quickly and comfortably.

When Natalie and Gretchen met for their first ride together, the first thing that they did was size a helmet for Gretchen. This was the first time that Gretchen had ever worn a helmet while riding her bike, and Natalie helped her become more comfortable with this equipment. On this first meetup, Natalie also mentioned that there was a lot of "basic instruction, like how to ride in the road." Gretchen was taught to ride on the left side of the road so that she could see the oncoming traffic, and she was nervous to hear that cyclists ought to ride on the right. To curb this worry, Natalie suggested that Gretchen invest in rearview mirrors, noting that many cyclists use them to see what's going on behind them. After the fact, Natalie told me that one of her greatest contributions as a bike guide was simply "telling her about a lot of different things to help make her cycling easier."

Natalie and Gretchen only completed two of the four scheduled rides for the program, but even with a truncated partnership, Natalie saw great progress from her ride partner. The first day, the pair rode two miles around their neighborhood, and on their next ride, they doubled their distance to four. Although the partners never made it to their third ride, a six-mile route to the nearby trail, because schedules started to conflict, Natalie noted how Gretchen grew as a cyclist, both in her comfort and her abilities: "I think she was surprised that she was able to do as much as she did. At the very least, it gave her the confidence that she could do it. So, if she comes back to it, she'll be one step further along in the process." Natalie acted both as a ride partner and a source of knowledge about how to best be safe on a bike for Gretchen. By demonstrating and

communicating how to safely dress for biking with a helmet and how to ride with cars on the road comfortably, Gretchen was not only able to get back on her bike for the first time in decades, but she was able to double the distance in which she rode from her first ride to her last.

Another way in which bike guides acted as an informational resource was by helping to ensure that their ride partner's bike is running as well as it can, making it as easy as possible for the new biker to ride. For example, in her ride partnership, Lydia told me that her new cyclist had taken time off her bike for a couple of years, so she initially wasn't very confident with riding. On her first ride, Lydia noted that her ride buddy had a flat tire by the time they got done with their route, so she diagnosed her with a slow leak in her tube. She thinks that this mechanical issue might have been part of the problem with why her ride partner hadn't been riding recently: "As you know, biking is harder when your tire is going flat. Initially, she was pretty slow." Before their next ride, Lydia suggested a tire and tube replacement, and that made a world of difference for her ride partner.

By the end of the four rides that spanned over two months, Lydia said that her ride partner was "definitely more comfortable and confident. She was doing 20 miles on her own and with a friend." Lydia also noticed that her ride partner's skill level and awareness on a bike had increased because of their partner rides together:

> Her bike handling was better and more confident. She was better at holding a straight line when she was biking. She maneuvered better. We went on some similar routes, so she was learning the different routes. One time I almost took a wrong turn, and she said, 'Oh no, we have to go this way.' So, she was definitely learning to navigate the trail system. She had more awareness of the rules of the road for biking and trail etiquette—and just general confidence that impacts your handling.

Because Lydia was able to provide the insight and the resources to tune up her ride partner's bike, her ride partner was able to bike more comfortably and efficiently. Lydia's

simple first step of advising a tube replacement led to a cascade of confidence and skill increases for her bike partner.

Finally, Madison's partnership as a bike guide was not necessarily geared toward getting someone back on their bike; rather, she used her four rides with her ride partner to pass along information about Indianapolis's bike and trail network to a new resident. Madison informed me that her bike guide partner was not a novice at all. In fact, she had been a cyclist for most of her life. She moved to Indy in 2020 from Cleveland, making her an experienced rider new to the area. Madison said that "she wanted someone to show her the different trails and places to ride in the city," so their rides were longer than those typically associated with this program. Madison, like many other bike guides, was able to transmit her knowledge of Indy's bike infrastructure to a cyclist who was unfamiliar, which increased the comfort and knowledge of her ride partner.

4.3.1.2 Bike Guides as encouragement/motivation

Another key to the Bike Guide program's success was that it gave aspiring cyclists a reason to ride. When they signed up to ride with a bike guide, these new riders locked themselves in for four rides, which created a layer of accountability within a motivational and encouraging environment. Stephanie, the bike guide who dreams of giving up her car, told me that "riding simply makes you better" but that "the barrier is the invite." This means that getting a new or aspiring rider on their bike for the first time is often one of the most difficult steps in creating a consistent bike rider. The Bike Guide's focus on overcoming this barrier is often one of the reasons for its success.

Sometimes, all a new rider needs to become a consistent biker is a supported first step riding on the streets of a city. This is best demonstrated through Dean's bike guide

partnership, which shows that overcoming a “first-time fear” can streamline a pathway to regular cycling. Dean is a lifelong biker, and he is the executive director of an Indianapolis bike advocacy organization. When we conversed about his Bike Guide experience, Dean told me that his ride partner arrived with an e-bike to their first ride. However, she was very cautious, and the two took their first ride very slowly and methodically. Their first route was seven miles long, which Dean admitted is no big deal for a rider on an e-bike. However, because his ride partner wanted to be very careful with how they rode, they spent an hour riding this route, which really could’ve been completed in about half of the time.

