



Doctoral Thesis in Philosophy

# Ethical Issues in the Adoption and Implementation of Vision Zero Policies in Road Safety

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## Thesis Composition

Abebe, Henok Girma (2023). *Ethical Issues in the Adoption and Implementation of Vision Zero Policies in Road Safety*. (Doctoral thesis). KTH Royal Institute of Technology, Stockholm, Sweden.

The thesis contains the following five papers:

Abebe, Henok Girma; Hansson, Sven-Ove and Edvardsson Björnberg, Karin (2022). Arguments against Vision Zero: A Literature Review. In Edvardsson Björnberg, K., Belin, MÅ., Hansson, S.O., Tingvall, C. (eds) *The Vision Zero Handbook*. Springer, Cham.

Abebe, Henok Girma and Hansson, Sven-Ove. Can Cost Benefit Analysis and Vision Zero be Reconciled? (Submitted Manuscript).

Abebe, Henok Girma (2022). Road Safety Policy in Addis Ababa: A Vision Zero Perspective. *Sustainability*, 14(9), 5318.4.

Abebe, Henok Girma; Belin, Matts-Åke; Edvardsson Björnberg, Karin. Equity and Social Justice Consideration in Road Safety Work: The Case of Vision Zero in NYC (Submitted Manuscript).

Abebe, Henok Girma. The Morality of Car Driving: An Ethical Analysis of Risk Impositions (Submitted Manuscript).

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## **Abstract**

Abebe, Henok Girma (2023) *Ethical Issues in the Adoption and Implementation of Vision Zero Policies in Road Safety*.

Theses in Philosophy from the Royal Institute of Technology.

The aim of this doctoral thesis is to analyze ethical issues in the adoption and implementation of Vision Zero policies.

The first article analyses criticisms against Vision Zero goals and measures promoted to reach them. We identify and assess “moral”, “operational”, and “rationality-based” arguments against Vision Zero. In total, thirteen different criticisms are analyzed.

The second article seeks to reconcile the two major decision-making principles in road safety work, i.e., Cost Benefit Analysis and Vision Zero, which are often viewed as incompatible. We argue that the two principles can be compatible if the implementation of Vision Zero accepts temporal compromises intended to promote efficient allocation of resources, and the results of Cost Benefit Analysis are viewed not as optimal and satisfactory as long as fatal and serious injuries continue occurring.

The third article uses Vision Zero as a normative framework to explore and analyze road safety work in Addis Ababa, Ethiopia. The ensuing analysis shows that there are significant differences between Addis Ababa road safety policies and Vision Zero in terms of how road safety problems are understood and in their responsibility ascriptions for improving road safety problems. It is argued that enhancing road safety in the city requires promoting a broader view of the causes and remedies of road safety problems. Moreover, given the magnitude and severity of road safety problems in the city, it is vital to emphasize the moral responsibility of actors responsible for the design and operation of the road system, and entities that procure and own large number of vehicles.

The fourth article analyses equity and social justice considerations in Vision Zero efforts in New York City (NYC). Moreover, this study seeks to understand and assess how the city accounts for equity and social justice implications of road safety work. The result of the study shows that equity and social justice considerations played important roles in the initial adoption of Vision Zero policy in the city. Nonetheless, the study also shows that the adoption and implementation process gave rise to important equity and social justice issues which are primarily related to the method of prioritization used in road safety work in the city, equity and fairness in the distribution of life saving interventions, the socio-economic impacts of road safety strategies, and the nature of community engagement in policy design and implementation. The findings of this study, among others, point to a need for Vision Zero practitioners to give due considerations to equity and social justice implications of Vision Zero policies and strategies.

The fifth article analyzes the nature and moral acceptability of risk impositions from car driving in a low-income country context. It is shown that car driving involves an unfair and morally problematic risk imposition in which some stakeholders, namely those who decide on the nature of the risk in the road system and benefit the most from car driving, impose a significant risk of harm on others, who neither benefit from the risk imposition nor have decision-making role related to the risks they are exposed to. It is argued that addressing moral problems arising from the unfair risk imposition necessitates the promotion, on the part of beneficiaries and decision makers, of certain types of moral obligations related to the nature and magnitude of road crash risks. Importantly, those who benefit the most from car driving, and actors who decide on the risk level in the road system, have the moral obligation to implement effective risk reducing measures that protect those unfairly risk exposed, obligations to know more about road crash risks, obligations to compensate victims, obligations to communicate with the risk exposed

and incorporate their concerns in policy making, and obligations to bring about attitudinal change.

**Key words:** *Ethics, Equity, Road Safety, Vision Zero, Responsibility, Systems Thinking, Risk, Driving*



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**PART ONE**  
**INTRODUCTION**

## **1. Introduction**

This introduction primarily aims to introduce the five papers in this Ph.D. thesis. It provides summaries of the papers and some reflections on methodological considerations used in the process of writing these papers.

The overall aim of the thesis is analyzing the adoption and implementation of Vision Zero policies from a philosophical perspective. By this I mean the application of philosophical methods in analyzing practical moral problems related to the adoption and implementation of Vision Zero policies and reaching justified moral judgements about them. In section 3, I will discuss the different methods used in analyzing the ethical and policy issues treated in the different papers in this thesis. Below, I will restrict the discussion to identifying and discussing morally relevant issues in road safety policy in general, and in Vision Zero in particular. By so doing, I aim to show why road safety, even though it continues to receive little engagement from moral philosophers, is a suitable policy area for critical ethical analysis and in what ways such analyses can contribute towards a more efficient and effective implementation of road safety policies.

As rightly noted by Nihlén Fahlquist (2009, p. 386-387) road transport has important ethical implications that “should be thoroughly and continuously analyzed and discussed”. One such implication is that of fatalities and injuries in road traffic. Every year, 1.35 million people are killed due to road crashes (WHO, 2018), which amounts to almost 4000 deaths every day. This makes road crashes the 8<sup>th</sup> major killer globally, but the number one killer for children and young people (WHO, 2018). It is also the case that in most places, pedestrians and cyclists, children, young adults, elderly people, low-income and minority groups are disproportionately exposed to road crash risks (WHO, 2018). This is partly because transport planning and road safety work has traditionally ignored the needs and interests of these groups (WHO, 2018). In most places, roads are designed and constructed that favor car travel without

the necessary pathways for people who walk and cycle. Additionally, interventions that protect vulnerable road users from fatal and serious injury crashes are often not implemented, and when implemented their distribution tends to neglect minorities and low-income neighborhoods. As a result, road safety risks and other transport related externalities in many places are disproportionately concentrated in neighborhoods where poor and minorities reside (Karner & Golub, 2019). These realities give rise to important equity concerns with regards to the distribution of benefits and burdens from the road transport system. Moreover, the lack of recognition for the interests and needs of children, pedestrians, cyclists, and women in transport planning and road safety work raises important procedural justice issues related to the nature of decision-making processes in road transport planning and safety work.

In general, human death and suffering caused by the actions and inactions of individuals, companies, and governments bodies, including the equity and social justice implications of road safety problems show that road safety problems are not just public health problems but also pose major ethical concerns (Nihlén Fahlquist, 2006, 2009; Hansson, 2014, 2023a; Hokstad & Vatn, 2008; Husak, 2004; Ori, 2014, 2020; Van den Berghe, 2018).

