



Licentiate Thesis in Philosophy

The Rationality and Moral Acceptability of Vision Zero Goal and Its Interventions

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Thesis Compilation

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This Thesis contains the following three articles

1. Abebe, Henok Girma; Hansson, Sven-Ove; Edvardsson Björnberg, Karin. 2021. Arguments against Vision Zero: A literature review. Forthcoming in Edvardsson Björnberg, K., Belin, M-Å., Tingvall, C., Hansson, S. O. (eds) *The Vision Zero Handbook*. Springer, New York. Manuscript accepted for publication
2. Abebe, Henok Girma; Hansson, Sven-Ove. Can Cost Benefit Analysis and Vision Zero be Reconciled? This manuscript is currently being revised for resubmission.
3. Abebe, Henok Girma. Road Safety Policy in Addis Ababa: A Vision Zero Perspective. Submitted manuscript.

Abstract

This licentiate thesis discusses moral issues associated with road safety work, with a particular emphasis on the Vision Zero (VZ) goal and its interventions. The licentiate thesis contains three articles and an introduction that briefly discusses issues and arguments presented in the articles.

The first article, identifies, systematically categorizes and evaluates arguments against VZ. Moral, operational, and rationality related criticisms against the adoption and implementation of VZ are identified and discussed.

The second article in this thesis seeks to reconcile the methods of Cost Benefit Analysis (CBA) and VZ in road safety decision making. CBA has been and still is a major decision making tool in road transport and traffic safety work. However, proponents of VZ question the use of CBA in road safety and transport decision making on methodological and ethical grounds. In this paper, we locate the philosophical roots of the conflicting views promoted by proponents of CBA and VZ. Then we try to identify ways through which the two methods can be made compatible.

The third and final paper uses VZ as a normative framework to explore and analyse the Addis Ababa road safety work. The aim of the paper is twofold. First, the paper seeks to examine how road safety problems are actually understood by those responsible for road safety at the local level. To this end, government policy documents, reports and other relevant sources were consulted to identify how road safety problems are framed, who is assigned responsibility for addressing road safety problems and through what interventions. Second, the paper aims to examine road safety work in the city from a normative point of view, i.e., what is the best, or most adequate, way of framing the problem, and who should be given the responsibility for addressing the problem and by what measures. It is argued that enhancing road safety in the city requires adopting a broader view of causes of road safety problems, and emphasizing the responsibility of actors that shape the design and operation of the road traffic system and the safety of its components.

Key words: Ethics, Road Safety, Vision Zero, Responsibility, Goal setting

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Part One: Introduction

1. Introduction

Claiming over 1.3 million lives and leading to 20 to 50 million serious injuries every year, road traffic crashes are one of the biggest public health problems in the world. (WHO 2018) In the process of addressing this public health challenge, some international entities, countries and cities have committed themselves to ambitious road safety goals. The goal to prevent all fatalities and serious injuries, the Vision Zero (VZ) is one important example. In 1997, Sweden adopted the VZ as the ultimate goal of road safety policy in the country. According to the government policy document, the long term goal of road safety work is the prevention of all road fatalities and serious injuries through the promotion of greater responsibility to actors responsible for the design and operation of the road system and safety of its components. (Government Bill 1996/97:137, Government Offices of Sweden 2016) The policy promoted the ethical unacceptability of preventable crashes and required the road system to be designed and operated in such a way that fatalities and serious injuries are prevented. Currently, similar VZ goals have been adopted in many European countries and cities around the world. The general aim of this thesis is to assess and analyse moral issues associated with the adoption of the VZ goal and its implementation.

VZ is based on the assumption that all fatal and serious injury crashes in road traffic are preventable and morally unacceptable. According to the policy document, “from an ethical point of view, it cannot be accepted that people are killed or seriously injured in connection with movements within the road transport system.” (Government Bill 1996/97:137) Moreover, in order to reach the goal of zero fatal and serious injuries, the policy states that it is imperative that the design and operation of the road system is done as per the requirements of VZ. (Government Bill 1996/97:137) This shows that the government intends VZ not just merely as an expression of a morally appropriate policy goal but also as a strategy that provides the best way of addressing road safety problems. Belin et al. (2012), viewed VZ as a road safety policy innovation that fundamentally differs from traditional road safety paradigm in terms of how it frames road safety problems, the

requirement it demands for the safety of road users, and the responsibility ascription for road safety.

VZ differs from the established road safety practices where the prime focus is on preventing all types of accidents, regardless of severity. In VZ road safety work primarily emphasizes the prevention of fatal and serious injury crashes, and not the prevention of accidents per se. According to the Government Bill, the reason for this is that although minor injuries and non-injury crashes impose substantial economic cost to the society, their overall effect on public health is less significant. The government considered that from a public health perspective it is important that a prime focus is put on preventing crashes that would result in fatal or serious injuries. Moreover, from VZ point of view the objective preventing all accidents fails to recognize the basic fact about the nature of road users operating in the road system, i.e they are fallible and could make intentional or unintended mistakes. Therefore, rather than requiring road user to be perfect all the time, VZ promotes designing the road system in such a way that predictable road user mistakes do not lead to fatal consequences. In other words, VZ requires the road system to be forgiving to road users, even when they make mistakes, by protecting them against fatal and serious injuries. A general implication is that VZ not only accepts minor injury and non-injury crashes in the road system but also, sometimes, promotes interventions that increase the likelihood of such accidents in an effort to avoid fatal and serious injuries. (Belin et al. 2012, Johansson 2009, Mendoza et al. 2017) This difference between VZ and the traditional approach to road safety work becomes more explicit when we look at the type of interventions and priorities made in road safety work. In VZ, narrower streets for vehicles and the institution of roundabouts are two important safety interventions in densely populated urban areas. (Mendoza et al. 2017) This is despite the fact these interventions tend to increase the chance for vehicle accidents. However, these interventions have proved relatively effective in reducing the risk of fatal and serious injuries. In contrast, where the aim of road safety work is to avoid accidents of all types, wider and straighter roads are usually preferred to facilitate smooth and accident free flow of the traffic. However, empirical evidence suggests that although accident risks are low on such types of roads, they are however frequently associated with higher rates of grave fatal and serious injury crashes.