Dean had a very intentional plan for his first ride with his ride partner, and he gradually increased the amount of traffic that the two faced throughout the route. They started on the Eagle Creek Trail, a route reserved for bikers and pedestrians, just to make sure that they were both comfortable with riding. Then, they got off the trail onto a “comfy side street” before looping back around onto some busier streets with light evening traffic. He remembered his ride partner saying, “but there’s no sidewalks on this street,” so he explained that they would be riding in the right lane together. She timidly followed Dean onto the street, and as cars passed by, Dean noticed that her confidence was increasing. Adding another unfamiliar challenge to the route for his partner, he incorporated a lane change into a left turn. She again asked if they were going to turn onto the sidewalk, and Dean explained that they would stay on the street. On the way back, the two biked on roads, conversing about what the next couple of rides would look like.

Dean's plan for the program was to progressively increase the length of the rides, culminating in a route from her house to her work building and back. The goal for both Dean and his ride partner was to help his new rider find a safe and comfortable route to commute to work by bike. The second ride was planned to be no trails, all street, and the third would get Dean and his ride partner from her house to her work. Finally, the last ride that Dean planned would be the same route as the third, but his ride partner would meet her husband downtown, and the two would get dinner and ride back home together.

When it came time to put this plan into action, Dean's ride partner had to cancel her second ride because of a scheduling conflict, but she was sure to let him know that she had been riding on her own in the meantime. After some time, Dean reached back out asking when they were going to keep riding together for the rest of their ride sessions. To this, she responded, excitedly, "I just rode 16 miles—it was all on the street! I don't need a partner anymore." Dean was stunned, saying, "It took one ride, and she was like 'I got this.' This is so cool." His ride partner who was, at first, anxious to be on the street instead of the sidewalk, was now riding far and confidently on her own, and all it took was one guided ride with Dean.

Dean's presence, knowledge, and encouragement as a bike guide helped his ride partner get on her bike for the first time in years, and just going on one guided ride with Dean gave her the confidence she needed to begin biking on their own. This suggests that her greatest obstacle was the fear of starting and the need for encouragement that Dean was able to provide for her.

4.3.2 Self-Organized Rides:

The Bike Guide program proved successful in encouraging and educating new riders to overcome many of the obstacles to riding bikes in Indianapolis. However, what should be done for people who don't want to sign up for a program like this? Perhaps new riders are afraid to ride with a stranger or embarrassed to admit to someone that they don't know how to ride a bike. Aspiring riders also may not be tuned in to the programs and resources around Indianapolis like the Bike Guide program because they aren't an active part of the biking network just yet. Although many of the partnerships were successful, the program did have a couple of challenges, including new riders who were unresponsive after the sign-up period, partnerships between people that were too far away to be practical, and conflicting schedules that resulted in the partnership ending before the four rides were completed. Many of these issues can be solved, though, through the creation of personal "partner riding" programs between friends, coworkers, or family members that can be more comfortable and convenient because of location and existing familiarity between riders. I interviewed several bike riders who took it upon themselves to "mentor" a newer rider in their lives, all with high levels of comfort and success. These self-organized rides provided new riders with a comfortable space to develop their riding skills with someone they trust on no specific timeline, and they allowed experienced riders to share their skills and insights with their friends.

Tyler and Kate are coworkers who both live downtown, and they are also close neighbors. They have been friends for a long time, and I interviewed them together to learn about how their partner rides to work developed. Tyler has been riding his bike for many years, and he has several very impressive bikes. Kate, on the other hand, grew up in

a strict household, so she was a bit scared to ride a bike on her own on the streets of a city like Indianapolis. Tyler had been encouraging Kate to get her bike fixed since she moved into the neighborhood, and sometimes he would let her borrow a bike to go on rides around their community. However, the two never had plans to commute to work together on bikes until there was no other option for Kate. She told me that "it was out of necessity, but also sort of an accident" that the two went on their first ride. She lost her keys one day, and couldn't get them back until the next, so she reached out to Tyler, asking if they could ride to work in the morning. Tyler sent back an enthusiastic "Yeah! Let's ride bikes!" The next day at 8:00 A.M., the two set off on their first ride of many.

Tyler let Kate borrow a spare helmet and his e-bike, which Kate described as "big, clunky, and awkward, but so much fun" Kate told me that their first ride together was equal parts fun and nerve-racking. She recalled "squealing at every corner because everything was so new." She remembered having such a fun time and describing all her surroundings as "so cute." One of her favorite parts of the ride was "seeing the city from a completely different viewpoint," and her time sightseeing was very exciting for her. However, at the same time, she was especially nervous around the cars that were coming at her very fast. Luckily, Tyler was there to take the lead and talk her through the stresses that they were facing together. Kate says that Tyler's knowledge and expertise, both about the route to work and bikes made her much more comfortable and secure on this first ride, and the enjoyment she felt riding to work led to the start of a consistent commuting partnership.