In the process of addressing road safety problems, many countries and cities are currently promoting the Vision Zero policy. The adoption of Vision Zero is also partly justified as a response to the many ethical concerns associated with road safety problems. Vision Zero, initially adopted in 1997 in Sweden, is recognized both as a road safety policy goal and a strategy to prevent road crashes with potential fatal and serious injury consequences. As a road safety goal, Vision Zero aims for the elimination of fatal and serious injury crashes in the road system (Government offices of Sweden, 2016). The commitment to eliminate fatal and serious injuries rests on the assumption that the occurrence of these types of crashes in the road system is morally unacceptable (Tingvall & Haworth, 1999). As the ultimate goal of road safety work, Vision Zero

serves as a normative framework that guides and motivates road safety work (Edvardsson Björnberg, 2022).

As a strategy to prevent fatal and serious injuries in the road system, Vision Zero promotes controlling kinetic energy that transfers to the human body during crashes (Belin et al., 1997; Johansson, 2009; Mendoza et al., 2017). From this perspective, the primary cause of death and serious injury from road crashes is the excessive transfer of kinetic energy to human body during crashes. Since vehicle speed is often the major determiner of the amount of kinetic energy that transfers to the human body during a crash, road safety work in Vision Zero has primarily focused on speed reductions, and the promotion of road and vehicle safety technologies that eliminate or significantly reduce crashes involving higher energy exchange. Some notable examples of specific road safety interventions in this regard are roundabouts, the use of 2+1 roads<sup>1</sup> and median guardrails that prevent head-on collisions among oncoming cars, the complete physical separation of unprotected road users from motor vehicles in places with higher speed limits, and the lowering of speed limits to 30kmh in populated urban areas (Belin et al., 1997, Johansson, 2009; Mendoza et al., 2017).

Perhaps the most innovative and often controversial aspect of the Vision Zero strategy is its system of responsibility ascriptions whereby the ultimate moral responsibility for road safety is put on actors responsible for the design and operation of the road system and its components (Belin & Tillgren, 2012; Hysing, 2021). This is partly due to the assumption that many fatal and serious injury risks in the road system are associated with

<sup>1</sup>2+1 roads have 'one continuous lane in each direction with a middle lane changing direction and a separating median barrier. This is created by introducing a continuous median barrier and adding overtaking lanes within an overtaking strategy. The differences are the existence of 1 + 1-sections, less overtaking opportunities, and a slightly narrower cross-section.' (Bergh et al., 2016, p. 331)

vehicle safety problems, unsafe road infrastructure design, and problematic functioning of the road system (Johansson, 2009). Therefore, from this perspective, it is believed that addressing road safety problems primarily requires addressing these system related defects. It seems only logical then that Vision Zero policies assign the ultimate moral responsibility for road safety on actors responsible for the design of these system components. It has been argued that the system of responsibility ascription in Vision Zero involves a shift from a backward-looking responsibility ascription focused on the role of individual road users, to a more proactive and forward-looking view on the remedies of road safety problems that prioritizes the role of state and non-state actors with a capacity and potential to bring about significant safety improvements (Nihlén Fahlquist, 2006, 2009).

The promotion of Vision Zero as a road safety goal and strategy gives rise to important ethical issues that require continues and careful deliberations. For instance, although some of the central ethical and empirical assumptions behind Vision Zero do challenge some of the well-established practices in road safety work, it is not self-evident how these assumptions should be understood and interpreted, especially in practical road safety work. As an example, the ethical and practical implications of the normative assumption behind Vision Zero that *“it can never be ethically acceptable that people are killed or seriously injured when moving within the road transport system”* (Tingvall & Haworth, 1999, p.1) is not quite clear. How much space shall a road safety work based on these assumptions leave for personal freedom in the road system? What types of behaviours and actions should be allowed or forbidden? Can, and should governments and road safety agencies, force individuals to do or not to do certain actions? What should be the nature and extent of state interference with individual freedom in the road system?

In addition to their implications for personal freedom, strategies and interventions promoted in Vision Zero have important implications for other goals and values. For instance, the promotion of speed reduction as

a major road safety strategy has had significant positive implications for safety but may negatively impact economy and personal freedom. Similarly, many effective road safety technological innovations are expensive, and making them mandatory in our roads and cars would have significant economic implications. Therefore, even when known effective strategies and interventions are readily available, their promotion should consider their potential implications for other societal and individual values. Given this, how should value and goal conflicts be resolved in Vision Zero work? Among others, it is interesting to understand how requirements that follow from Vision Zero fare in relation to other individual and societal goals. For instance, does the current focus on fatal and serious injury risks, and the strategies promoted to prevent these risks work well with climate and environmental goals, and other desirable social values such as those of equity and social justice? If not, how should Vision Zero be designed so that it also promotes other socially desirable goals?

Answers to these and similar questions cannot readily be inferred from the underlying ethical and empirical assumptions and principles in Vision Zero. However, philosophical, and ethical inquiries could contribute towards the clarification, and hopefully, resolving of these different ethical issues that may arise in the implementation of Vision Zero. They can do so, among others, by identifying normative issues, uncertainties, implicit and explicit moral judgements, and other relevant considerations that ought to be adequately accounted in road safety decision making (Baard, 2016; Elliot, 2016; Möller, 2012; Hansson, 2012; Taebi, 2021).

Additionally, the promotion of Vision Zero in road safety has questioned mainstream understanding of some of the key concepts in road safety analysis and decision-making such as the concepts of *risk*, *causation*, *responsibility*. The new definitions and conceptualizations extended to these concepts are often ambiguous and value laden. The shift from the prevention of all accidents in traditional road safety work to the sole focus on fatal and serious injuries in Vision Zero is one manifestation of how the



later redefines what constitutes a road safety risk or road safety problem. Such definitional differences have normative and practical implications for road safety, and public health in general. More importantly, these differences also show that political, economic, and moral judgments often play important roles in the assessment and characterizations of risks (Elliot, 2016). In this regards, ethical analysis can contribute to the clarification and interpretation of complex and normatively charged concepts and assumptions in road safety work, and, hence, can help avoid political and moral disagreements that arise due to lack of clear meaning of such concepts.

Policies and strategies implemented to enhance road safety often receive criticisms from different stakeholders. Given this, ethical analyses can contribute to the identification and critical assessment of claims and arguments both in support of and against policy implementation. In this regard, using philosophical argumentation analysis could bring out fallacies, biases and ineffective practices that might negatively affect successful policy implementation (Hansson, 2012). On the other hand, such critical engagement would make it possible to identify constructive and evidence-based criticisms the consideration of which would positively contribute towards effective and efficient policy implementation.

In general, ethical inquiries could be highly relevant and useful in the identification, clarification, understanding and resolving of ethical issues in road safety work. Moreover, ethical inquiries could be vital in identifying adequate ways of defining, framing, and categorizing road safety problems in a way that accounts for other values. Additionally, philosophical and ethical analysis can play significant role in efficient policy implementation as it can help identify and assess criticisms that target policy design and implementation.

Although this thesis seeks to analyze ethical issues in the adoption and implementation of Vision Zero, I should, however, admit from the outset that the thesis is in no way an attempt to cover all philosophically and

morally relevant topics and issues pertaining to the implementation of this road safety policy. Nonetheless, the discussions in these articles do cover some important topics and issues in road safety ethics. I hope that they make important contributions to this research field. The primary intended audience are road safety ethicists and road safety practitioners. Nonetheless, these papers could be highly relevant for policy and decision makers, as well as other researchers working on road safety and transport planning in general.

The rest of this introduction is structured as follows. Section 2 discusses ethical issues and considerations in Vision Zero policies by taking the different papers in this thesis as a point of departure. Section 3 discusses methods and methodology. Section 4 presents summaries of the five papers.

