

# **Vision Zero in Oslo: A Radical Transition to a City without Cars**

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On my honor as a University Student, I have neither given nor received unauthorized aid on this assignment as defined by the Honor Guidelines for Thesis-Related Assignments

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## **Introduction**

Can injuries and fatalities as a result of car crashes really be eliminated? In many countries, these are seen as unavoidable side effects of transportation, but in Norway, many believe elimination is possible. Vision Zero was adopted in Norway in 2002 to strive to end all traffic fatalities, and now it has some of the safest roads in the world. In 2015, Norway's capital city, Oslo, made its own changes to shift to a people-centric transportation model, completely banning cars from its center by 2019 (Hartmann & Abel, 2020). To do this, 60km of bike lanes were added, prices for parking around the city have been greatly increased, and street parking spaces were replaced with sidewalks or flowerboxes (Bliss, 2018). In 2019, four years after committing to Vision Zero, Oslo ranks as the seventh most bike friendly city in the world according to the Copenhagenize Index of 2019. This is up from ranking nineteenth in 2017, and not being ranked in 2015.

To analyze the factors that contributed to these changes, the Social Construction of Technology (SCOT) framework will be used. A key component of SCOT is evaluating relevant social groups' interpretations of a problem and the impact they have on the solution or final product (Social Construction of Technology, 2018). This framework is particularly relevant to Oslo due to the number of participants involved. These participants include proponents of the changes, such as advocates of safer transportation within the city (Kvanvik, 2021), reducing environmental impact (MDG, 2021), pushing public transit over private vehicle transport (Grøtting, 2021), and improving cycling facilities and safety (Syklistene, 2021). This paper will analyze the major contributions of relevant social groups to achieving Vision Zero in Oslo, how these same contributions made Oslo one of the most bike friendly cities in the world, and discuss how the same strategies could be adapted in other cities globally.

## **Introduction of STS framework**

SCOT is a constructivist theory based on the sociology of scientific knowledge (SSK). It is specifically based on the principle of symmetry within SSK (Social Construction of Technology, 2018). The basic belief from SSK says that theories succeed based on social support rather than truth. In the same way, SCOT holds that technologies do not succeed because they are better than others, but because they receive more support. The purpose of using SCOT is to determine the support (or lack thereof) that allowed an innovation to succeed (or fail).

To perform analyses with SCOT, relevant social groups need to be identified. These social groups are important because each one has a vision or interpretation of the problem, and the way the problem is resolved will be due in large part to the contributions of each group. Each of these groups will affect the resolution in some way, but typically either one group's ideas will be the driving factor over the other social groups, or two groups will compromise on their stances. This is called stabilization.

Using SCOT to analyze how Oslo, Norway, achieved such great success with Vision Zero and improving cycling infrastructure will be particularly relevant due to the number of social groups involved in redesigning the city streets. Each social group's views on the issue can be analyzed, and the significance of each group can be used to determine how stabilization occurred.

## **Background information**

Vision Zero is a strategy to increase safe mobility and eliminate serious traffic injuries and fatalities. It began in Sweden in the 1990s and has since been adopted by most of Europe with general success. The Vision Zero movement is now gaining support in several major

American cities. Adopting Vision Zero is important because around 40,000 people in America and 1.35 million people worldwide die in traffic accidents each year (Vision Zero Network, 2018; ASIRT, 2021). These “accidents,” however, are preventable. Vision Zero deviates from traditional planning by understanding that humans will sometimes fail, rather than assuming that every driver will be perfect all the time. With this mindset, engineers and designers can rethink the way streets are laid out to reduce serious or fatal accidents (Vision Zero Network, 2018).

Improving cycling facilities plays a major role in achieving Vision Zero for the simple reason that bicycle incidents are typically less deadly than vehicle collisions. The more people that are consistently biking, walking, or using public transit instead of driving reduces the likelihood of a serious incident. Most of Europe has realized this, and they have made significant changes to their cities to accommodate cycling and other alternate forms of transportation. One of the countries most successful in implementing these changes is Norway.