For the first couple of rides, Kate borrowed one of Tyler's bikes, but he noted that even after lowering the seat for her, the frame was still a bit big, leading to an awkward

sizing. However, they both agreed that riding together was a catalyst for Kate to take her personal bike to the local bike shop to get an "easy-to-fix mechanical issue" addressed. Tyler noted that "just riding together encouraged her to pull the trigger and go and get that one replacement part," which is just one simple way that Tyler acted as a resource for his ride partner. Kate also commented on her decision to get her bike fixed, saying that Tyler inspired her to "take ownership in something that [she] had neglected," and when she went to the bike shop, she said that it was "so magical...to see everything coming to fruition."

Tyler also leveraged his cycling expertise to improve Kate's bike comfort through proper bike accessories, fitting, and attire. Kate said that comfort is one of the biggest considerations for her when riding a bike, so Tyler's help with changing her bike seat and raising her handlebars increased her comfort and confidence on her bike. She remembers that these slight adjustments to her positioning "made a world of difference." Tyler also pointed her toward bike shorts and rain jackets that he knew worked well to provide Kate with an extra level of comfort on her bike.

The two had been riding to work together for about three weeks when I interviewed them as a pair. They said that they had gone on a double-digit number of rides, and Kate became more comfortable with facing the unfamiliarities of biking in Indianapolis. Kate told me that Tyler has been instrumental in helping her with understanding the gears on her bike. Tyler explained that shifting gears on a bike is similar to that of a car, and when Kate rides behind Tyler on their way to work, she uses that space to "feel the difference between the gears and the shifts." Since they started

commuting together, Kate has noticed that she now feels “more comfortable in a higher gear,” which is a physical indicator of comfort and strength on her bike.

Tyler and Kate’s ride partnership has not been completely one way. Both riders have gained different perspectives and have enjoyed different aspects of it. Kate has increased her confidence and abilities so much from riding with Tyler that she has begun riding her bike with her friends in different parts of Indy. She told me that just a couple of days after our interview, she had a date with one of her friends to ride by the zoo downtown on the White River Trail. Tyler, on the other hand, has derived a lot of enjoyment from “planting the seed” for a new cyclist. He says that, “it’s fun,” and “seeing it through someone else’s eyes where it’s new and exciting for them is kinda fun too.” This relationship and self-organized ride partnership is an example of how a familiar ride guide can help a new rider overcome educational, social, and even infrastructural obstacles to cycling by providing them with knowledge, resources, comfort, and safe routes together.

4.3.3 Neighborhood Rides

Bike Indianapolis’s second initiative that focuses on building biking skills and safety is its Neighborhood Ride program. Neighborhood rides are free, weekly, low-stress, 5-10-mile bike rides through the trails and streets of different communities throughout Indianapolis. My primary role as an intern for Bike Indianapolis was to attend and lead these slow-roll community rides in four different locations around Indianapolis, four days a week. Meeting locations for these rides included Garfield Park’s Edna Lacy Park, Garfield Park’s Public Library, Haughville’s Public Library, and Near East Area Renewal (NEAR) on the Near Eastside of Indy. I marketed these rides through

Meetup.com, the Bike Indianapolis event calendar, social media, and through the creation of physical flyers that were displayed at each location's meeting site. These rides acted as another effective solution to overcome many of the obstacles to cycling by providing an accessible informational resource to community members who want to bike, building a sense of community that leads to ride consistency and accountability, and creating a safe space for riders to claim more space on the road in a group and practice their bike skills in a controlled environment.

The neighborhood ride program is a casual bike ride with a dynamic group of riders each week. When I led rides in the fall, before we rode, I always did a bike inspection for everyone who showed up. For my first ride from Garfield Park, four riders showed up, which was one of the most successful kickoff rides of the entire program. All four riders biked to the library in their neighborhood to meet me, and they all knew each other and planned to come together. Three riders were female, and one was male, and all of them were in their early 20s, making for my youngest group of riders in the program.

Before we kicked off the ride, I went around testing people's tires and offering to pump them up. Anthony, the only other man on the ride with us, said that his tires might need a pump, and that he usually just fills them "by feel." Just by a squeeze of his tire, I could tell that it was flat. I checked his tires to see how much pressure per square inch (PSI) was called for, and they read 70. When I started pumping them up, my gauge read that both his front and back tires were around 20 PSI. I finished pumping them up for Anthony, and I told him to squeeze them now, telling him that's what a full tire feels like. I pumped up one other rider's tires, and then began talking about the route. One of the ride leader's primary roles for these neighborhood rides is to provide this information

about bike sizing, maintenance, and general mechanics, and this allows for free, nearby information for participants who come to ride with me.

Another way that I (and other neighborhood ride guides) acted as an informational resource for bike riders was through the creation of safe biking routes in each of my locations and by introducing riders to the mapping resources that I use. I mapped out each route before the ride using a program called RideWithGPS, which tracks progress through the route and gives real-time audio cues on when to turn and where to go next. By guiding the group on safe routes that utilized the low-traffic streets of a neighborhood and the trails of the area, I showed riders paths that they can take on their own or adapt to suit their uses in the future.