## **2. Road Crash Risks, Vision Zero, Ethics**

### **2.1 Vision Zero Goal: Normative aspects**

As stated above, the adoption of the Vision Zero goal in most places rests on the assumption that fatal and serious injury risks in the road system are morally unacceptable and that society ought to aim for the ultimate elimination of any such risks (Tingvall & Haworth, 1999; Government of Sweden, 2016). This view contrasts with a more traditional approach to setting road safety goals using utilitarian Cost Benefit Analysis. This latter method primarily involves identifying and weighing the costs and benefits associated with different alternative policy goals with the aim of identifying the one that maximizes societal benefits. From this perspective, it is not itself morally problematic that fatal and serious injuries happen in the road system; societal investments should be directed towards the promotion of goals that bring the greatest benefit (happiness) to society. Although this position seems intuitive, and sometimes morally convincing, it has the unfortunate implication of, for instance, accepting the sacrifice of a few to promote a benefit for the majority (Hansson, 2003, 2007, 2013; Wolff, 2012). Moreover, it has been

argued utilitarian approaches to risk analysis and decision-making ignores normatively relevant aspects in risk imposition such as the role of agency, intent, rights, consent, and fairness (Hansson, 2003, 2007, 2013; Shrader-Frechette, 1994, 2002).

On the other hand, there are important safety implications of the ethical assumptions behind the Vision Zero goal. Unlike the utilitarian perspective, proponents of Vision Zero view safe travel within the road transport system as a fundamental right of every road user<sup>2</sup>. From this perspective every road user has the right to access the road system without risk of fatal and serious injury and this right should not be compromised for the promotion of car-based mobility in the road system (Tingvall & Haworth, 1999). The declaration of road safety as a right protects individual road users from unjust and morally questionable risk impositions in the road system by others. For example, the categorical prioritization of safety in the road system would lead to the protection of road user groups, such as children and unprotected road users who have historically been disproportionately exposed to risks of fatal and serious injuries in the road system. In this regard, it could be said that Vision Zero has strong influence from Kantian and rights-based ethical theories in which the role of individual's autonomy, rights, and values are given special emphasis in moral analysis of the acceptability of actions and risk impositions (Hansson, 2003). Therefore, from an individual road user perspective, it could be said that Vision Zero provides a morally better way of designing the road system that accounts for some of the major defects associated with the utilitarian approach.

Nonetheless, road fatalities and injuries are just one of the many public health challenges of our time. Humanity faces other existential problems too, such as those posed by climate change and other pressing public health challenges. As much as societies seek to address road safety problems, therefore, they also have other obligations, and are usually

<sup>2</sup> [https://unece.org/DAM/trans/roadsafe/unda/Sweden\\_Tylosand\\_Declaration.pdf](https://unece.org/DAM/trans/roadsafe/unda/Sweden_Tylosand_Declaration.pdf)

committed to preventing other causes of human suffering. As a result, difficult trade-offs and compromises are usually made in public health prioritizations in general and in the selection of road safety measures from among different alternative options (Nihlén Fahlquist, 2009).

Some critics, such as Elvik (1999, 2003), have argued that the categorical prioritization of safety in Vision Zero would lead to counterproductive economic and public health results as it would require shifting economic resources from other societal objectives. Instead of prioritizing safety in transport decision making, these critics argue that the use of Cost Benefit Analysis would provide a more optimal and morally acceptable way of distributing scarce resources.

In Papers 1 and 2, we analyze the two approaches to goal setting and decision making in road safety, i.e., the Cost Benefit Analysis and Vision Zero. Paper 1 analyzes the criticisms that question the strict prioritization of safety, in decision making in Vision Zero, from an economic perspective. It is shown that these criticisms are based on a misunderstanding that Vision Zero goal implies that safety in the road system has a higher priority than everything else. In practice, road safety decision making accepts temporary compromises of safety with other societal goals. However, in contrast to Cost Benefit Analysis, Vision Zero does not accept end-goal compromises. As a result, Vision Zero demands that temporary compromises of safety should be remedied as soon as conditions allow through the promotion of measures intended to improve safety.

In Paper 2, we go deep into the philosophical roots of the conflicting views in Vision Zero and Cost Benefit Analysis with the aim of reconciling them in road safety work. It is shown that both Vision Zero and Cost Benefit Analysis are based on moral principles that are intuitively appealing. We argue that the two principles can also be made compatible if the implementation of Vision Zero accepts temporal compromises intended to promote efficient allocation of resources, and the results of Cost Benefit

Analysis are viewed not as optimal and satisfactory as long as fatal and serious injuries continue occurring.

In addition to its potential economic implications, the adoption and pursuit of Vision Zero goal has generated a philosophical discussion with regards to its implications for action guidance and motivation (Edvardsson Björnberg, 2022; Rosencrantz et al., 2007, Rosencrantz 2006). Goals are often adopted because it is believed that they motivate and guide agents towards the achievement of the desirable states of affairs (Edvardsson & Hansson, 2005). To succeed in their action guidance and motivating purposes, it is often said that goals must fulfil certain rationality criteria, such as being specific, precise, attainable, and measurable. The assumption is that goals having these qualities are rational to adopt because they induce goal achievement (Edvardsson & Hansson, 2005). In contrast, adopting goals that are imprecise and unattainable is said to lack such achievement-inducing effect, as it would be difficult for such goals to guide and motivate agents pursuing them. The promotion of Vision Zero goal has been criticized on these grounds.

The discussion in Paper 1 is partly devoted to analyzing three rationality-based arguments against Vision Zero goals. These are criticisms that Vision Zero is unrealistic, too imprecise, and self-defeating. We argue that criticisms related to the precision of Vision Zero goal are partly constructive and ought to be further analyzed and considered in traffic safety work. However, our analysis shows that the criticism related to attainability and self-defeatance of Vision Zero goal rest on misconceptions and wrong interpretations of the goal. We show that the argument that Vision Zero is unrealistic is based on a too far-reaching requirement on policy goals. In order for a goal to be rational and useful, it has to be approachable, but it does not necessarily have to be realistic in the sense that it is known beforehand that it can be fully realized (Edvardsson & Hansson, 2005; Rosencrantz et al., 2007). We also argue in this paper that the criticism that Vision Zero is counterproductive and self-defeating contradicts with the many successes of safety work based

on Vision Zero, which is one of the main reasons behind the current proliferation of similar policy goals and strategies to reach it. In general, the combined economic, action guidance and motivational implications of Vision Zero goal relates to a more general issue of what types of policy goals are rational and morally acceptable to adopt with the aim of achieving or approaching them.

## **2.2 Vision Zero and road safety measures: Ethical implications**

The aim of road safety strategies and interventions is to save lives and reduce harm. As such, the ethical dimension is almost always present in road safety policy measures (Nihlén Fahlquist, 2009; Van den Berghe, 2018). Often, measures intended to reach road safety goals impact on other societal and individual values, such as liberty, autonomy, or privacy (Elvebakk, 2015; Erikson & Björnskaug, 2012; Nihlén Fahlquist, 2009; Grill & Nihlén Fahlquist, 2012; Hansson, 2023b; Jones & Bayer, 2007). Therefore, the promotion of harm-reducing interventions often needs to be balanced against the promotion of other desirable values in the road system.

The goal of zero fatal and serious injuries in the road system is not practically impossible. A society could achieve this by banning car travel altogether, or by making it mandatory that all vehicles operating in its road system are fitted with a technology that prevents drivers from driving over desired speed limits or even by deploying police or camera enforcement on every section of the road system. However, many would find the promotion of such drastic measures not only too costly but also morally questionable given the implication that they have for the economy, personal freedom, privacy, and equity.