Norway has been a Vision Zero world leader since it began practicing in 2002 (Hartman & Abel, 2020). In 2019, Norway had the fewest traffic related deaths per million at 20, while the average in Europe was 51 (Trygg Trafikk, 2021 b). Its capital city of Oslo has made major changes to its roadways to improve safety for drivers, bicyclists, and pedestrians that led to only one road related death in 2019 from a driver who drove his car into a fence (Hartman & Abel, 2020). Since 2015, when Oslo seriously started pushing for safer roads, it has added about 50 new kilometers of bike lanes throughout the city, and there are plans for 25 more kilometers to be added starting in 2022 (Giæver, 2021).

Adding these cycling paths often comes at the cost of street parking for cars (Bashford, 2021). Usually, the renovations do not expand upon the streets, but instead they are repurposed. Much of the success towards achieving Vision Zero in Oslo is not about making streets safer for

cars, but rather it comes from disincentivizing driving and making alternative modes of transport, like public transit or cycling, more appealing. This is a method known as choice architecture, where something is designed in a specific way to achieve a desired response.

## **Analysis by STS framework**

Advocates of increased transportation safety, reduced environmental impact, public transit, and cycling are four of the main groups that will be discussed. For each social group, their interpretation of the problems facing Oslo will be analyzed, followed by a specific group or organization within each social group and their contributions to solving these problems.

### ***Road Safety***

One social group to heavily contribute to adopting Vision Zero is people concerned for general safety on roadways. In 1975, 41 people in Oslo and 539 people in all of Norway died from road related incidents (Wray, 2020; Trygg Trafikk, 2021 b). In addition to this, hundreds or thousands more are seriously injured each year. These statistics are the greatest problem in the eyes of those advocating for safer roads. The EU, of which Norway is a member, has set a goal that between 2020 and 2030 they want to see a reduction in both road fatalities and serious injuries by 50 percent (Trygg Trafikk, 2021 b). As a country with some of the lowest statistics in these categories, Norwegian road safety advocates take these goals very seriously, and would ideally like to see their stats fall not just by half, but to zero.

An organization pushing towards Vision Zero for safety reasons is Trygg Trafikk, a Norwegian advocacy group that serves as a link between volunteer groups and road safety authorities (Trygg Trafikk, 2018). According to their website, Norway has been the safest

country in the world in terms of traffic deaths for the past three years (Trygg Trafikk, 2021 b). In 2020 the average traffic deaths per million inhabitants in Europe was 42, while in Norway it was 17 (Trygg Trafikk, 2021 a). Even with their current success, Trygg Trafikk is still pushing for safer roads due to their belief in the zero vision (or Vision Zero). They do this by promoting traffic education in schools, and by sharing information about traffic safety. Their website contains safety tips and information for different modes of transportation like walking, cycling, and driving. For Oslo, this focus on safety led to a decrease of risk by 47% for serious or fatal road injuries for cyclists from 2014 to 2018, and in 2019 no cyclists were killed in accidents (Hartmann & Abel, 2020).

### ***Environmentalists***

Environmental advocates are another major social group calling for reform of the Oslo city center, along with other Norwegian cities and roads. They believe that many cities have policies that are too car-friendly, and that those contribute to higher greenhouse gas emissions, along with dangerous roads and fewer cycling paths (MDG, 2021). Half of the world's population lives in cities, and that accounts for 70% of the world's greenhouse gas emissions (MDG, n.d.). The problem that this social group has focused on is reducing vehicle usage in favor of cycling, walking, or other modes of transport that do not contribute as much or at all to greenhouse gas emissions.

Miljøpartiet De Grønne (MDG, The Green Party) is a political party that focuses most of their attention to environmental issues and policy making. In their plans for remodeling cities, their first point is to “make it safer and easier to cycle and walk” by adding better pedestrian and cycle paths (MDG, n.d.). They also want to not just replace some current car infrastructure to

make it more cyclist and pedestrian friendly, but “prohibit the construction of new car-based shopping centers” entirely. Their hope is to turn Oslo and other major Norwegian cities into “ten-minute towns,” where everything a person could need is only a ten-minute walk or bike ride away, and by doing so, drastically cut their carbon footprint.

### ***Public Transportation***

A couple problems seen by those who view increased public transportation as an answer to achieving Vision Zero are the safety and usage of public transport. Trams were a major cause of incidents in the 1990s and earlier for Oslo. They accounted annually for 25 collisions with pedestrians or cyclists, 60 incidents with passengers on board, loading, or unloading, and 600 collisions with cars (Sagberg & Saetermo, 1996). These collisions occurred most frequently on streets with mixed use, two-way traffic, but were less frequent with more separation from busses and cars. Some may say trams are a problem and need to be removed from the streets to protect cars, but public transit advocates may claim the opposite: remove cars from the streets to make it safer for trams and busses to use them.