Finally, before each ride, I would talk through the route with the other riders who are generally more familiar with the area than I am just so that we all know the general layout of the route. Before the first Garfield Park ride, I talked through the seven-mile route that I had planned through the Eli Lilly campus and around Shelby Street. One rider nervously asked me how long seven miles would take them, and I estimated around 40 minutes. She responded, “not for me on this bike,” doubting her abilities. We got back in 39 minutes, and at the end, she said that she had a great time. In this last example, I dispelled the education myths that biking is more difficult than it is and takes longer than it actually does. Through active demonstrations and route riding on these neighborhood rides, participants learn the true distance and time that it takes to bike somewhere—and they are often surprised to hear how fast and effortless it is.

4.4 Building Bike Enthusiasm

One of the best ways to encourage ridership is to host city-wide bike events to draw attention to this method of transportation and get people excited to ride. These large-group rides also increase feelings of safety for participating riders because of the strength in numbers, the knowledgeable volunteers, and the pre-determined routes. For this study, I will be evaluating Bike Party, Indianapolis's year-round monthly mass ride on the first Friday of the month as the primary method of building bike enthusiasm.

4.4.1 Bike Party

The night of my first Bike Party, I had no idea what to expect when I pulled up to Obelisk Park downtown with my roommate who just started biking regularly that year. After failing to get off the IndyGo bus at the right place, we rode from the transit center to the meeting point for September's group ride and my first ever Bike Party. The whole event is advertised anonymously on Facebook, and upon first impression, it didn't seem very busy or organized. We got there five minutes before the event start time of 7:00 PM, which was, looking back, a rookie mistake. At this time, there were about 50 people casually conversing—a modest crowd, I thought.

About 30 minutes went by, and then the regulars and volunteers started rolling in. Shortly after that came the main event. This group of late arrivals turned heads as men and women rolled in with LED-lined, speaker-boosted, fat-tired, low-riding, flame-painted bikes. One group of guys in probably their mid-forties rolled through slowly blasting Tupac out of the back of one of their cargo bikes as the rest of the growing crowd gazed in audible amazement.

If my first mistake was showing up too early, my second mistake was not bringing anything to drink. Bud Lights and Fireball shooters flowed like water, and I even saw someone shotgun a beer when the ride started. The air smelled of marijuana, and I could tell that this was a much more casual ride than I initially thought.

Around 7:45, one of the volunteers got in front of the crowd and pulled everyone's attention with a megaphone. He told us that there are three rules for Bike Party. First, "we only take up one lane because if we rode in two, we would be dicks. Second, we do not run reds. Third," he paused. "I know there's a third, but I can't remember it, so fuck it let's ride!" And with that well-versed announcement, all 300 or so riders took off down the typically busy Meridian Street.

The number of riders in the group was a bit overwhelming, but simultaneously fun. Looking around me, I saw parents towing their kids in trailers, young adults with clear backpacks holding their pets, couples with matching helmets, and solo riders of all speeds. The diversity of riders is one of the event's strengths, according to Liam. They told me that "Bike Party is so fun because there are so many different types of people that ride at Bike Party."

Since we all rode in the right lane about four or five riders abreast, the first stoplight divided the whole group in half. Each subsequent light thinned our ranks, and just when I was riding with only my roommate and about 10 other people, we got to our first planned stop at the MLK center. Another surprise to me was how long the built-in stops were along the route. We arrived at the MLK center at around 8:30, and people kept drinking and socializing for about thirty minutes before riding off as a group toward the next stop. At this point, the sun was already down, and my roommate and I realized how

close we were to Butler and our house on campus, so we dipped out with a few other riders. This formative Bike Party experience left me with a lot of lessons and a burning desire to return next month.

For October's ride, I brought with me two of my friends for the Halloween-themed ride. We met at Obelisk Park again, and this time, I knew better than to arrive right away. The three of us got a ride downtown and showed up around 7:30. I recognized many of my weekly riders since I had led my community rides for a couple of months by that point. I saw many of my riders from Garfield Park and the Near Eastside, so it was nice to catch up with them. Keeping with the Halloween theme of the night, the three stops for the evening were Andrew Ramsey Park, Funky Bones, and "Hellmont" (Bellmont) Park.

This route began by heading north on Illinois Street, which allowed people to show off a wide variety of costumes. We saw a gorilla riding with a banana, a grinch that was a little bit too realistic, a lot of ghosts, ghouls, and zombies, the Mario crew, and Squid Game contestants. That month's ride did take us on unpaved roads, which was a good break from the stoplights and city riding that it took to get back to Butler.

My Bike Party guests who I brought had fun the entire time. One of them told me while we were riding that she likes to ride her bike just because it's so fun and makes her feel like a kid. The two even started a "barty barty barty" chant that earned them a sticker from a volunteer who rode past us. The pair told me that Bike Party was one of the most fun nights they've had at Butler. One of them also wanted to keep the "barty" going, so we biked to Broad Ripple to meet some friends at a bar afterward. Contrary to my own

belief, the "barty" does not stop when it gets cold. Bike Party runs every month, and as the temperatures drop, the ride speed increases to help keep people warm.