In addition to the focus on fatal and serious injuries, VZ also advances a new understanding of what causes such crashes. Prior to the adoption of VZ in Sweden, and still in many places, road safety problems are primarily viewed as individual road user problems, i.e. as resulting from human error. (Belin et al. 2012, Belin 2021, Hysing 2021) One main consequence of this view is that it justified and sought to find solutions to safety problems primarily through the creation of law abiding, careful, and skilful road users. To this end, educational, informative and enforcement initiatives are primarily promoted with the goal of adapting road users to road system requirements. (Belin et al. 2012, Belin 2020, Hysing 2021) According to the government policy document, such a reductive understanding of the causes and remedies of road safety problems would be inefficient if road safety is to be improved significantly. (Government Bill 1996/97:137) Although it recognizes the role of road user behaviour in promoting road safety, the policy stated that the major reason for fatalities and serious injuries in the road system is rather associated with deficiencies in the design and operation of the road system. It is said that, “the shortcomings in the design of the current road transport system contribute to a large extent to the risk of road users being exposed to external violence in traffic accidents that significantly exceed what humans can physiologically tolerate. The consequence of a single wrong decision or a single mistake in road traffic can be life-changing for several people.” (Government Bill 1996/97:137) In particular, it has been argued that problems associated with road infrastructure and vehicle design are the biggest contributors to safety problems in road traffic. (Johansson 2009) This makes VZ different from traditional approaches that present behavioural problems as the major cause for road safety problems.

Given that the major cause of road safety problems is associated with system defects, who then is responsible for addressing these defects and how? According to the government policy document, achieving long term and sustainable safety improvement not only requires the promotion of a shared responsibility for safety but primarily emphasizing responsibility of those actors that offer significant opportunity for safety improvement. In particular, the government believed this would require “designing roads, vehicles and transport services so that human tolerance of external violence in traffic accidents is not exceeded.” (Government Bill 1996/97:137) Therefore, the ultimate responsibility for a safe road system is put on the system designers, i.e. on entities that are responsible for design

and construction of roads and vehicles and also on transport planners that design the way the road system is operated. Tingvall (1997) lists five ethical rules that form the basis for system designers' responsibility in VZ. These ethical rules emphasize the system designers' responsibility to do everything in their power to prevent the occurrence of fatalities and serious injuries in the road system. Among other things, it states that system designers have the responsibility to apply the best-known solution in the prevention of fatal and serious injury crashes.

The goal to eliminate fatalities and serious injuries in the road systems is intuitively and morally appealing. However, what rational and morally justified grounds could be identified that may question the adoption and pursuing of VZ? How rational and ethically justifiable is the claim that safety should always be given priority in transport planning? Does it follow from VZ that individual freedom, and privacy can be overridden as long as doing so prevents a fatal or serious injury? Should we spend on improving traffic safety, when the same amount of money could be used to save more lives in other policy areas? How ought selections and priorities be made between alternative interventions intended to promote safety in VZ? Should we equally prioritize children, elderly, law-abiding road users, and traffic offenders, such as drunk drivers, in road safety planning? In general, what morally justifies priorities and compromises made in road safety work? Important morally relevant questions can also be posed regarding VZ's responsibility ascription. What morally justifies VZ's shift, from emphasis on individual road users' responsibility, to shared responsibility for traffic safety in which the role of system designers is central? What is the nature and extent of system designers and individual road users' responsibility in VZ?

Many more issues could be identified and listed that make VZ, and road safety work in general, a good candidate for critical ethical inquiry. One might think that the abundance of moral dilemmas and ethical questions in road safety work, should have led to the establishment of a strong school of ethics of road safety, as for example has been the case in computer ethics, engineering ethics, medical ethics and other well established areas of applied ethics. Instead, moral philosophers have largely ignored ethical issues in road safety work. (Nihlén Fahlquist 2009) This is echoed in a recent paper by Ori (2020, p. 389) "it seems that philosophers and, perhaps more importantly, professional ethicists have not

devoted much thought to the many moral issues that road traffic was bound to create”. However, in recent years there has been some work published in this area. (Berghe 2018; Hansson 2014, 2021a, 2021b; Hauer 2011; Husak 2004; Nihlén Fahlquist 2006, 2009; Ori 2014, 2020; Hokstad & Vatn 2008). This thesis, and the articles included in it, is a contribution to the rather scanty literature available in this field of road safety ethics.

This introduction is structured as follows. Section two discusses the methodology of the study. Section three discusses two concepts that are vital in understanding road safety problems and also in the moral analysis of practical safety work: the concepts of causation and responsibility. In Section four, three general considerations that are often sources of moral dilemmas in road safety work are identified and discussed. Section five contains a brief summary of the three different articles included in this licentiate thesis.

2. Methods and Methodology

This thesis could, generally, be categorized as a work in the fields of road safety ethics. Road safety ethics is branch of applied ethics that deals with moral problems and issues arising in association with road safety work. Here it is important to clarify what is meant by applied ethics, and how it is intended to be used in this thesis. Traditionally, there is an understanding of applied ethics as involving a top down application of ethical theories in the analysis of moral issues and resolving of ethical dilemmas associated with practical human endeavors. From this perspective, applied ethics is the use of ethical theories such as deontology, rights theory, utilitarianism, and virtue ethics in the analysis of moral issues in any field or issue of practical nature. (Collste 2012) A recent example of this approach applied to road safety is found in Ori (2020).

