

Introduction

In recent years, the topic of city and town design, and its effect on the well being of humans and the environment, has been receiving more attention, in both social media [1] as well as academia [2]. In particular, many car-centric policies that have long been implemented by towns and cities - such as single-use zoning, minimum parking requirements, road widening, and lack of infrastructure for walking, biking, and public transportation - have been called into question around the world.

In this proposal, we will present critical issues that car-centric design has caused or exacerbated in society, and argue for specific shifts in local policies that we believe will lead to a safer, fairer, happier, and healthier Henrietta.

Why car dependency is a problem

Over the last century, the gradual development and adoption of cars into society has led to huge changes in people's daily lives. Some of these changes have certainly been positive, such as making travel easier in rural areas, and giving certain people enjoyment from learning about, collecting, or driving them. However, the widespread usage of cars, combined with the political response to it by the government on all levels, has drastically changed our landscape. Roads, parking lots, and other space for cars, as well as single use zoning policies that separate homes from work and amenities, have pushed our destinations apart from each other, making walking and biking less practical or even impossible modes of transport for survival. Combined with a lack of investment in public transport, owning a car has become the only convenient way to live in many places, forcing people to either own one or make their lives inconvenient and dangerous. While it would be impossible to list every single problem that this system has caused, we will present some of the most critical issues.

Firstly, one issue with car dependency is that it poses a threat to public safety. Globally, car crashes are the leading cause of death for people from 5-29 years old, killing around 1.2 million people per year. In addition to deaths, between 20-50 million suffer non-fatal injuries from car crashes, many of them becoming disabled as a result [3]. Injury and death from cars have become so common, that this danger is considered to be a normal part of life. The amount of damage caused by car crashes is, without doubt, increased when other forms of transportation are not viable or convenient means of traveling and surviving.

While crashes are an obvious and well-known danger posed by cars, there are also other, less visible forms of physical and mental harm that cars inflict on the public. One major source of this is their combustion emissions - in fact, one study estimates that the impact of road transportation on air quality in the US has actually caused about 30% more premature deaths

than fatal accidents [4]. Another source of harm is lack of exercise, which is a crucial part of one's physical and mental health. Lack of exercise increases the risk of heart disease, cancer, type 2 diabetes, anxiety, depression, poor sleep quality, and many other health issues [5]. While lack of exercise is often pointed to as a matter of personal responsibility, it is undoubtedly worsened when work, grocery stores, school, or other meaningful destinations are too far away to walk or bike to. It is especially worsened when there is a lack of safe and comfortable infrastructure for walking or biking.

Another issue with car dependency is that it is extremely unfair to those who cannot drive - including children, the elderly, the disabled, or lower income people who cannot afford to buy, maintain, and fuel a car. Without a car, many of these people have to put themselves in danger by walking or biking on roads without protected sidewalks or bike lanes, and by crossing roads that are designed to prioritize the speed of cars over their safety. Others are forced to rely on others to drive them around for their basic needs. This can be particularly detrimental to children's ability to develop and become independent - in fact, evidence from multiple studies shows that "Compared to children who walk or cycle, children who travel in cars have less knowledge about their neighborhoods, have fewer opportunities for outdoor play and exploration, and gain less experience in assessing risk and becoming independent" [1].

One more point we would like to make is the effect of car dependency on the environment. Road transportation accounts for 15% of global CO2 emissions, and about half of road transportation comes from passenger vehicles. Microplastics from car tires are also a source of environmental damage - in fact, it has been found that "Among primary microplastics released into the ocean, tyres and road markings account for an estimated 35%" [1]. While many consider electric vehicles to be the solution to the environmental damage caused by cars, and they certainly are a step in the right direction, electric vehicles have actually been found to still contribute over half the emissions per unit distance as standard combustion vehicles, in part due to a higher environmental impact from their engine manufacturing [7]. Not only that, but electric vehicles are not a solution to the previously mentioned problems of public safety, physical and mental health, and isolation.

Finally, we bring up how car dependency affects the economy. Issues such as inflation, housing affordability, job opportunities, and cost of living can have an enormous effect on people's ability to not just survive, but maintain a good quality of life. The first thing to consider is that owning a car is a large financial burden. The American Automobile Association found that the average yearly cost of owning a car - including insurance, fueling, maintenance, depreciation, and ownership itself - was \$9,282 in 2019 [12]. Owning a car also makes one's housing more expensive - in fact, including off-street parking has been found to raise the price of a single-family home by \$47,000 [11]. While some may be willing to pay these costs for reasons such as the enjoyment of owning a car, it is extremely unfair and detrimental for these

burdensome costs to be requirements of surviving and living a decent life. The second thing to consider is that the cost of car infrastructure is not just imposed on car owners - it is actually imposed on everyone. This is because restrictive zoning laws such as minimum parking requirements, minimum yard sizes, and single-family-only zoning drive up the cost of housing and business spaces, and this cost is paid by everybody through inflated prices of housing and other goods. Lastly, having good bike and pedestrian infrastructure stimulates the economy by providing more foot and bike traffic to businesses. A review from 2021 found that upon the addition of bicycle or pedestrian infrastructure, local businesses experienced largely positive economic effects - this was the case 57% of the time for bicycle facilities, 100% of the time for pedestrian facilities, and 75% of the time for mixed facilities - even though these facilities almost always required replacing some car infrastructure [13].

What can Henrietta do about it?