Much of Bike Party's success comes from the fact that bikes become "first-class citizens" for the night instead of cars. Taking up an entire lane on Illinois Street, one of downtown Indy's major thoroughfares, certainly held up traffic, but there were so many riders that the cars had no choice but to slowly creep behind our group. Some drivers looked a bit annoyed that they couldn't turn for a while, but more common were drivers giving us celebratory honks, cheers, or waves. By creating a space for riders to "reclaim the roads," Bike Party encourages malicious compliance in a fun and organized way with community, music, and celebration. These rebellious rides exist in a lot of cities, often with the intended purpose of reclaiming roads as a form of bike advocacy.

Another reason for the monthly rollout's success is because it gives people an exciting reason to be flamboyant on their bikes. In doing so, Bike Party shows new riders the joys of biking in a controlled riding environment, which can help overcome the inertia of starting to ride and pave a path to consistent biking.

4.5 Miscellaneous/Underlying Solutions

4.5.1 Creating Road Empathy

On my second-ever Wednesday night neighborhood ride through the Near Eastside of Indy, Joseph, our ride leader, had made a route in advance that took us through the neighborhoods near 10th street. Since this was only our second-ever ride from this location, we had only five riders, which made for one of the more intimate Wednesday night rides. About halfway through the route, we were rolling through a neighborhood road when suddenly, an SUV filled with people screeched by us, yelling

profanities. One individual shouted, “get a car,” before throwing an empty can that hit a rider in the back of the head. The perpetrators sped off, and all we could do was shout back and gather ourselves following the interaction.

This incident was certainly frightening, and Joseph stopped us all to make sure that we were all okay. I mention this story because these drivers lacked road empathy, and I’m willing to bet that they aren’t bike riders themselves. A lack of understanding of a cyclist’s perspective is one large reason why biking in Indy is unsafe in many areas.

One of the underlying reasons for the success of programs like Bike Guides, Neighborhood Rides, and Bike Party is because they invite new riders to join more experienced ones, thereby granting people a new point of view on the road. On a bike, one experiences a city or a place differently than they do when they’re in a car. City riding is more vulnerable than city driving, and it allows the rider to interact with their environment with more of their senses. By exposing new cyclists to this point of view, the next time they use the road in any form of transportation, they will have greater empathy for the bikers who share the space. Creating this “road empathy” helps make a safer space for cyclists and helps drivers and other road users understand what it’s like biking in Indy.

One of the greatest conflicts that I’ve observed and experienced between cyclists and vehicles is shared road space. Nancy, a bike guide and a new Indianapolis resident, reflected on the lack of understanding that many drivers have if they haven’t ever ridden a bike. She told me, “People who only drive really can’t imagine what it’s like to be on a bike in a city. Some people care, but most don’t... They think that bikes should only be on trails and not on the streets.” What Nancy describes here is not necessarily a fault of the

drivers, for they have no experience on a bike competing for space. However, education programs and hands-on exposure to city riding through programs like Bike Party, Bide Guides, and Neighborhood rides, to name a few, would help develop empathy for other road users.

Winston, the IndyGo driver who bikes every day, is a great example of an individual who was able to change his viewpoint once he began using other methods of transportation beyond an automobile. He recounted that when he first got his license, everything was from a driver's point of view. "Like when a city bus would stop and block traffic... that was frustrating. When a cyclist would be blocking the road… it was frustrating." However, his perspective changed when he began biking and taking the bus as his primary means of transportation. Now, Winston's first thought when on the roads is to "see things a little bit more from the perspective of other road users who aren't in a car." Winston proves that simply expanding one's own point of view carries over in the future in the treatment of others, so by increasing the number of new riders biking in Indy, general safety and understanding will follow.

Even between cyclists, there can be different perspectives. Luke, one of the daily commuters who I interviewed for this project, told me about competing "cliques" in the bike community that oftentimes don't see eye to eye, which creates a counterproductive rivalry and competing interests. He explained the different "sects" of Indy bikers, from the generally older road cyclists in their lycra suits to the "dirtbags who are pushing gravel roads and drinking beer. That crowd is different from the bike messengers and the commuters, or the people who are literally riding because they have to." These groups understand cycling a bit differently, with distance road riders primarily riding for

exercise, gravel and mountain bikers riding for leisure, and everyday commuters riding for transportation purposes. Because the goals of each rider differ slightly, they also might have different priorities and viewpoints when it comes to what bike infrastructure ought to look like. Exercise and distance riders who avoid the bustle of downtown Indy would likely prefer more bike infrastructure outside of Central Township, whereas commuters would prefer more bike lanes downtown. These competing interests can undermine and obfuscate future bike infrastructure projects through disagreement, so Luke urges all bike riders of all interests and reasons to be empathetic to other riders. He encourages people to be "less selfish about their specific needs" and instead focus on the unified goal of making safer spaces for all bikers in Indy.