The promotion of road safety measures intended to reach the Vision Zero goal has been criticized based on different moral considerations. Papers 1 and 4 discuss ethical implications of strategies and measures intended to approach Vision Zero. In Paper 1, we analyze, among others, criticisms that Vision Zero is paternalistic, that its implementation contravenes

equity and social justice, and that it assigns too little responsibility to drivers. Similarly, Paper 4 analyses four equity and social justice related criticisms related to the implementation of Vision Zero in New York City. The study shows that despite the commitment to a similar road safety goal, i.e., Vision Zero, the implementation of a policy in a context different from where it originated could give rise to not only context-specific normative challenges but also to a different interpretation and application of the goal and its strategies.

The relative success of Vision Zero strategies in Sweden is the major reason behind the proliferation of similar policies and strategies in other parts of the world. Nonetheless, the adoption of Vision Zero policies has so far been largely limited to developed countries. To this day, only very few cities from low- and middle-income countries are committed to the Vision Zero goal and its strategy. This raises important questions both from an ethical and road safety point of view. Given that the road safety problem in these countries poses an even bigger public health problem than in developed countries, should these countries also commit to Vision Zero and its strategies to address road safety problems? Moreover, these countries have unique socio-economic, political, and cultural realities that differ significantly from where Vision Zero originated and is largely practiced currently. Given that most of these countries have other equally pressing public health and socio-economic challenges, would a commitment to the prioritization of road safety be as ethical as it is in developed countries? Moreover, what would be the ethical ramifications of promoting Vision Zero in political systems that are not as open and democratic as where Vision Zero initially emerged?

Papers 3 and 5 aim to contribute to these discussions by analyzing road safety problems and policies in low-income country contexts. In paper 3, Vision Zero is used as a normative framework to analyze road safety policy in a low-income city context, namely Addis Ababa, the Ethiopian capital. In this paper it is shown that Vision Zero could provide a morally better way of understanding and approaching road safety problems than

how currently existing policies frame the problem and seek to address it. In paper 5, I discuss the nature and ethical implications of risk impositions from car driving in Ethiopia. It is shown that car driving in Ethiopia involves a morally questionable risk imposition, namely those who decide on the nature of the risk in the road system and benefit the most from car driving impose a significant risk of harm on others, such as children and pedestrians, who neither benefit from the risk imposition nor have a decision-making role related to the risks they are exposed to. I argue that this moral problem gives rise to important moral obligations on the part of the decision makers and beneficiaries. More importantly, addressing the unfair risks imposed on children and pedestrians requires the promotion of effective road safety strategies and interventions that protect these groups of road users against fatal and serious injury crashes.

### **3. Methods and Methodology**

Before discussing the methods used in the different papers in this thesis, I believe it is important to say few words on the general field of philosophical inquiry that these manuscripts aim to contribute towards. As such this thesis could be categorized as a work in the field of applied ethics in general and road safety ethics<sup>3</sup>, in particular. Applied ethics is the branch of ethics that is concerned with analyzing moral issues and problems that arise in practical human endeavors, such as business, engineering, medicine, information technology, and politics just to mention a few (Lippert-Rasmussen & Archard, 2013; Collste, 2012; Nihlén Fahlquist, 2009). As shown above in the introduction, road transportation and road safety work also give rise to important ethical issues and dilemmas that are interesting to study and analyze from an ethical

<sup>3</sup>Nonetheless, it is also easy to note that the issues covered in the different papers are closely intertwined to other fields in Applied Ethics such as Risk Ethics and Ethics of Technology. I believe the fifth paper in this thesis is a good illustration of how it is sometimes impossible to clearly categorize a work in applied ethics as belonging to a specific field.



perspective<sup>4</sup>. The aim of a study in Applied ethics is to increase our knowledge and awareness of ethical issues in a given field. Moreover, Applied ethics studies often aim at clarifying and interpreting normative concepts, judgements, moral ambiguities and disagreements, but also “to find a well-argued position from which to act” with regards specific moral problems (Collste, 2012, p.22).

Applied ethicists use different methods to achieve these aims. These methods primarily contrast from each other on the basis of the emphasis they give to the relevance and importance of over-arching moral theories and specific ethical standpoints in moral analysis and problem solving. Depending on this, methods in Applied ethics can be divided into three categories: Top-Down Approaches, Bottom-Up Approaches and Midlevel theories. In general, Top-down methods start with some over-arching theory and try to adjust the specific ethical standpoints to that theory. Bottom-up theories start with the specific ethical standpoints and try to adjust theorizing on the over-arching level. Mid-level methods combine elements from top-down and bottom-up theories.

### **3.1 Top-Down approaches to ethical analysis**

One major method in Applied ethics involves the application of ethical theories and principles, in the analysis of moral issues (Singer, 1998; Collste, 2012). The aim is to apply high level ethical theories, such as deontology, rights theory, utilitarianism, and virtue ethics, to solve practical problems, hence the name top-down approaches (Alvarez et.al., 2019). Peter Singer’s use of Utilitarianism in defense of animal rights and charity is a classic example of the application of this approach in Applied ethics (Singer, 1998, 2011). Another practical example of the use of Top-Down approach is utilitarian cost benefit analysis in decision making, where the consequences of a decision or alternative decisions are used to

<sup>4</sup> For a thorough discussion of ethical aspects of road safety see (Nihlén Fahlquist, 2009; Hokstad & Vatn, 2008, Van den Berge, 2018).

determine the morally best course of action without regard to other morally relevant considerations.

Perhaps it is worth noting here that different ethical theories allow for different applications. While some moral theories such as hedonistic utilitarianism may contain all the information that is needed for solving specific problems in different areas, other moral theories need considerable additions to become applicable. For instance, in order to apply deontology to road traffic one would need to specify duties that apply in the specific situations that arise in road traffic.

Although ethical theories have been vital in identifying and analyzing moral problems, none of the papers in this thesis subscribe to a specific moral theory as *the right* theory to analyze and solve moral problems in road safety. This emanates from the recognition that strict adherence to the truth and recommendations of a specific ethical theory may not always lead to a practically feasible position from which to act in policy context such as in road safety (Wolff, 2012). While strict adherence to deontological and rights theories could lead to the problem of paralysis<sup>5</sup>, the mere focus on maximizing social welfare alone could be insensitive to other important ethical considerations (Hayenhjelm & Wolff, 2012; Wolff, 2012). In practical road safety work and decision-making, it seems that practitioners and decision makers find ways to compromise on matters involving value conflicts without necessarily attaching themselves to a particular moral theory (Wolff, 2012). Therefore, when dealing with moral problems associated with road safety it might not be useful to assume the self-evident truth of some moral theory, at least not without including

<sup>5</sup>The problem of paralysis refers to the notion that if individuals have absolute rights not to be subjected to any risk of harm by others, then almost everything that people do in their ordinary social life becomes impermissible (Hayenhjelm & Wolff, 2012).

other relevant considerations. In general, adequate solutions to moral problems in road safety may not be attained if we just consider the prescriptions of one ethical theory alone.

An additional problem for the top-down application of a normative theory to solve moral problems in road safety is that road safety problems occur in a very complex socio-technical system. Therefore, an adequate and satisfactory ethical analysis requires a proper understanding and knowledge of the socio-technical system, and specific empirical facts related to moral problem at hand (Collste, 2012; Wolff, 2012; Nihlén Fahlquist, 2009). In general, reaching justified moral judgements concerning moral problems arising in road safety and in many practical fields would require going beyond prescriptions of specific moral theories to looking at empirical facts, practices, assumptions underlying current safety work, and alternative or competing views on the issues at hand, and determining the option that ought to be promoted (Collste, 2012; Wolff, 2012; Nihlén Fahlquist, 2009).