Let's face it - Henrietta is car dependent. Parking lots and wide roads dominate the landscape. Public transportation and bike infrastructure are lacking, and destinations are too sparsely distributed and uncomfortable to trek between for walking, biking, or transit to be considered convenient means of travel. As one example, traveling from the dorms at RIT to the nearest grocery stores such as Price Rite or Wegmans requires a 4-6 mile trip back and forth. Not only that, but the path on the way to Wegmans has a gap that must be crossed without any sidewalk or protected bike lane, putting the person traveling in danger. This is also the case with many other areas of Henrietta as well.

So what can we do about it? As car usage rose throughout the country over the last century, many car-centric features of local policy - from zoning laws to street infrastructure codes to lack of investment in public transit - were implemented in towns and cities which caused them to be car dependent. Here we will go over some of these features that exist here in Henrietta, why they are harmful, and propose solutions to them.

One policy that exists here is single use zoning [8], which is present across the vast majority of Henrietta [9]. These laws divide the town into residential-only and commercial-only areas, which pushes people's required destinations - home, work, and stores - very far apart from each other, which plays a huge part in making walking and biking impractical forms of transport, and isolates people from their community.

While Henrietta did establish some mixed use overlay zones in 2019, the regulations surrounding these areas make it nearly impossible for them to actually become a walkable or bikeable community. Unlike the way most people imagine mixed use zones, people cannot just build an individual house or store using a mixed-use overlay zone - instead, an entire 'mixed-use project', spanning at least one acre and containing multiple residential and

commercial components, has to be made. This requirement is extremely restrictive towards new projects being built by individuals, such as a single grocery store or house in the wrong underlying zone. Therefore, we suggest firstly that mixed use zones allow for individual residences or businesses to be created independently, and secondly that these zones are expanded.

The second policy we would like to address are minimum parking requirements. These regulations force building owners to personally provide and pay for a set number of parking spaces, which does far more harm than good for our community. While parking minimums may sound like a good idea, these requirements are based on outdated and poorly established formulas that are hardly even correlated with actual parking demand at all [14]. This has resulted in somewhere between 800 million and 2 billion parking spaces in the United States, with at least twice as many parking spaces than the actual vehicles that use them [15].

There are several problems with these archaic and excessive parking minimums. Firstly, they result in spread-out, sprawling areas that make walking, biking, and public transit less viable forms of travel. Secondly, they damage the environment by greatly expanding the space that cities and towns take up, which replaces wildlife with heat-absorbing and impervious concrete - not to mention the immense environmental damage caused by the high emissions of concrete production. Lastly, parking minimums place an enormous economic burden on businesses, homeowners, renters, and developers. This especially hurts small businesses, many of which operate on tight budgets. Being forced to pay for a poorly determined amount of parking takes money away from them - money that could otherwise be invested in improving their products, services, customer experience, or reducing prices.

In short, parking minimums not only contribute to the car-dependent nature of our cities and towns, but also impose unnecessary economic burdens on businesses and individuals alike, all while damaging the environment in the process. It's time to reevaluate these regulations - the space of our town should be used for the needs of people, not filled with empty parking lots. As a matter of fact, in 2017 our close neighbors in Buffalo became the first U.S. city to eliminate off-street parking minimums citywide. This allowed developers to consider several variables - walkability, distance from a bus or light rail stop, and the possibility of shared parking arrangements - and freely determine how many parking spaces to build themselves. As a result, there are signs that Buffalo is becoming less car dependent. Places once lined with designated parking are now filled with new sidewalks, streetlights, and a protected bike lane. Buffalo has also seen its first population increase in a long time.

There is one final policy that we will briefly propose: widespread bicycle and pedestrian infrastructure. No matter how many other policies are changed, we will never become a walkable nor bikable town unless it is safe and comfortable for people to walk or bike. As it stands currently, this is not the case. The only such infrastructure we have are sidewalks - which

often end abruptly with nowhere else to go - and tiny, unprotected “bike lanes” that appear at certain intersections - which also end abruptly, and dangerously place bikers in between lanes of traffic. Instead of forcing people onto these dangerous and degrading paths, let’s add pedestrian and bicycle infrastructure that is not only separated from dangerous car traffic, but that actually exists everywhere that it is needed.

Conclusion

In summary, the policies that we - our specific town, but also society at large - choose to implement, can have far-reaching effects on public safety, physical and mental health, the environment, and economic opportunity. As a town, we can choose what to do with this information.

We could continue to suffocate small business owners by forcing them to pay tens of thousands of dollars for an arbitrary number of parking spaces, while continuing to deny them any nearby walking and biking infrastructure which has been proven to help them. We could also, if we wanted, continue to keep everybody’s homes miles away from what they need to survive, continuing to isolate our children, elderly, and disabled instead of allowing them to experience independence and community. We could also continue to accept the immense amount of injury and death caused by car crashes as a static part of life.

Or, we could challenge ourselves to change these issues. We could learn lessons from the past, by taking a closer look at the policies implemented decades ago that caused these problems in the first place. Moving our town in a safer, fairer, and healthier direction will undoubtedly take some time. But for now, there are 3 key policies we believe are steps in this direction: updating and expanding mixed use zoning, removing antiquated parking minimums, and establishing safe, widespread walking and bicycle infrastructure. By discussing and following through with these policy changes, we can together create a more healthy, enjoyable, and prosperous town where everybody has the opportunity to thrive.

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