4.5.2 Making Examples out of People and Places

Increasing the population of riders increases overall safety for cyclists because they are more prevalent and visible on the road. Similar to the bandwagon effect, the more people that you see doing something like riding their bike, the more likely it is that others will follow. And seeing a wide range of people on bikes makes a greater diversity of people feel like they can tide too. Samantha is incredibly well-connected to the bike community, and she knows people of all shapes and sizes who bike regularly. She told me that she's friends with a 74-year-old who runs all of her errands, including grocery shopping, on a bike. She said that "to meet that 74-year-old, you can't say that you're too old to be riding a bike." She also argued that physical fitness is rarely an excuse: "We have ladies who start, and they're really heavy. There are racers who are 200-pound racers. So the idea that you're too fat to ride a bike, that excuse goes away." Seeing inspirational riders like these creates a "why not me" mentality for onlookers or aspiring

riders. If physical conditions are a limiting factor for someone, then Samantha encourages riders not to go as far or as hard. She told me that if biking is hard for someone, that doesn't mean that they can't get on an exercise bike or go on a quick ride to start their journey. "The idea of biking being so approachable at so many levels keeps people from having the excuse that 'I can't do it.'"

Another solution for many of Indy's bike woes could be to use current bike infrastructure projects as examples for others. Timothy described his class field trip to Long Beach, California as an example of using new projects to market future development. He told me that they "came across actual experimental streets where they created dedicated bike tracks where you have bollards or something separating the cars from the bike lane." The city installed these bike protections a couple of blocks at a time, and then used them as case studies. In this way, the city can see that smaller, incremental investments result in greater bike use, and those can snowball into investment into an entire network:

> It's important to educate people, for instance, about what the possibilities are. You could take a block-by-block approach, designing a bike lane between two strategic thoroughfares, perhaps, and show people that that's how you connect two thoroughfares with a bike lane. Get people out there to see it.

Creating more bike infrastructure to use as models in other parts of the city will end up having a positive feedback effect. As more infrastructure is built, we have seen in other cities and studies that more riders will come. Then, as the perception of biking improves and people see others doing it more, they will be more likely to join. As numbers continue to grow, more infrastructure is justified, completing the positive feedback loop.

4.5.3 Private Incentives:

Changing the norms of an entire city will take an entire city. Employers, companies, and other institutions who might only be tangentially related to the network of cyclists in a city can also take on key roles and encourage biking. Private programs can help get more people on bikes through competitions, prizes, or financial incentives, adding yet another layer of motivation to ride.

There are many different programs and incentives that employers can offer to get their employees commuting. For example, Tyler, the gentleman who started his own Bike Guide program with his coworker, recalled how a staff competition where he works is what first inspired him to start riding his bike. He told me that all city employees had a fitness and riding competition, and that encouraged Tyler to start riding more. Those who rode to work the most days during the competition won, which created friendly competition to ride. This initial motivation to change Tyler's method of commuting eventually expanded cycling to his personal life. Now, biking is not just a method to get to work—it's a method of transportation, leisure, and connection to other people. What began as an external motivation for Tyler quickly became an internal passion, and his employer's programming acted as a catalyst for this transition.

A competition is not the only way for an institution to promote biking for its members. A couple of other stakeholders I interviewed brainstormed ideas for how employers can incentivize riding bikes. Walt told me that his employer "does almost nothing to encourage anything other than driving a personal automobile to [his] place of work." He said that the first and most basic thing that an employer can do to support those who want to bike is to add a bike rack to the building—preferably an indoor bike

locker. However, an even more effective solution would be to add financial incentives on top. Walt did mention that his place of employment has a transit program, where he can take a portion of his paycheck and put it towards a commuter benefit tax-free. However, if he were to cycle, then he does not get that benefit. He told me that extending the benefit to bike riders in the form of subsidies would be a "low-cost, simple" solution to create "small but effective financial incentives."

Andrew had a similar idea for an employer subsidy program that would help by incentivizing the use of public transit and cycling. He laid it out for me: "If you work downtown, and the business has to pay for a parking stall, they can go to the employee and say 'Here's the cash value for the parking stall. You can either use it to pay for the parking, or you can pocket the cash and bike to work.'" He explained to me that people respond to incentives better than they do regulation, so city-wide programs such as this "would have a really significant impact on biking in Indy."

One final way that employers could incentivize commuting via bike to work is to create friendlier bike facilities within their actual workplace. Adding showers to a site of work would allow commuters to clean up after their ride and change out of their riding clothes into their work clothes. That removes the potential obstacle of being inappropriately dressed to ride for those who have to work in suits, for example, and it solves the problem of showing up sweaty. Other measures that employers could implement at work include in-building bike lockers for additional bike security and additional storage for equipment like helmets, bike uniforms, and locks.