Kollektivtrafikk Foreningen (Public Transport Association) advocates for major changes in public transit, especially considering the changes that have occurred from the Covid-19 pandemic. They cite changes in customer behavior, the technological shift, and the economical shift as the main reasons for the overhaul of the current transit system (Grøtting, 2021). Public transport is an important focus both financially and politically because of its community development value, and this focus on public transit “helps to facilitate alternative modes of transport such as walking and cycling” (Grøtting et al., 2021). Closing streets to private cars makes public transit a more viable option and clears the roads to encourage cycling safely.

## *Cyclists*

Cyclists are obviously major proponents of improving cycling infrastructure in Oslo. Within this social group there are a number of different views about why cycling should be prioritized in the city, including health, the environment, ease of access, economy, and more. However, for the purposes of this analysis, their common interest of improving cycling infrastructure in the city will be the main focus of this social group's values. Their views on the problems facing Oslo's streets are simple: improve cycling facilities citywide.

Syklistforeningen (The Cyclists' Association) is a cycling organization that seeks "to accomplish political impact" towards the government (Syklistforeningen, 2020). Their efforts have led the Oslo City Council to invest NOK 673 million (USD 79.8 million) in bicycles in 2022, including "25 kilometers of new and upgraded bicycle infrastructure" (Giæver, 2021). Today there are 70% more cycling trips in Oslo, and more people feel safe cycling there. The ultimate goal though is for everyone to be able to cycle safely in their city.

## *Stabilization Scenarios*

With all of these social groups and their views and contributions identified, the stabilization aspect of SCOT can be analyzed. Stabilization, as a reminder, occurs when one social group's ideas or contributions prevail over others, or two groups come to a compromise in their ideas. In this case, the argument can be made for either of those scenarios. Safety and a commitment to Vision Zero by the City of Oslo, Norway, seem to be the driving factors in the success of Vision Zero and in implementing new cycling facilities throughout the city. With saving lives and preventing serious injuries from traffic incidents as a top priority, and reducing



car usage in the city being a simple solution to those goals, the other social groups' agendas do not seem to be as relevant as this one.

Two of these groups, advocates of public transit and of cycling are more niche groups in their interests. While each is still important, improving facilities for each to appease the interests of these groups is not significant enough to evoke change. The main components of each group's values contribute to the cause of those advocating for safety, as both of them reduce the number of vehicles on the road, which has been stated as a major factor in improving safety. This is somewhat ironic to consider that cyclists and their agendas were not the main factor in Oslo becoming one of the most bike friendly cities in the world, but the reality is that the safety of cycling was more relevant to the resolution.

Environmentalists are also a relevant social group with a lot of power. This social group's agenda seems to have had more influence than the two listed in the previous paragraph, and could potentially match or outweigh those of safety advocates. In 2015, when Oslo made a serious shift in its thinking on transportation, a new mayor was elected. Raymond Johansen, previous Vice Mayor for Transport and Environment in the City of Oslo, became mayor and brought many of his values to the city (Raymond Johansen, n.d.). He has committed to making Oslo a zero-emissions city, and to do this will make sure that all transportation growth comes from cycling, pedestrians, and public transit rather than vehicle facilities. This goal focuses mostly on the environment rather than safety, yet in improving transportation facilities to accommodate cyclists, pedestrians, and users of public transit, they also improved safety.

The argument can be made for multiple scenarios of stabilization based on the power of the two most relevant social groups: safety and the environment. As mentioned, committing to a zero-emission policy certainly shows the power of environmentalists, but also shows that it is

largely interconnected with transportation and safety. In this way, both are needed to achieve success with Vision Zero. From a transportation perspective though, it is not entirely necessary that cars be mostly or entirely removed to achieve greater safety. Innovations like roundabouts, ThrU-Turns, and diverging diamond interchanges are all new ways of designing transportation systems to reduce conflict points and extending the time period over which those conflict points are encountered. Another argument is that the main social group is environmentalists, because if cars are all removed so that everyone bikes or walks everywhere in an effort to eliminate emissions, Vision Zero can still be achieved without solely prioritizing safety.