Without denying the merit of that approach, the current work does not employ a top down application of ethical theories in analyzing moral issues discussed. Although a top down approach can still be important in theoretical explication on ethical concepts and issues in a given field, it alone could not provide a sound basis for reaching justified judgements in road safety decision making and also in the resolving of practical moral problems needing urgent moral solutions. Moral problems arising in road safety work provide a good example. For instance, from a utilitarian point of view we might be obliged not to invest on a risk reducing measure with a potential of preventing two pedestrian

deaths, as far as doing so leads to greater benefit for the society. For the same reason, a road safety authority might deem it morally acceptable to limit its road safety efforts to just the prevention of 50 fatalities annually because aiming to prevent more fatalities may be economically costly to the society. However, such a utilitarian way of distributing risk and goal setting might be morally questionable because of the insensitivity of the theory to distributional inequities and implications for individuals' rights and freedoms. (Huer 2011, Elvik 2009)

On the other hand, exposing road users to risks that they have not consented to for the purpose of promoting social welfare, could reasonably be viewed as an instance of using individuals as a means to an end. Therefore, proponents of deontological theory of ethics, may insist that we have a duty to respect the life and dignity of all road users and that it is morally unacceptable to expose people to risks of fatalities and serious injuries to promote mobility in the society. In road traffic, this might require designing and operating the road system in such a way that everyone is protected, against any risks of fatal and serious injury crashes, even if doing so is not economically efficient for the society. (Vanem 2012) However, a strict adherence to deontological and rights theories of ethics would lead to what Hayenhjelm and Wolff (2012, p. 37) called the problem of paralysis. 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 and Wolff 2012, Holm 2016)

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. Therefore, when dealing with practical moral problems associated road traffic safety it might not be enough to assume the self-evident truth of moral theories, but also question what ethical and rational grounds there are to follow certain moral principles and the recommendations that follow from promoting them. As rightly noted by Jonathan Wolff (2012), in matter of public policy, it is also important to, first, understand “why it is we have the policies we do have” before making an ethical analysis with the intention of reaching a practical recommendation on how to solve practical moral problems facing a certain policy area. In general, reaching justified moral judgements concerning moral problems arising in road safety work may

require going beyond moral theories, to looking at practices and assumptions underlying current safety work, alternative or competing views on the issue at hand, and determining the option that ought to be promoted. (Nihlén Fahlquist 2009) Since empirical facts are often important considerations in moral analysis and judgment, the different works in this thesis have consulted different government policy documents, reports, and findings from empirical research to understand what VZ is, what its underlying assumptions are and safety practices in it.

3. Causation and Responsibility in Road Safety Work

To effectively and efficiently respond to any societal or public health problem, understanding the causal mechanisms and processes leading to its occurrence is crucial. This in turn is important in the designing of relevant policies and strategies by exploiting identified causal factors for specific for road safety problems. Relatedly, identifying and determining factors contributing to the cause of a given social and public health problem is highly relevant when determining who should do what to address the problem. In this section, I briefly discuss how causal and responsibility ascriptions are often discussed in relation to road safety problems and the policy implications for road safety work and decision making.

Most of the time when discussing road safety problems, it is the role of individual road users that usually catches people's attention. (Hansson 2020, Nihlén Fahlquist 2006, McAndrews 2013) Many believe that road safety problems are primarily the result of individual road users' failure to behave as per the demands of the traffic rules, and that these problems could easily have been avoided if road users behaved a little bit more responsibly in the road. This way of thinking about the cause and remedy for road safety problems is a dominant approach in professional road safety work too. Prior to the adoption of VZ, and still today in most places, it is believed that the main reason why road crashes occur is due to human error and illegal behaviour in the road system. (Larsson et al. 2010, Hysing 2021) There is also a strong empirical support behind this view in road safety literature. (Hansson 2021b) As briefly discussed above, the presentation of road user behaviour as the major cause of road crashes had major implications for actual road safety work. Since it was believed that road user behaviour is the major causal factor, it was

assumed that the key to safety is to improve road user's behaviour through interventions targeting road users' behaviour. According to Larsson et al. (2010, p. 1168), "in most countries, there are general rules that the road-user, in all situations, should behave in such a way that accidents do not occur. If an accident occurs, at least one road-user has, by definition, broken the general rule and the legal system can therefore act."

This way of distributing responsibility for traffic safety has been criticized. It has been argued that this approach to responsibility ascription is based on simplistic understanding of causes of road safety problems and prevents the institution of innovative and efficient ways to improve safety. (Hansson 2021b) It is simplistic in that it ignores the fact that, usually, crash events in the road system have multiplicity of causal factors rather than being a product of a single predominant factor. Since road safety problems occur in a complex socio-technical system in which different components operate and interact, it is indeed necessary to be cautious about reductive accounts of causation that tend to conflict with the special nature of the road transport system. According to Hansson (2021b, p.24), the over emphasis on responsibility of road users is based on the misconception that road user behaviour is the predominant factor in most traffic crashes. However, he argues, "no one can establish what the "predominant causes" of traffic accidents are, for the simple reason that the designation of some causal factors as "causes" or as "predominant" cannot be done in an objective way." (Hansson 2021b, p.24)

Our responsibility ascriptions for crashes resulting from over speeding and drunk driving provide good examples as to how our views on causal ascriptions for road safety problems often lack strong objective basis. It is usually the case that individual drivers who are involved in over speeding or drunk driving are particularly identified and blamed when crashes occur. This is often well justified given that drivers are morally and legally expected to drive within speed limits and sober. However, it is not usually part of public and academic debate whether vehicles, road infrastructures, and decision makers responsible for the design of the road system are partly causally responsible for road fatalities and injuries. For example, given that cars can actually be designed in such a way that it becomes impossible for drunk drivers to start and operate them, or in such a way that they can only speed at a desirable speed level, it is difficult to understand why only drivers can be held causally responsible but not the vehicle manufacturers (for constructing the

vehicle in such a way that it can speed beyond a desirable level or drunk drivers can start it) or the decision makers who allowed the operation of vehicles that allow going beyond desirable speed (and also for constructing infrastructure that promotes speeding). As rightly argued by Hansson, “in accident investigations performed under the assumption that vehicles complying with the legal regulations are beyond criticism, human failures will be the predominant causal factors. If we instead assume that human mistakes are inevitable, and investigate how the technology reacts to such mistakes, then the causal analysis will have a different outcome.” (Hansson 2021b, p.24)