### **3.2 Bottom-up approach to ethical analysis**

In contrast to top-down approaches, which starts by identifying general moral theories and principles that could be applied to specific cases, bottom-up approaches emphasize the importance of understanding the contexts, and characteristics of particular cases. The aim is to reach moral judgements with regards to the specific moral case, or to derive moral norms and principles that could be used in analyzing other similar cases (Alvarez et.al., 2019). Moreover, whereas top-down approaches, at least in principle, only aim at solving problems in a particular area, bottom-up approaches tend to have an additional aim of improving ethical thinking on an over-arching level. In consequence of this, bottom-up approaches tend to attend much more closely to a wide variety of the details of the studied cases, whereas top-down approaches have a strong focus on only those aspects of the cases that are treated by the chosen over-arching theory.

Although bottom-up approaches are grounded in real world contexts and recognize the importance of contextual differences, the lack of a specified theory can make case descriptions unsystematic so that they are difficult to compare to each other.

### **3.3 Midlevel theory and Reflective equilibrium**

As the discussion in the above sections' shows, ethical analysis and moral problem solving could take a bottom-up approach centered on the importance of case related factors and considerations without necessarily employing ethical theories as a framework of analysis. Or it could take a top-down approach where specific ethical theories or a combination of them are used in the analysis and solving of a moral problem without necessarily focusing on the specific peculiarities of the case at hand. Although both approaches have their own merits, the limitations associated with each of these approaches often necessitate combining elements of both approaches in moral analysis and problem solving (Collste, 2012; Lippert-Rasmussen & Archard, 2013). This is very important as the analysis and resolving of moral problems must take the different aspects of a case into considerations including specific case related facts, and relevant normative values and principles.

One very common midlevel approach is to try to construct moral principles that are area-specific or refer only to some areas. This is a very common approach in bioethics, where it is called "principlism" and usually refers to the application of four principles, autonomy, beneficence, non-maleficence and justice in resolving ethical problems that arise in bioethics (Beauchamp & Childress, 1979).

Reflective equilibrium is another midlevel approach in Applied ethics that promotes the importance of relating different aspects of a moral problem to have a fuller understanding of a moral problem but also in the processing reaching justifiable moral judgements. The concept of Reflective equilibrium was first used by John Rawls (1971) as a method of justifying moral judgements. From the perspective of reflective

equilibrium every morally relevant aspect of a case should be considered in reaching a justified moral position. Therefore, one must first identify and incorporate all considered moral judgements, intuitions, principles, and fact associated with a moral issue at hand (Collste, 2012; Tersman, 2018). Then, one tries to determine “which of a set of competing moral principles best fits with our considered judgments. If there are nevertheless conflicts between that principle and our judgments, we are to go back and forth between them and modify our views until coherence is achieved—a process in which no element is immune to revision” (Tersman, 2018, p. 2).

The different papers in this thesis have employed elements of top-down and bottom-up approaches in argumentation analysis and problem solving thereby aiming at reflective equilibrium.

### **3.4 Empirical methods**

In addition to the application of philosophical methods, other empirical methods have been employed in writing these papers. Three of the papers in this thesis, (paper 3, 4, and 5) are case studies related to the implementation of road safety policies in different socio-economic and political contexts. Case study methods are vital to understand a contemporary phenomenon within its real-world context (Yin, 2015, 2018). To this end, extensive literature search was conducted to identify relevant policy documents, reports, and research articles. This has been instrumental in understanding the nature of road safety problems in specific contexts and the ethical implications that road safety work gives rise to.

Moreover, informal and formal interviews have been used in Papers 3 and 4 to have a good understanding of road safety policy design and implementation at a city level, and in identifying their normative implications. It is believed that interview method is important to have a deep understanding of a problem and to elicit data that allows researchers to investigate people's views in greater depth (Alshenqeeti, 2014;

Håkansson, 2013). Accordingly, semi structured interviews were conducted with major stakeholders involved with road safety work to get an in-depth understanding of the nature of road safety problems, and the role of ethical values in the design and implementation of road safety policies. The data collected from the interviews were crucial inputs in the ensuing moral analysis.

Another important method in this regard is qualitative content analysis. Qualitative content analysis involves analyzing textual identified data and interpreting its meaning (Elo et al., 2014). Such analysis and interpretation played an important role in the different papers in this as it allowed for the systematic analysis and interpretation of text data collected such as policy documents, research literature and transcriptions of interview data.

In general, these different empirical methods have been critical in understanding and analyzing ethical issues in road safety policy making and implementation from a bottom-up perspective.

#### **4. Summary of the Papers**

##### **Paper 1. Arguments against Vision Zero: A Literature Review**

Despite the moral appeal of the policy and its relative success in road safety improvement, the adoption and implementation of Vision Zero has faced criticisms. In this paper, we identify, categorize, and critically assess these criticisms against Vision Zero. To this end, we made a desk-based review of academic research articles, reports, and policy documents from the last two decades. The paper identifies thirteen arguments against Vision Zero having normative and practical implications. These criticisms are divided into three general categories: moral arguments, arguments targeting the rationality of the Vision Zero goal, and arguments aimed at the implementation of the policy.

Moral arguments against Vision Zero target the central moral assumptions behind Vision Zero and the ethical implications of interventions promoted to reach the goal. The assumptions that deaths

and serious injuries in the road system are morally unacceptable and that safety should be prioritized in road traffic have been criticized both in terms of economic considerations (Elvik, 1999) and in terms of their implications for personal freedom (Elvebakk, 2015; Allsop, 2005). In some contexts, Vision Zero and the strategies promoted to reach it have been strongly criticized for increasing social injustice and inequity (Lugo, 2015; Lee, 2018).

The second category of criticisms relates to the rationality of adopting Vision Zero, i.e., whether the goal is sufficiently action-guiding and motivating. From this perspective, the Vision Zero goal has been criticized for being imprecise, unrealistic, counterproductive, and potentially demotivating.

The third group of criticisms deals with the operationalization and implementation of Vision Zero. Criticisms in this category are those, for instance, relating to the way safety is defined and measured in Vision Zero and the responsibility ascription in it.

Our analysis shows that some of these criticisms are based on misconceptions of Vision Zero, while others are based on fallacious reasoning. However, some of the arguments we identify are highly relevant and could serve a constructive role in future road safety work in Vision Zero if adequate attention is given to analyzing their importance.

## **Paper 2. Can Cost Benefit Analysis and Vision Zero be Reconciled?**

Since the second half of the 20th century, Cost Benefit Analysis has been an established decision-making tool that aids road safety practitioners in identifying economically optimal policy goals, strategies and interventions. Cost Benefit Analysis is justified as a means to promote an efficient and rational use of economic resources in the field of road transport. Generally, Cost Benefit Analysis allows investments in safety only as long as the monetized benefits of introducing a safety intervention are higher than the monetary costs associated with the intervention. The general implication is that road safety interventions should only be

promoted when doing so brings the largest economic gain in comparison to alternative uses of the money.

On the other hand, Vision Zero promotes that safety should never be compromised for the purpose of promoting mobility in the road system. As a result, proponents of Vision Zero reject the use of Cost Benefit Analysis as a sole decision-making method in road safety goal setting and implementation. Given the limited nature of economic resources, such a categorical prioritization of safety might conflict directly with the societal aspiration to promote economic efficiency through the use of Cost Benefit Analysis. It is the purpose of this paper to provide a way through which potential conflicts between Vision Zero and Cost Benefit Analysis could be resolved.