5. Conclusion

One purpose of this ethnographic study is to paint a picture of the Indianapolis bike scene at a specific moment in time. During my research collection and writeup, the Indianapolis transportation scene planned and underwent several dramatic changes, including the proposal of a new BRT Purple Line, Cultural Trail expansion projects, and $25 million invested into trail maintenance and planning through Proposal 290, which makes this report a unique snapshot of the changing attitudes of many Indy stakeholders. I hope that in the future those interested are able to look back at this study to assess the attitudes of Indianapolis residents, bikers, workers, ride leaders, planners, government officials, and more during the beginnings of the city's shift away from an automobile-dominated paradigm toward one more focused on multi-modal transportation that puts walking and biking at the forefront.

Another hope of mine is that this report can be used as a guide to both identify and provide solutions for the problems that currently make biking in Indianapolis more difficult than it ought to be. By pointing out infrastructural, safety, social, and targeted issues from multiple different perspectives, I isolated the obstacles to riding so that they can be recognized by people of many different backgrounds and areas of expertise.

The specific suggestions for "best infrastructure practices" throughout the solution section of this paper reflect the points of agreement across over 100 years of modern urban planning experience. The recommendations from my informants can be used as a framework to begin solving Indy's infrastructure woes and as a model to make sure that current projects maintain the well-connected, multimodal ideals outlined by the informants of this study. Moreover, I hope that success stories like Tyler and Kate's

partner riding program and my Wednesday night Neighborhood Rides act as a catalyst for even more of these initiatives around the city. If this paper makes even one or two more riders join me for Bike Party, then I would consider my research an overwhelming success. Building bike enthusiasm and road empathy are both socially situated solutions to many of the identified obstacles to riding that have a domino effect in normalizing this passion of mine.

But don't just take my word for it. Also consider all the ardent informants in this study who spent hours of their lives talking to an undergraduate student about why they love biking so much and why they share my passion for improving cycling around the city:

> It's very peaceful. It's a very relaxing thing. We're only five miles from the office, but we end up going seven miles just so that we can take the scenic route and have more fun and enjoy the ride on the way in. And then going home, we usually just go straight home or we stop for a drink on the way because that's really easy to do... I love it. It's so much fun. I really enjoy it. -Caroline

> Just being outside. I like to be outside. I am not one to ever wear earphones when I'm out. I like hearing birds and seeing the water. -Micah

> Riding my bike just makes me happy. My husband and I always have this discussion about where we're going to live, and always at the top of my list is having to live somewhere where I can get places by bike. -Nancy

> I get to see what the city actually looks like. And I have more interactions with people who live here rather than who are just passing through. I don't have to have fights with people who are driving here. And it actually allows me to see more of a third space, rather than just being at work or at home—such as a coffee house or a bar. I stop at the park. I stop and actually do things I enjoy without having to go through the 'hassle' of finding parking. It slows down my life without slowing me down on my commute, and that's something that I really appreciate. -Walt

> Another one of my favorite things is having the exercise. I feel a lot better when I'm done. Mentally I feel a lot better—I can sleep a lot better. And I feel like I'm able to concentrate better on my work or whatever task I am doing later that day. -Kate

> The other thing I really enjoy about it is that it's less stressful just being able to commute places in comparison to driving. Not having to worry about parking for me is a big convenience. -Lydia

> I like the independence of it. If you want to take a different route—if you want to ride down whatever random little trail or path. There's just more flexibility, would be the right word. -Madison

And my personal favorite:

> Biking gives me the chance to feel like I'm 8 again. Every time I get on my bike, I experience the joy that I felt when I first learned how to ride a bike. It never gets old for me. -Samantha

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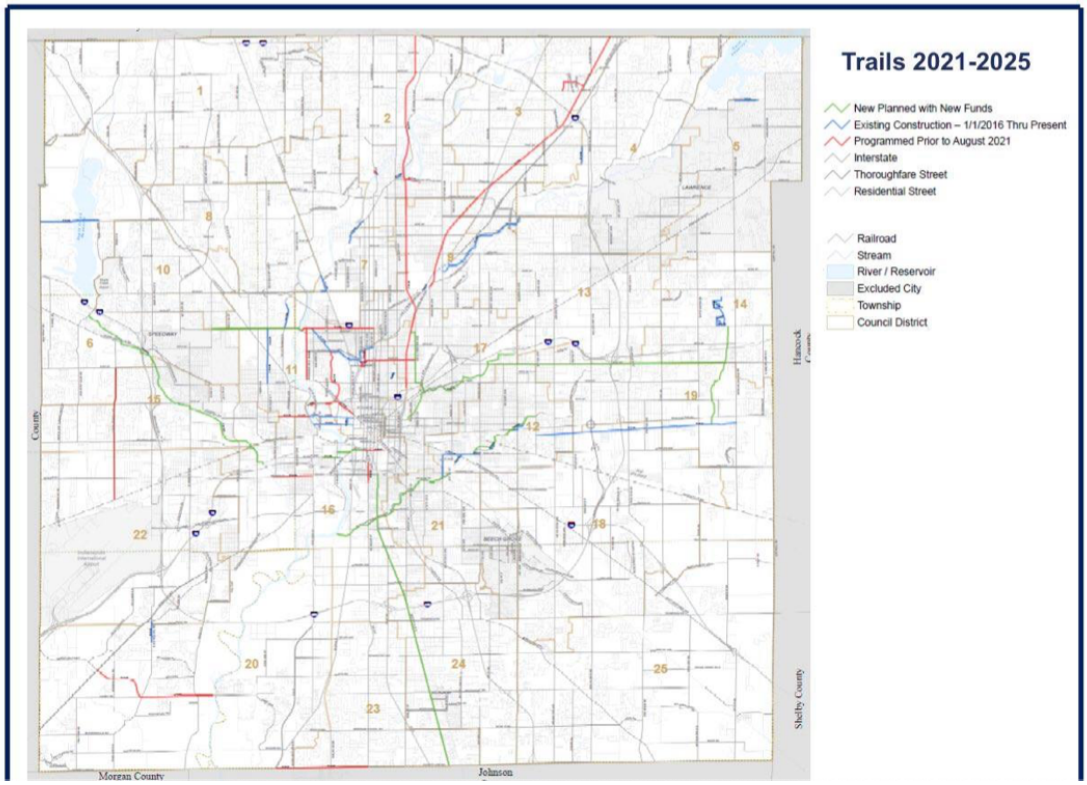
Appendix A: Circle City Forward – Phase 3 Plan