Part of the problem leading to a reductive account of causation in road safety work is related to the type of data used when evaluating what factors actually bring about the occurrence of specific crashes. Traditionally, and still in many places, road safety work primarily relies on police crash reports. Police crash investigations are, however, mainly interested in identifying deviations from legal requirements when crashes occur. For instance, whether the driver or road users involved in crash were acting in accordance with what the traffic law requires of them. Moreover, it is usually the case that police investigations are mainly about “the crash” and rarely concerned with identifying the underlying causes of fatalities and injuries. However, this is understandable because traffic police officers in most places usually lack the knowledge, and resources needed to understand how road and vehicle designs could have contributed to the occurrence of a fatal or serious injury crash. On the other hand, when engineers and physicians look at specific safety problems, different causal factors tend to be emphasized that are less interesting from police officers point of view. For instance, as opposed the focus on human behaviour in road safety work, some physicians and engineers, mainly beginning from the second half of the twentieth century, emphasized the importance of recognizing the role of ‘second crashes’ in the promotion of safety for vehicle occupants. (Nader 1965, MacLennan 1988) Second crashes are crashes that happen between vehicle occupants and the interiors of motor vehicles, such as a vehicles steering wheel and dashboards, often resulting in fatal and serious injuries for drivers and occupants. The recognition of this phenomena is the major driving force behind some of the most effective vehicle technologies promoted to enhance safety of vehicle occupants, such as airbags, the use of easily distractible steering wheels and dashboards. This example shows that causal

ascriptions for road safety problems are often dependent on who is assessing a given safety problem and from what perspective.

The take away is that, first, specific traffic crashes usually have multiple causal factors. In designing effective, and efficient ways to address road safety problems, a broader and systemic perspective ought to be adopted that recognizes the complexity and plurality of causal factors for road safety problems. Second, in addition to the importance of recognizing the role of relevant causal factors in the process of understating road safety problems, it might be critical to find which of the causal, and salutogenic, factors identified and potential ways of exploiting them provides the best means to improve road safety.

4. Road safety goals and their moral acceptability

It is not practically impossible to prevent all road traffic fatalities and serious injuries. A society could reach or approach this goal by, for instance, extensively policing every section of the road system or by designing the road infrastructure in such a way that cars can only travel at 30 km/h. All cars can also be designed so that they do not accelerate beyond a predetermined amount of speed or that drunk people cannot start and operate them. The mere fact that an intervention is effective, however, is neither a necessary nor a sufficient condition to actually go about and implement it. For instance, although alcohol interlock technology provides a relatively effective means to address the problem of drunk driving, it would be morally questionable to require its installation on every car at the present time due to its high cost or other moral considerations. It would be possible to prevent thousands of deaths of motorcyclists by forcing them to wear helmet. But would it be morally justifiable for governments to impose mandatory helmet laws on those who are not willing to wear it? What justifies the use of safety cameras in school areas but not in the entire road system?

In the following section, three general considerations that are often discussed in road safety literature in relation to the adoption and promotion of road safety goals and interventions are identified and discussed. These considerations relate to the rationality or functionality of policy goals, their efficiency, and impacts on rights and liberties of individuals. These considerations are often discussed in relation to why certain policies

and strategies ought to be promoted than other alternatives. I will also try to identify and present some general policy implications for practical safety work.

4.1 Road safety goals and their functionality

One well quoted example in the philosophical literature on goal setting regarding the nature of goals that ought to be promoted in social life is from the Austrian philosopher Karl Popper. In this literature, Popper is particularly noted for his promotion of a step by step transformation of society (piecemeal social engineering) than a utopian and radical shift in social restructuring. One of his main reasons is that effectuating radical change would necessitate a tyrannical government. This criticisms against utopian goals are partly empirical. It requires us, among other things, to determine whether there is any truth in the claim that whenever there is a revolutionary change, there is also tyranny. There is, however, no strong evidence to support the view that pursuing utopian goals necessarily requires a sudden radical change or leads to a tyrannical type of government.

In goal setting and management literature, we also find several criteria that goals should fulfil in order to effectively guide and motivate action. For instance, it is often claimed that utopian goals should not be adopted because “they are usually too sweeping, or complex, to guide action effectively”. (Edvardsson Björnberg 2008, p. 146) Similarly, the widely used SMART criteria of goal setting, for instance, is based on the assumption that specific, measurable, attainable and time bounded goal are more action guiding and motivating than goals that lack these properties. Similarly, Edvardsson and Hansson (2005) developed a theory of rational goal setting which states that goals effectively guide and motivate action when they are “precise, evaluable, approachable and motivating”. (Edvardsson and Hansson, 2005, p. 343) These criteria are often important considerations in determining what policy goals ought to be adopted with the ultimate intention of achieving them. In this regards, some policy goals, and the VZ goal in particular, have been criticized for being unrealistic, vague, and counterproductive. For some (e.g. Long 2012, Morgan 2018) the goal to eliminate fatalities and injuries is not only unachievable, but also primes agents for failure. However, the binary classification of goals as realistic and unrealistic assumes that goals are either fully achievable or unachievable, which misses the fact that goal achievement often comes in degrees. (Edvardsson and Hansson 2005) What

is difficult or even impossible to fully achieve can still be approached to a significant level. Hence, the mere difficulty in fully realizing a goal is not a good justification to reject its promotion. For example, it is highly desirable that no murder or rape occurs at all. However, should the continued occurrence of these problems prevent current societies not to aim for eliminating murder and rape? Long term utopian goals are often expressions of the categorical rejection of social tolerance for preventable harms in the society. In the case of VZ, for instance, the adoption of the goal seems to be primarily intended as an expression of the moral unacceptability of preventable road fatalities and injuries. This seems to have a stronger ethical appeal than, for instance, a road safety goal that aims to reduce the occurrence of fatalities by 50% in the coming budget year. Evidence from international and national road safety practices shows that ambitious long term goals, such as VZ, can be effective in guiding and motivating action when supported by precise sub-goals and interim targets. (Locke & Latham 2002, Rosencrantz et al. 2007)

4.2 Road safety and economic efficiency

Road fatalities and injuries are one of the biggest public health challenges of our time. However, both current and future generations face similar risks of fatalities and injuries due to other factors than traffic safety problems. As can be seen from the sustainable development goals, societal aspiration seems to be to aim at the eventual elimination of road fatalities and injuries, while at the same time extending similar kind of emphasis to other causes of fatalities and loss of health (U.N. 2015). Therefore, as much as societies seek to achieve the goal of zero fatalities and serious injuries in the road system, it can be argued that they also have a moral obligation to prevent preventable causes of death and serious injuries in other areas of human life. Achieving this in practice requires distributing available scarce economic resources in different areas of public life, such as healthcare or the prevention of environmental hazards. Given the magnitude and complexity of most public health problems, and the societal aspiration to, simultaneously, reduce risks of fatalities and injuries caused by other factors, how ethically acceptable is the assumption in VZ that safety shall never be compromised in the road system?