We argue that Vision Zero and Cost Benefit Analysis can be compatible, if 1) Vision Zero accepts temporal compromises intended to promote efficient allocation of resources among different policy areas requiring risk-reducing interventions, and 2) a suitable format for Cost Benefit Analysis is chosen that accounts for the ethical and methodological problems associated with conventional Cost Benefit Analysis. We propose ways through which Cost Benefit Analysis could be improved for ethical decision-making in road safety work. It is also argued that the methodological concerns associated with Cost Benefit Analysis and the moral issues they overlook should be explicitly stated and presented for decision makers so relevant moral considerations are considered in road safety decision-making.

### **Paper 3. Road Safety Policy in Addis Ababa: A Vision Zero Perspective**

Even though middle and low-income countries only account for about half of the world's total registered vehicle population, they account for more than 90% of the road traffic deaths. Given that road safety problems pose a big public health and development challenge in low-income countries, it is critical to examine how road safety problems are understood by those responsible for ensuring road safety at the local level.



It is also important to examine road safety work in these contexts from a normative point of view to identify what is the best, or most adequate, way of framing road safety problem, who should be given the responsibility for addressing the problem and by what measures. It is the purpose of this paper to do both things by taking the specific case of the road safety situation in Addis Ababa, Ethiopia. Accordingly, the present Addis Ababa road safety policy is described and analyzed using Vision Zero as a normative framework. Three major government policy documents, reports, research articles on road safety in the city, and an informal interview with a former mayor of the city were used in the process of analyzing road safety policies in Addis Ababa in terms of problem framing, goal formulation, responsibility ascription, and road safety strategies promoted.

The analysis shows that Addis Ababa road safety work and Vision Zero significantly contrast in terms of how road safety problems are understood and the responsibility ascription for road safety. While Vision Zero views road safety problems as those that relate to fatal and serious injury crashes only, the different policy documents on road safety in Addis Ababa are concerned with the prevention of road accidents in general. Furthermore, the Addis Ababa policy documents primarily emphasize the responsibility of individual road users for road safety while the role of stakeholders in improving road safety is limited. However, Addis Ababa's road safety approach and the Vision Zero share some similarities in relation to goal formulation and choice of strategies.

It is argued that enhancing road safety in Addis Ababa requires adopting a broader view of causes of road safety problems, recognizing the importance of assigning responsibility to major stakeholders that significantly shape the design and operation of the road traffic system. Road safety work ought to promote proactive engagement of all actors that influence the safety of the present road system in ways that go beyond educational and enforcement initiatives.

#### **Paper 4. Equity and Social Justice Considerations in Road Safety Work: The case of Vision Zero in New York City.**

Road fatalities and serious injuries are not just public health problems but also pose a major equity and social justice issue. To give some examples, road crashes are one of the leading causes of death for children and young people (Mütze et al., 2022; WHO, 2018). In many places, road fatalities and injuries disproportionately affect pedestrians and cyclists. In some places, older people, low-income groups and minorities are overrepresented in road fatalities and injuries (Viola et al., 2022; Fox & Shahum, 2017; Nantulya & Reich, 2003). Policies, strategies and interventions promoted to address road safety problems also have equity and social justice implications. Many inequities and injustice in road transport are partly attributable to a decision-making process that excludes affected stakeholders and their interests (WHO, 2018; van Wee & Roeser, 2013). As a result, in many places, transport policy choices and decisions do not reflect the interest of children, young people, women, disabled people, low-income groups or minorities, even though these groups of road users disproportionately bear externalities of the road transport system.

The purpose of this paper is to understand equity and social justice considerations in Vision Zero work in New York City (NYC). To this end, Vision Zero policy documents, progress reports, research articles were studied to understand the role of equity and social justice consideration in road safety efforts in the city. Moreover, we conducted twelve semi structured interviews with different stakeholders working with road safety in the city, as well as academic researchers and social justice advocates to get an in-depth understanding of the initial policy design and adoption process.

The study shows that equity and social justice considerations played a significant role in the adoption and implementation of Vision Zero in NYC. This could be seen from the fact that Vision Zero was initially endorsed and promoted by cyclist and pedestrian safety advocacy groups

as the best way to ensure equity in road safety for groups formerly exposed to disproportionate burden of road fatalities and injuries. Moreover, the recognition and adoption of Vision Zero by the city's mayor and the subsequent emphasis placed in Vision Zero work to improving the safety of unprotected road users, such as pedestrians and cyclists, also suggests the important role of equity considerations in road safety work. These findings point to two possible success factors in the promotion of equitable road safety policies: the importance of involving marginalized groups when formulating policy goals and interventions, so as make sure their needs and values are adequately accounted for throughout the policy process, and the importance of commitment to equity and social justice considerations among key political actors responsible for road safety.

Nonetheless, our analysis also identified four major criticisms related to the adoption and implementation of Vision Zero in NYC that have important implications for equity and social justice. These are related to 1) ethical and methodological concerns associated with the data driven approach (DDA) to prioritization 2) concerns related to inequity in the distribution of life saving engineering interventions, and the inequitable socio-economic consequences associated with road safety strategies such as 3) policing and 4) the promotion of bike and pedestrian lanes. It is suggested that the process of adopting and implementing Vision Zero should be designed in such a way that it recognizes existing inequities and injustices in road safety and integrates equity and social justice into road safety work, for example, by adopting a broader conceptualization of the DDA that includes socioeconomic and community data in addition to quantitative crash data. Moreover, the implementation of Vision Zero should be complemented by empirical studies on the socio-economic impacts of strategies and interventions promoted to enhance road safety. The meaningful inclusion and participation of different road user and socioeconomic groups in the initial goal setting and policy design process

is vital for the successful implementation of road safety strategies and interventions.

### **Paper 5. The Morality of Car Driving: An Ethical Analysis of Risk Impositions.**

Car driving is associated with many risks, both for those who drive and other road users (WHO, 2018; Kebede et al., 2022). Every year over 1.35 million people are killed and between 20 to 50 million are injured due to road traffic crashes (WHO, 2018). About 93% of road fatalities occur in low and middle-income countries despite the fact that they only account for half of registered motor vehicles in the world (WHO, 2018). Pedestrians, cyclists, and children are gravely overrepresented in fatalities and injuries in these countries (WHO, 2018). Even though road safety is a major public health problem for low-income countries, current policy making, as well as academic and public debate in these countries, neglect the many ethical implications of car driving and a growing motorization.

The purpose of this paper is to understand and analyze the risk impositions from car driving in a low-income country context and the moral implications that it gives rise to. To this end, I use a model of ethical analysis developed in (Hermansson & Hansson, 2007) and further developed in Hansson (2017, 2018) to analyze the morality of risk imposition from car ownership and driving in Ethiopia. The ensuing analysis shows that personal car driving involves a morally questionable risk imposition in which some stakeholders, who decide on the risk and directly benefit from it, impose significant risk of harm on others, who neither have a say in the decision contributing to the risk imposition nor benefit from the risk involuntarily imposed on them. Those who are unfairly exposed to risks of fatalities and injuries from car driving are mainly groups that are already socially and economically disadvantaged. Therefore, risk impositions from car driving contributes to other preexisting inequities in the society.

I argue that personal car driving creates a major moral dilemma between individual road users' prima facie rights not to be exposed to risks of harm by others and the societal desire to promote car ownership and driving for transport and development related purposes. It seems current transport policy planning allows the compromise of individuals' prima facie rights not to be exposed to risk of harm as an acceptable price to pay for transport and economic related advantages of car driving.