## **Discussion**

The two major social groups and agendas to be discussed involving how Oslo achieved and continues to achieve such great success with Vision Zero are those of environmental and safety advocates. Each has a significant impact on the policies and actions of the city, and these actions can serve as a guideline for how to affect change in any city.

As mentioned in the explanation of the SCOT framework, not all ideas and innovations have power because of the “truth” behind them, but rather it comes from their acceptance by society. Environmental topics such as climate change are subjects that many are divided on, and could potentially fall into this category of being accepted and having power not because the theories are true, but because they are accepted by people. Whether or not these theories are actually true is not a topic to be discussed here. And whether one believes those theories or not, the fact remains that many are divided upon the issues. There is science in favor of climate change and against it, but the studies most widely accepted by society are those that claim climate change is happening and is a major issue.

The widespread acceptance of these studies by major politicians and political parties provides a firm reasoning for moving towards alternate modes of transportation, specifically in cities and densely populated areas. With the threat of climate change involved, there is great incentive to reduce the number of gas-powered vehicles on the road to cut down on emissions from those vehicles. This opens the door for cycling and public transit to become two major options for transportation. Transforming a city to reduce car usage and move into more sustainable modes of transportation is an incredibly effective way to reduce traffic deaths and serious injuries.

Committing to the safety of drivers is another way to reduce serious traffic incidents. As mentioned in the analysis, traffic systems are evolving to improve safety where it may not be possible to reduce the number of cars on the road. In America, many places are spread out and a car is required to make most trips, unlike Europe where many towns and cities are more densely built. People often still need cars in Europe though, but many countries have moved toward implementing roundabouts on their streets to improve safety for drivers. Since 1981, Norway has grown from having 15 roundabouts to more than 2000 (Wærsted, 2014). Roundabouts have been shown to be much safer than signalized intersections, and these have been very helpful to reducing the number of traffic accidents in Norway, including Oslo.

The City of Carmel, Indiana, in the United States, has adapted similar strategies to Oslo and other European cities when it comes to roundabouts. Since 1996, the mayor of Carmel, Jim Brainard, has been pushing for more roundabouts in the city, and they now have over 130 on their streets. He notes that traffic fatalities in the city have decreased by 90 per cent because of roundabouts. The average rate in the U.S. is 14 per 100,000 people, but in Carmel it is two (Dorfman, 2020). This is on par with Norway's statistics today. Carmel is a prime example that

these ideas and systems will work in America, despite pushback from drivers who may be unfamiliar with these traffic patterns. Roundabouts not only reduce accidents and fatalities due to the geometry of their design, but they also save energy, allow for more efficient flow of traffic, and are greener than a traffic signal due to less time spent idling, once again showing a strong correlation between traffic safety and improving the environment.

These changes in road layouts to improve safety, the environment, or both are very simple, but very effective. In many cases, streets will not need to be widened, but can be repurposed to be more favorable to cyclists or busses. By improving facilities for these modes of transport without accommodating for the loss in car space, cities can easily incentivize more sustainable, safer transportation. It is also important to remember to phase in these changes over time. Many of Oslo's major changes happened over a span of three to four years, and they are continuing to slowly introduce more improvements today. The biggest reason for implementing these changes slowly is to give people time to adjust, because many people are quite resistant to change. Introducing new traffic patterns and street designs slowly allows people to be able to adapt to them. Axel Bentsen, CEO of the company that runs the Oslo bike sharing program says "Cities have been built around cars for many decades," but for new developments they are "trying to make sure it's easy...to live without their own private car" (Peters, 2019).

## **Conclusion**

By focusing efforts and resources into improving road safety and the environment, Oslo, Norway, has become a world leader in Vision Zero, and is now one of the most bike friendly cities in the world. This was achieved by several activist groups making their agendas known and by the leadership and commitment of local and national governments. Two specific groups that

had the largest impact were advocates of increased road safety, and those of improving the environment. Through the combined efforts of these two groups, Oslo streets have been redesigned to incentivize biking or other means of transport over car usage. Many of the same strategies used in Oslo to improve safety and promote cycling can be used in other parts of the world where road safety and the environment are not a high priority. These changes in mindsets and design are crucial to saving lives. Commuting should not be a life-or-death task, and if much of the world would invest in the safety of their streets like Oslo has, hundreds of thousands of lives could be saved each year.

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