A common critique of Vision Zero is that the categorical prioritization of safety in it amounts to the prioritization of safety in resource distribution. For example, Elvik (1999,

p. 279) argues that, “an objective of eliminating a certain cause of death, like traffic accidents, may be so expensive to realize that there is so much less resources available to control other causes of death that general mortality increases.” This criticism has an intuitive appeal. It might well be morally questionable to attempt to realize a goal of zero fatal and serious injuries when doing so may, for instance, lead to the death of more people (due to other factors than road crashes) than are saved by implementing the goal. Therefore, decision makers have to find some way to ensure that resources are efficiently distributed among the different areas where it is equally important to implement risk-reducing measures. In road transport and safety work, the method of CBA is widely used for the purpose of promoting efficient allocation of resources. This method requires identifying and weighing the different costs and benefits associated with different alternative policies and interventions with the aim identifying one that brings greater benefit to the society.

In road transport decision making, the results of CBA are often used to justify why society ought not to invest in safety promoting projects. For example, in the 1970s, the Ford motor company manufactured and sold millions of vehicles despite the awareness that the design of the vehicles contains some technical defects that could increase the chance of fatal or serious injuries for vehicle occupants. As feared, the release of the vehicles into the market led to the death and serious injury of many people. When justifying to the court as to why the company choose not to correct the technical flaw prior to the release into the market of the vehicles, it was argued that the results of CBA did not show that it was economical to invest on correcting the design flaw. (Taebi 2021)

There are however many problems that could be identified that question the moral appropriateness of basing road safety decisions solely on CBA. One is that it is often difficult to clearly identify the benefits and costs associated with particular policy options. Decision makers are often uncertain about current and future consequences of implementing a given policy let alone the consequences of all alternative policy options that are assessed for their benefits and costs. (Hansson and Hadorn 2016) Second, we know that, as the example above illustrates, the price of not investing on safety interventions is often the ensuing fatalities and serious injuries. In other words, the benefits of road safety interventions is the lives saved, injuries and material distractions prevented. It is also the case that many safety intervention reduce or eliminate the fear of being killed or seriously

injured in the road system. On the other hand there are the economic costs of investing on road safety and their potential impacts on travel time. In CBA these benefits and costs have to be converted and expressed in one and the same unit of measurement to be able to do a reasonable comparison of the benefits and costs of particular policy options. The dominant approach in practice is to assign monetary value to each and every benefits and costs. Over the past couple decades cost benefit analysts have developed different methods that helps them extract monetary values for lives saved, for different types of injuries, environmental effects, and travel times. In the literature on risk ethics the different methods intended to illicit quantitative monetary values have been criticized for their inconsistency and distributional effects. (Elvik 2009, Hansson 2013). However, still the biggest challenge for cost benefit analysts is that most of the values associated with the different benefits and costs to which monetary values are assigned are both incommensurable to monetary valuation and also between each other. (Hansson 2007) Therefore, even if we can use the method of CBA to systematically assess effects of road safety policies, the underlying value conflicts remain unresolved when CBA is used in decision making. In fact, the use of CBA leads to more dilemmas that indicate towards the importance of promoting other mechanism that are helpful in designing a fair, equitable, and morally acceptable decision making in road safety work.

4.3 Freedom, privacy, and equity in road safety

The impact that road safety interventions may have on individual liberty and autonomy is often an important consideration in road safety decision making. (Elvebakk 2015, Hansson 2021a, Nihlén Fahlquist 2009, Grill and Nihlén Fahlquist 2012) In the past three decades, more than thirty states in the US have revoked mandatory helmet wearing laws due to pressure and influence of motorcyclist lobby groups. (Jones and Bayer 2007) The major justification for the action is that helmet wearing imposes undue limitation on individual liberty of motorcyclists. Protestors, in different countries, have also vandalized safety cameras due to concerns of privacy evasion. The major concern with safety cameras is that they collect too much of sensitive individual information. (Nihlén Fahlquist 2009) Related to issues of liberty and privacy are also issues of social justice and equity which are often important considerations in ethical decision making road safety work. Here, the

issues concern the distribution of benefits and burdens in road transport system, and also the fairness and acceptability of the decision-making processes.

It is undeniable that many road safety interventions are liberty limiting by nature. Seat belts limits the freedom of the drivers and occupants by restricting their body movement, speed limits prohibit those who wish to drive at a higher speed, 2+1 roads and narrow streets have the same liberty limiting effect, driving license requirements prevent those who want to drive without a proper training. Modern innovative technologies are also providing effective and efficient ways to impose restrictions on what, for instance, drivers can do or not with their vehicles. (Grill and Nihlén Fahlquist 2012) Alcohol interlocks provide good example in that they totally prevent drunk drivers from starting a vehicle.

Usually, restrictions on the liberty of drivers and road users are justified based on their societal advantages. Road safety strategies and interventions are primarily intended to prevent risk of harm and injury to others in the road system. One could easily imagine how the road system would look like if there are no speed limits, or skill requirements for operating in the road system. Therefore, many restrictions on the liberty of road users is reasonably justified. However, what about those interventions that are intended to prevent harm to the individual road user upon which the restriction is imposed? According to one tradition that we inherited from John Stuart Mill, we can only interfere with the freedom and liberty of individuals if not doing so will bring harm to others. Given this, for instance, we can justifiably prevent drunk drivers and people who lack proper driving skill from operating motor vehicles because not doing so could harm others. However, can we also prevent people from motorcycling if they are not willing to wear helmets? It is often argued that the society lacks the moral ground to force cyclists or motorcyclists to wear helmets because by not wearing a helmet they are not affecting other people but only themselves. To force someone to use a helmet against his or her own wish is viewed as paternalistic and that it violates individual freedom and autonomy.