This compromise does not mean that individual road users' prima facie rights not to be exposed to risk is cancelled. Nor does it mean the risk imposers have no moral obligation towards those who continue to face unfair risk imposition from car driving. Rather, the overriding of individual road users' rights due to risk imposition from car driving gives rise to important residual obligations on different stakeholders, primarily on those who determine the nature of the risk in the road system through their decision-making powers and those who benefit the most from the risk imposition from car driving. These actors have various obligations towards those unfairly exposed to risks in the road system such as pedestrians and children. These includes the "obligations to improve" the road system by promoting effective risk reducing strategies and measures, "obligation to fair compensation" for those harmed, "obligations to communicate" with affected stakeholders, "obligations to search for knowledge" to better understand the nature and magnitude of the risk imposition and ways of addressing it, and "obligations to bring about attitudinal change". It is argued that the conscious identification and promotion of these obligations in road transport and safety work could contribute towards an equitable and morally acceptable risk imposition in the road system.

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**PART TWO**

**SVENSK SAMMANFATTNING**

## Svensk Sammanfattning

Nollvisionen, som ursprungligen antogs 1997 i Sverige, är allmänt erkänd som både ett trafiksäkerhetsmål och en strategi. Som trafiksäkerhetsmål innebär Nollvisionen ett moraliskt och politiskt engagemang som syftar till att på sikt eliminera dödliga och allvarliga personolyckor i vägsystemet. Som strategi främjar den prioriteringen av säkerhet i vägsystemets utformning, drift och funktion. I praktiken har det lett till ett uttalat fokus på hastighetsreduktion och främjande av vägtekniska och fordonssäkerhetstekniska innovationer för att förhindra dödliga och allvarliga personolyckor i vägsystemet. En ytterligare aspekt av Nollvisionsstrategin har varit dess system av ansvarsbeskrivningar.

I motsats till traditionella vägsäkerhetsstrategie lägger Nollvisionspolitik en del yttersta moraliska ansvaret för att förebygga dödliga och allvarliga skador på aktörer som ansvarar för utformningen och säkerheten av vägsystemet och dess komponenter.

Etiska överväganden och bedömningar ligger bakom antagandet och implementeringen av Nollvisionen. Nollvisionen har också lett till en re-konceptualisering av några av de nyckelbegrepp som förekommer i trafiksäkerhetsrelaterade diskussioner, såsom "risk", "orsakssamband" och "ansvar". Skillnader i hur dessa begrepp förstås har praktiska och normativa konsekvenser som är relevanta att analysera etiskt.

Värden spelar en avgörande roll i riskbedömningar och beslutsfattande som rör Nollvisionen. Nollvisionens prioritering av dödliga och allvarliga personolyckor vilar exempelvis på det normativa antagandet att endast sådana olyckor bör förhindras. Det finns dock inget självklart sätt att avgränsa olyckor i kategorier som "dödliga", "svåra" eller "lindriga". Ibland kan även mindre olyckor leda till allvarliga hälsokonsekvenser beroende på vilken typ av trafikanter som är inblandade. Dessutom används ofta olika definitioner och kategoriseringar av olyckor med dödlig utgång och personskada. Det pågår till exempel en debatt om huruvida självmord ska räknas som ett trafiksäkerhetsproblem och ingå i

definitionen av trafikolycka. Sådana definitionsskillnader har normativa och praktiska konsekvenser för trafiksäkerhetsarbetet i synnerhet och folkhälsoarbetet i allmänhet.

Implementeringen av Nollvisionen ger också upphov till värdekonflikter och moraliska dilemman i relation till de strategier och åtgärder som vidtas för att nå den. Främjandet av hastighetssänkning påverkar exempelvis säkerheten positivt men kan samtidigt ha negativa ekonomiska konsekvenser eftersom det ökar restiden. På samma sätt är många effektiva trafiksäkerhetstekniska innovationer dyra för samhället. Även när effektiva strategier och interventioner står till buds behöver främjandet av dem därför alltid föregås av en analys av hur de påverkar andra samhällliga värden.

Filosofisk och etisk analys kan bidra till att göra implementeringen av Nollvisionen och andra trafiksäkerhetspolicies mer effektiv och moraliskt acceptabel. Etisk analys kan hjälpa till med att identifiera normativa frågeställningar, osäkerheter, moraliska dilemman samt implicita och explicita moraliska antaganden och överväganden som bör beaktas vid beslutsfattande och implementering. Filosofisk argumentationsanalys kan belysa felaktigheter och identifiera dåligt underbyggda bevis och argumentationslinjer, vilka i sin tur kan påverka policyimplementeringen negativt. Dessutom kan filosofisk begreppsanalys bidra till att klargöra komplexa och normativt laddade begrepp inom trafiksäkerhetsområdet, såsom risk, orsakssamband och ansvar och på så vis bidra till att undvika politiska och moraliska meningsskiljaktigheter som uppstår till följd av bristande tydlighet.

Denna avhandling innehåller fem olika men till varandra relaterade artiklar som behandlar normativa frågor i antagandet och implementeringen av Nollvisionen. Det övergripande syftet med avhandlingen är att analysera Nollvisionen ur ett filosofiskt perspektiv. Artikel 1 analyserar argument mot Nollvisionen som mål och dess implementering. Trots att Nollvisionen är både tilltalande ur ett moraliskt perspektiv och har bidragit till att förbättra trafiksäkerheten, har den mött



kritik. I artikel 1 identifierar, kategoriserar och analyserar vi denna kritik med hjälp av filosofiska metoder, såsom begrepps- och argumentationsanalys. Artikeln identifierar tretton argument som har framförts mot Nollvisionen. Argumenten delas in i tre kategorier: moraliska argument mot Nollvisionen, argument som riktar sig mot rationaliteten hos Nollvisionsmålet och argument som handlar om genomförandet av målet. Vår analys visar att några argument bygger på missuppfattningar om Nollvisionen eller felaktiga resonemang. Några av argumenten är dock relevanta och skulle kunna ha en konstruktiv roll i det framtida trafiksäkerhetsarbetet.

Artikel 2 innehåller en jämförande analys av två beslutsmetoder som används flitigt i trafiksäkerhetsarbetet: kostnadsnyttoanalys och Nollvisionen. Kostnadsnyttoanalys är en etablerad beslutsmetod som hjälper trafiksäkerhetsutövare att identifiera ekonomiskt optimala politiska mål, strategier och insatser. Generellt tillåter kostnadsnyttoanalys investeringar i säkerhet bara så länge det ger den största ekonomiska vinsten i jämförelse med alternativ användning av pengarna. Nollvisionen innebär i stället att säkerheten aldrig får äventyras i syfte att främja rörligheten i vägsystemet. Som ett resultat avvisar förespråkare av Nollvisionen användningen av kostnadsnyttoanalys som den enda beslutsmetoden vid antagande och implementering av trafiksäkerhetsmål. Med tanke på de ekonomiska resursernas begränsade natur kan en sådan kategorisk prioritering av säkerhet komma i direkt konflikt med samhällets strävan att främja ekonomisk effektivitet genom att använda kostnadsnyttoanalys. Syftet med den här artikeln är att tillhandahålla ett sätt varigenom potentiella konflikter mellan Nollvision och kostnadsnyttoanalys kan lösas.

I Artikel 2 argumenterar vi för att Nollvision och kostnadsnyttoanalys kan vara kompatibla om: 1) Nollvisionen accepterar tidsmässiga kompromisser som syftar till att främja effektiv fördelning av resurser mellan olika politikområden som kräver riskreducerande insatser, och 2) ett lämpligt format för kostnadsnyttoanalys väljs som redogör för de

etiska och metodologiska problem som är förknippade med konventionell kostnadsnyttoanalys. Vi menar att de metodologiska och etiska problem som är förknippade med kostnadsnyttoanalys bör identifieras och presenteras för beslutsfattare i ett tidigt skede och vi ger exempel på hur kostnadsnyttoanalys kan förbättras i syfte att främja ett mer etiskt beslutsfattande i trafiksäkerhetsarbetet.