Circle City Forward – Phase 3
$25M Trail Projects Investment

Project	Impact	Est. Design	Est. Construction/Inspection	Total ARP
Pogue's Run	Greenway – Finish Original System	$600,000	$6,000,000	**$6,600,000**
Pleasant Run Rehab/New Terrain	Greenway – Finish Original System and move south	$640,000	$5,460,000	**$6,600,000**
Eagle Creek Phase 2	Greenway – Westside connections to B&O Trail, Girls School Road, and Speedway	$300,000	$1,400,000	**$1,700,000**
Nickel Plate	Trail – Northeast connections to State Fairgrounds, Fall Creek, Monon Trail to Castleton and Hamilton County	$1,000,000	$10,000,000	**$1,000,000**
Grassy Creek	Greenway – Eastside connections to Pennsy Trail; and Purple and Blue BRT lines	$685,000	TBD	**$685.000**
Pogue's Run/Monon Connector	Complete Street – Connecting Pogue's Run, Douglas Park, Monon Trail	$200,000	$1,700,000	**$200,000**
Interurban Trail (Madison Ave)	On-street trail – Connections to Pleasant Run, Red Line BRT, Greenwood Trail on Madison Ave	$500,000	TBD	**$500,000**
E 21st Street Road Diet	Complete Street – Connections to Pogue's Run Trail and Grassy Creek Trail	$1,200,000	$9,800,000	**$1,200,000**
W 30th Street Connector	Complete Street – Connections to Red Line BRT, Canal Towpath, Riverside HS, Marian Univ., and IMS	$500,000	$4,600,000	**$500,000**
ROW Engineering				**$2,000,000**
Additional Construction & Land Acquisition				**$4,015,000**



Appendix B: Question List

Stakeholder Questions:

1. When did you learn how to ride a bike?
2. How often do you ride your bike today?
3. How often did you ride your bike before the COVID-19 pandemic?
4. What is the main reason why you ride your bike?
5. Is there anything stopping you from riding your bike to work? For leisure?
6. Is there anything that could be done that would increase the likelihood of you biking, either for commuting purposes or for leisure?
7. In your opinion, what prevents new riders from getting on a bike for the first time in Indy? What is the greatest obstacle to cycling for experienced riders?
8. Do any areas of Indianapolis cause you problems on your bike? Do you avoid any? How might these be remedied?
9. What do you think might be other reasons why people choose not to bike?
10. What changes would you like to see to the current transportation infrastructure in Indianapolis? How would these changes affect the use of cars and different modes of transportation?
11. How is biking connected to other transportation systems?
12. How do you see bike infrastructure as part of the overall transportation infrastructure?
13. How has biking changed your view of transportation in general?
14. Has biking changed how you use or view other methods of transportation?
15. What does your ideal city for cycling look like? What is the main thing preventing these changes?
16. What are things that could be done today that would encourage cycling in Indy?
17. What are the strengths and weaknesses of our trail systems in Indy? Our streets?
18. What is your favorite part of riding your bike?

Bike Guide Questions:

1. Why did you sign up as a bike guide? How did you find out about the program?
2. How was the matching process? How might it be improved?
3. How was your training process to become a bike guide?
4. How often did you ride with your ride partner?
5. How long were your typical rides?
6. Can you tell me a bit about your routes?
7. How many weeks did you ride together?
8. Was the length of the program appropriate?
9. Can you tell me a bit about the novice rider who you got paired with?
10. What was your novice rider/s comfort level on a bike when you first started riding?
11. How did you see your ride partner grow/develop on their bike?
12. Do you think that your ride partner gained cycling confidence from riding with you? How do you know?
13. Do you think your ride partner has/will ride on their own after this program?