In responding to the criticism about the paternalistic nature of road safety interventions, it is important to identify and assess the actual benefits and burdens associated with such interventions. It is also important to determine whether interventions that are often criticized as paternalistic have consequences that only affect the individual road users only if risks materialize. Let us just continue with the example on mandatory

helmet laws. The biggest benefit of this intervention is that it eliminates and severely reduces fatal and injury risks to those who wear it. However, the biggest costs are the cost of buying the helmet and the discomfort of wearing it. The problem that contributes to the dilemma is that while we know that the costs of buying and wearing a helmet are often born by individual cyclists, the benefits are only randomly distributed in that we cannot really state who is going to get into an accident. Many who wear helmet for years might have never been involved in an accident. Then the issue is whether it is reasonable to wear helmets regardless of the fact that individual motorcyclists and cyclists have lower chances of getting into a fatal accident. This even becomes a stronger claim in places where the ultimate goal of road safety work is to protect road users regardless of whether they make mistakes or not. This is because road users might be tempted to think that they can disregard safety devices as long as the design and operation of system is done in such a way that any mistake committed by road users does not lead to fatal or serious injuries. However, in reality, no one country has so far been able to design the functioning of the road system in such a way that every road user mistakes does not lead fatalities or injuries for those involved. In fact, in many places, motorcyclists, cyclists and pedestrians are forced to share the road system with fast moving vehicles increasing their chances of getting into a fatal or serious injury crashes as compared to other road users.

In addition, it is highly questionable to assume that harms that are said to affect individuals, e.g. motorcyclists, only affect the individuals in question. In reality, motorcyclists have families, friends, and careers that will be affected if a fatal or serious injury crashes occur. Therefore, it is very rare that only an individual will be affected by the death or injury of a person in the road system. The consequences to family and society in general still remains. It is for this reason that it is often difficult to say whether paternalistic measures are “introduced purely for paternalistic reasons or because of the societal costs associated with not implementing the new policy.” (Nihlén Fahlquist 2009, p. 387) In general, many paternalistic interventions in road safety work can equally be justifiable on non-paternalistic grounds.

Impacts of road safety interventions on privacy and equity are also important considerations in road safety work. Safety camera are currently widely promoted due to their speed reducing effects. In Sweden, for instance, thousands of safety cameras have

been erected since 2006 on the country's high-speed roads. (Belin et al. 2010) Similar interventions have been promoted in other European countries, Australia, and Canada. (Delaney et al., 2005) The international experience with this technology shows disparities in terms of its implementation and acceptance, despite the fact that they are primarily intended as speed management tools. (Belin et al. 2010, Delaney et al., 2005) In countries like Sweden, the use of safety camera is primarily intended to nudge drivers to drive within acceptable speed limit. (Belin et al. 2010) It assumes that speed violations are mostly unintended and that people in general want to drive and behave safely in the road system. To this end, drivers are informed about the presence of a camera ahead of the road section where the cameras is present. (Belin et al. 2010) Moreover, cameras are fixed, and set in such a way that they can only take a limited number of photos per year. The Swedish system also communicates the purpose of the cameras and how they are used. (Belin et al. 2010) In contrast, in places like Victoria, Australia, and New York City, cameras have been used with the intention of increasing chances of detecting speed offenders through the deployment of mobile speed cameras. To this end, information about the presence of the cameras is hidden from drivers. This is intended to create the feeling, among drivers, that they are being watched and could easily get caught anytime if they speed over limit. (Belin et al. 2010)

The international implementation of safety technologies and interventions with privacy implications shows that their effectiveness and public acceptability depends on complex myriad of factors that requires looking into how particular technologies are designed and implemented in practice. Empirical evidence shows that public acceptability of safety technologies and is more likely when, among others, the potential users have a positive belief about the effectiveness of the intervention and recognize their contribution in the occurrence of the specific problem that the technology is intended to solve, when that amount of personal information collected by technologies is limited, when people are meaningfully involved in decision making process, and when the purposes of the safety technology are clearly and transparently communicated. (Belin et al. 2010, Eriksson and Bjørnskau 2012, Jamson 2006)

Considerations of equity are also important considerations in contemporary road safety work. According to the World Health Organization (WHO 2018), ninety percent of

road fatalities happen in low and middle-income countries despite the fact that these countries only account for half of the world's total vehicle population. Major victims are unprotected road users; pedestrians, cyclists and motor cyclists. Moreover, in many countries, poor neighborhoods, pedestrians, cyclists, children, elderly and disabled people are usually ignored in road transport and safety planning. (WHO 2018) Moreover, some road safety interventions exacerbate equity problems by further burdening already disadvantaged groups. (Lee 2018) In the process of addressing the issue of inequity it is important, among others, to understand the nature and extent of current and past inequities in road safety work and identify how the attempt to achieve fair distribution currently is affected by prevailing inequities. Moreover, it might be necessary in some situations to promote measures targeted at correcting past injustices and unfair distributions through such mechanisms as compensation, or reforming of legal and socio-political institutions that could have contributed to the inequitable distribution in the first place. Ensuring equity in road safety work may also necessitate designing and implementing relevant equity strategies so that current decision-making processes are fair and inclusive, and also to ensure that road safety policies do not lead to unfair distribution of benefits and burdens.

5. Summary of Articles

Article One: Arguments against Vision Zero: A Literature Review

Despite the moral appeal of the policy and its continued proliferation in the world, the adoption and implementation of VZ has faced criticisms in both Sweden and other places. In this paper, we identify, categorize, and critically assess these criticisms against VZ. 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 about thirteen specific arguments against VZ, which we then divided into three general categories: moral arguments, arguments targeting the rationality of VZ goal, and arguments aimed at the implementation of VZ.