Artikel 3 använder Nollvisionen som normativt ramverk för att analysera trafiksäkerhetspolitik i ett låginkomstland, nämligen Etiopien. Även om medel- och låginkomstländer står för ungefär hälften av världens totala fordonsinnehav, står de för mer än 90 % av dödsfallen i vägtrafiken. Mot bakgrund av det är det angeläget att undersöka hur trafiksäkerhetsproblemet förstås av de bär ansvar för trafiksäkerhet på lokal nivå. Det är också viktigt att granska det lokala trafiksäkerhetsarbetet ur en normativ synvinkel för att på så vis identifiera vad som är det bästa eller mest adekvata sättet att formulera trafiksäkerhetsproblemet samt vem som bär ansvaret för att åtgärda problemet och med vilka medel.

I Artikel 3 analyseras centrala trafiksäkerhetsdokument i Addis Abeba med stöd av Nollvisionen som normativt ramverk. I artikeln analyseras Addis Abebas antagna trafiksäkerhetsmål, definitionen av trafiksäkerhetsproblemet, valet av trafiksäkerhetsåtgärder och hur ansvaret för trafiksäkerheten fördelas mellan olika aktörer. Analysen visar att Addis Abebas trafiksäkerhetsarbete och Nollvisionen skiljer sig markant både när det gäller hur trafiksäkerhetsproblemet förstås och hur ansvarsfördelningen ser ut. Addis Abebas policydokument betonar i första hand enskilda trafikanter ansvar medan andra aktörers roll i att förbättra trafiksäkerheten är begränsad. Addis Abebas trafiksäkerhetsstrategi och Nollvisionen delar dock vissa likheter, främst avseende målformulering och val av åtgärder. En central slutsats i artikeln är att en bredare syn på orsakerna till trafiksäkerhetsproblemet, liksom ett erkännande av olika aktörers roll i trafiksäkerhetsarbetet, krävs för att förbättra trafiksäkerheten i Addis Ababa.

Artikel 4 syftar till att förstå hur rättvisa och sociala hänsyn har format och fortsatt påverkar New York Citys (NYC) nollvisionssatsningar. För detta ändamål studerades NYC's nollvision genom policydokument, lägesrapporter och forskningsartiklar för att bättre förstå vilken roll jämlikhet och social rättvisa spelar i stadens trafiksäkerhetsarbete. Dessutom genomfördes tolv semistrukturerade intervjuer med olika intressenter som arbetar med trafiksäkerhet i staden och med akademiska forskare för att få en djupare förståelse för den initiala policyutformningen och processen fram till antagandet av visionen.

Artikeln visar att jämlikhet och social rättvisa spelade och fortsätter att spela en betydande roll i antagandet/genomförandet av NYC's nollvision. Det visas bland annat av det faktum att Nollvisionen ursprungligen förespråkades av intressegrupper för cyklister och fotgängare som det bästa sättet att säkerställa rättvisa i trafiksäkerhetsarbetet. Erkännandet och antagandet av Nollvisionen av stadens borgmästare och det efterföljande arbete som lagts ned för att förbättra säkerheten för oskyddade trafikanter, visar också att rättvisöverbägganden spelar en viktig roll i trafiksäkerhetsarbetet. Resultaten pekar på två möjliga framgångsfaktorer för ett framgångsrikt och rättvist trafiksäkerhetsarbete: vikten av att involvera marginaliserade grupper när man formulerar politiska mål och insatser, för att säkerställa att deras behov och värderingar beaktas på ett adekvat sätt under hela policyprocessen, och vikten av engagemang för jämlikhet och social rättvisa bland centrala politiska aktörer med ansvar för trafiksäkerhet.

I artikeln identifieras även fyra omständigheter som kan påverka hur rättvist och jämlikt trafiksäkerhetsarbetet i en stad som NYC blir: 1) valet av prioriteringsstrategi vid fördelning av trafiksäkerhets-förbättrande resurser, i NYC specifikt den så kallade datadrivna strategin (DDA), 2) fördelningen av väg-, fordonstekniska och andra åtgärder mellan olika grupper i samhället, 3) graden av fokus och resurser som läggs på polisiärt trafiksäkerhetsarbete och 4) främjandet och lokaliseringen av nya cykel- och gångbanor. I artiklen föreslås att processen att anta och implementera

Nollvisionen bör utformas på ett sådant sätt att den erkänner befintliga sociala och trafiksäkerhetsrelaterade ojämlikheter samt integrerar rättvisa i trafiksäkerhetsarbetet. Ett sätt att göra det är att arbeta med en bredare konceptualisering av DDA som bygger på socioekonomiska data utöver kvantitativa kraschdata. Dessutom bör det polisiära trafiksäkerhetsarbetet erkänna och adressera de etiskt problematiska aspekterna av det operativa tillsynsarbetet. Ytterligare ett sätt handlar om att på ett meningsfullt sätt bredda deltagandet i trafiksäkerhetsarbetet till att inkludera olika trafikantslag och socioekonomiska grupper.

I Artikel 5 analyseras fördelningen av riskerna med bilkörning i ett låginkomstland och de etiska problem som den ger upphov till. Jag använder en etablerad modell för etisk riskhantering för att säga något om riskfördelningen vid biläggande och bilkörning i Etiopien. Analysen visar att bilkörning innebär ett moraliskt tveksamt riskpåförande där vissa intressenter, som beslutar om risken och direkt drar nytta av den, utsätter andra för en betydande risk för skada – personer som i många fall inte har något att säga till om när det gäller själva beslutsfattandet. De som på det här sättet drabbas av risken för död och allvarlig skada är framför allt grupper som redan är socialt och ekonomiskt missgynnade. Därför bidrar riskpåföranden från bilkörning till redan existerande orättvisor i samhället. Jag menar att personlig bilkörning skapar ett stort moraliskt dilemma mellan enskilda trafikanters *prima facie* rätt att inte utsättas för risken för skada och samhällets önskan att främja biläggande och körning i transport- och utvecklingsrelaterade syften. Den nuvarande transportpolitiska inriktningen i många låginkomstländer innebär att individers *prima facie*-rättigheter att inte utsättas för risk ofta ses som ett acceptabelt pris att betala i syfte att möjliggöra transporter och ekonomisk utveckling. Denna kompromiss innebär inte att enskilda trafikanters *prima facie* rätt att inte utsättas för risk upphävs. Det betyder inte heller att de som påför riskerna helt saknar moraliska skyldigheter gentemot dem som fortsatt utsätts för riskerna. Åsidosättandet av enskilda trafikanters rättigheter på grund av bilkörning ger tvärt om upphov till moraliska

skyldigheter gentemot olika intressenter. Dessa skyldigheter tillkommer i första hand de som genom sina beslutsbefogenheter bestämmer riskens art i vägsystemet och de som drar mest nytta av risken. Jag menar att man genom att identifiera skyldigheter och aktörer i vägtransport- och trafiksäkerhetsarbetet skulle kunna bidra till ett mer rättvist och moraliskt godtagbart riskpåförande i vägtrafiken. Riskpåförande aktörer bör bland annat ha en skyldighet att främja effektiva riskreducerande åtgärder som skyddar barn, fotgängare och andra utsatta grupper mot risken för dödliga och allvarliga skador i vägsystemet.