In general, moral arguments against VZ mainly target the central moral assumptions behind VZ and the ethical implications of safety interventions promoted to reach the goal. The assumption that preventable death and serious injury in the road system

is morally unacceptable has been questioned based on economic cost considerations (Elvik 1999), and also in terms of its imposition on freedom of individuals not to engage in risky activity in the road system. (Elvebakk 2015, Alsop 2005) Another moral argument against VZ is one that views and rejects VZ as paternalistic due to a threat to the individual freedom and autonomy of road users associated with the potential promotion of certain VZ interventions. In some contexts VZ is strongly criticized for promoting social injustice and promoting inequity.

The second category of criticisms relate to the rationality of adopting VZ, i.e critics question whether VZ is a rational goal to adopt, i.e whether it is action guiding and motivating. From this perspective, VZ goal has been criticized as imprecise, unrealistic, counterproductive and demotivating.

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

According to our analysis, some of the arguments that we identify and discuss are based on misconceptions of VZ, while few 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 VZ if adequate attention is given to analyzing their importance.

Article Two. Can Cost Benefit Analysis and Vision Zero be Reconciled?

The aim of this article is to identify ways through which CBA and VZ can be reconciled. Since the second half of the 20th century, CBA is an established decision making tool that aids policy and decision makers road and traffic safety planning in identifying economically optimal policy goals, strategies and interventions. CBA is justified as a means to promote an efficient and rational use of economic resources in the field of road transport. Generally, CBA allows investments on 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 than can be achieved by alternative uses of the money. On the other hand, in almost all places where

VZ has been adopted as a road safety goal, the main justification is the moral unacceptability of preventable fatalities and serious injuries. VZ also promotes that safety should never be compromised for the purpose of promoting mobility in the road system. As a result, proponents reject the use of CBA as a sole decision making criteria in decision concerning the prevention of fatal and serious injury crashes. Given the limited nature of economic resources such a categorical prioritization of safety in the road system might directly conflict with societal aspiration to promote economic efficiency through the use of CBA. It is the purpose of this article to provide a way through which potential conflicts between VZ and CBA could be resolved.

In general, we argue in this article that VZ and CBA can be compatible, if 1) VZ accepts temporal compromises intended to promote efficient allocation of resources among different policy areas requiring risk-reducing interventions and 2) if a suitable format for cost-benefit analysis is chosen that accounts for the ethical and methodological problems associated with conventional CBA. We propose ways through which CBA could be improved for ethical decision making in road safety. One such a way is to present results of CBA not only for the currently used life-value but also for alternative, higher life-values. It is also argued that moral issues associated with the CBA and the issues that they tend to overlook should be explicitly stated and presented for decision makers so relevant moral considerations are taken into account.

Article Three. Road Safety Policy in Addis Ababa: A Vision Zero Perspective

As stated in the introduction, one major characteristic of road traffic system is the disproportionate distribution of benefits and burdens of the use of road vehicle traffic. Despite the fact that middle and low-income countries only account for about half of the world's total 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

article 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 the VZ framework as a normative framework. Three major government policy documents, reports, academic researches, and an interview with a former mayor of the city is used in the process of comparing and assessing road safety work in Addis Ababa to VZ in terms of problem framing, goal formulation, responsibility ascription, and road safety strategies promoted.

The analysis shows that Addis Ababa road safety work and VZ significantly contrast in terms of how road safety problems are understood and the responsibility ascription for road safety. While VZ 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, despite the fact that there is an increasing recognition of the role of road infrastructure in road safety problems in Addis Ababa, road safety work mainly assumes that road safety problems are individual road user problems. However, Addis Ababa road safety approach and the VZ share some similarities in relation to goal formulation and choice of strategies. Both advance a long-term vision of a safe road transport free from road trauma even though the policy documents analyzed in association with road safety work in Addis Ababa lack a clear commitment to the ethical unacceptability of fatal and serious injury crashes. In addition, road safety work in Addis Ababa promotes the design and construction of city road infrastructure as per the scientific standard promoted in VZ. Moreover, the emphasis on speed reduction as a major strategy to enhance traffic safety is something that the Addis Ababa road safety work and VZ share in common although practical implementation might be different.

It is argued that enhancing road safety work 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.

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Part Two: Svensk Sammanfattning

I denna licentiatavhandling diskuteras moraliska frågor i samband med trafiksäkerhetsarbetet, med särskild tonvikt på nollvisionsmålet och dess insatser. Avhandlingen innehåller en introduktion och tre artiklar. I denna svenska sammanfattning kommer jag kortfattat att presentera de tre artiklarna.

1997 antog Sverige Nollvisionen som det slutliga målet för trafiksäkerhetsarbetet. Regeringspropositionen konstaterade att det långsiktiga målet med trafiksäkerhetsarbetet är att eliminera dödliga och allvarliga skador från vägsystemet. Den betraktade den fortsatta förekomsten av sådana krascher som moraliskt oacceptabel. För att uppnå målet föreslog regeringen att vägsystemets utformning och funktion skulle anpassas till Nollvisionens krav. Detta krav innebär erkännandet och främjandet av två grundläggande fakta om trafikanternas karaktär i vägsystemet, det vill säga deras fysiska bräcklighet och kognitiva felbarhet. Regeringspropositionen konstaterade att de då rådande tillvägagångssätten för trafiksäkerhetsarbete ignorerade dessa grundläggande fakta om trafikanternas karaktär. Som svar föreslog regeringen att dessa fakta skulle vara utgångspunkten för trafiksäkerhetsarbetet och att utformning och drift av vägsystemet ska göras på ett sådant sätt att förutsägbara trafikantmisstag inte leder till dödlig eller allvarlig hälsoförlust. Enligt Nollvisionen ligger det yttersta ansvaret för att utforma vägsystemet på ett sådant sätt hos de så kallade systemformgivarna. Dessa är statliga och icke-statliga aktörer som ansvarar för utformningen och driften av vägsystemet och dess komponenter, till exempel fordonstillverkare, vägkonstruktörer och trafikplanerare.

Sedan införandet av Nollvisionen har trafiksäkerheten avsevärt förbättrats i Sverige och i de andra länderna som följde en liknande strategi. Emellertid har Nollvisionens mål och vissa insatser som främjats för att komma närmare det målet allvarligt kritiserats både i Sverige och på andra håll. I den första artikeln identifierar, kategoriserar och utvärderar vi argument mot Nollvisionen. Enligt vår analys kan kritik av Nollvisionen indelas i moralisk, operativ och rationalitetsrelaterad kritik. Moralisk kritik mot Nollvisionen är främst den som riktar sig mot etiska premisser och antaganden som Nollvisionens policy grundar sig på. Bland annat ifrågasätter denna kritik det etiska antagandet bakom

Nollvisionen, att dödliga och allvarliga skador är moraliskt oacceptabla. Ett viktigt argument är att, eftersom de ekonomiska resurserna är begränsade, borde offentliga pengar läggas på policyer och insatser som garanterar större nytta för samhället än andra tillgängliga alternativ. I praktiken är detta tankesätt dominerande och används ofta som berättigande för att inte investera i trafiksäkerhet. Liknande resonemang förs också fram för att berättiga utvecklingen av policyer och åtgärder som påverkar trafikanternas säkerhet på ett negativt sätt. I allmänhet säger kritiker att det ofta är moraliskt acceptabelt att äventyra säkerheten så länge det ger större fördelar för samhället. Andra kritiker avvisar godtagandet av Nollvisionens etiska princip och hävdar att trafikanter frivilligt har gått med på att ta ansvar för varje olycka som kan drabba dem i vägsystemet. Genom att gå in i vägsystemet och använda det, menar dessa kritiker, har trafikanterna i tystnad samtyckt till risken för dödlig eller allvarlig hälsoförlust. Vi tyckte att detta argument var svagt eftersom det inte finns någon anledning att tro att folk faktiskt accepterar att bli dödade och allvarligt skadade när de går in i vägsystemet. Däremot är det troligare att om de presenterades med ett säkrare och tryggare vägsystem skulle säkert de flesta välja att använda det säkrare systemet än ett där chansen att bli dödad och allvarligt skadad är stor. Övrig moralisk kritik mot Nollvisionen riktar sig mot specifika insatser som främjas för att öka säkerheten, t.ex. användning av säkerhetskameror (t.ex. att de kränker integriteten och samlar in för många känsliga personuppgifter), polisarbetet (t.ex. att det ofta är oproportionerligt och ineffektivt), trånga gator (t.ex. att de förhindrar snabba förflyttningar av uttryckningsfordon), hjälmar och säkerhetsbälten (t.ex. att de kränker människors autonomi och frihet). Kritik relaterad till processrättvisan och beslutsprocesser i Nollvisionens beslutsfattande ingår också i denna kategori. I allmänhet visar vår analys att några av dessa moraliska argument mot Nollvisionen förtjänar noggrann uppmärksamhet och därför är det viktigt att fortsätta att studera och undersöka genomförandet av policyn ur ett moraliskt och socialt rättviseperspektiv.

Den andra kategorin av kritik som vi kallar rationalitetsrelaterad kritik, riktar sig mot rationaliteten i att anta och driva Nollvisionen som sådan. Man sätter upp mål i det privata och offentliga livet för att människor vill uppnå de situationer som målen syftar på. För detta ändamål krävs ofta att målen måste vara specifika, mätbara, uppnåeliga och tidsbegränsade (SMART) för att kunna vägleda och motivera på rätt sätt. I den filosofiska

litteraturen om målrationalitet hänvisar man till mål som i tillräcklig utsträckning vägleder och motiverar handlingar mot måluppfyllelse som prestationsframkallande mål. Även om det har hävdats att Nollvisionen är ett prestationsframkallande mål på grund av dess handlingsvägledning och motiverande roller i trafiksäkerhetsarbetet, har vissa kritiserat Nollvisionens mål som orealistiskt, ospecifikt, kontraproduktivt och demotiverande. I allmänhet hävdar kritiker att Nollvisionen är ett irrationellt policy-mål. Vi anser att den första kritiken, att Nollvisionen är orealistisk, bygger på ett diskutabelt antagande om att målen antingen är realistiska eller orealistiska. Vi hävdar dock att en sådan binär beskrivning av måluppfyllelsekrav är förminskande eftersom den ignorerar det faktum att måluppfyllelse ofta sker gradvis. Dessutom visar empiriska belägg att även svåra och ambitiösa trafiksäkerhetsmål kan uppnås till en avsevärd nivå om effektiva och beprövade insatser främjas proaktivt. Vi hävdar att ett visionärt mål fortfarande kan vara värt att sträva efter så länge det kan uppnås till en betydande nivå.

Vissa kritiker hävdar dessutom att Nollvisionens mål är för vagt för att korrekt vägleda och samordna åtgärder. Antagandet är att eftersom det inte är tydligt formulerat, skulle det vara problematiskt för agenter som eftersträvar det att ha en klar förståelse för vad de vill uppnå men också hur de ska utvärdera sina framsteg med tiden. Vissa hävdar dessutom att det faktum att sträva efter oprecisa och orealistiska mål skulle vara kontraproduktivt och demotiverande för agenter som strävar efter sådana mål. Vår analys visar att åtminstone när det gäller Sverige är det trafiksäkerhetspolitiska målet det tydligast uttalade policy-målet inom vägtransportpolitiskt område. Det finns inte endast ett tydligt uttalande om vad det slutliga policy-målet är, utan också det faktum att det övergripande långsiktiga målet har gjorts operativt och mer specifikt tack vare uppdelningen i delmål för att göra det mer relaterbart och exakt för agenter som är inblandade i trafiksäkerhetsarbete. En adekvat bedömning av inverkan Nollvisionens mål har på agenternas motivation skulle kräva en empirisk undersökning av dess karaktär, dess praktiska genomförande och dess konsekvenser för, bland annat, intressenters motivation. Bland annat skulle detta kräva en utredning för att fastställa om Nollvisionens mål har kunnat generera den nödvändiga energin och ansträngningen som behövs för att minska problemet på ett betydande sätt eller inte. Det är uppenbart att om ansträngningar för att uppnå trafiksäkerhet, efter flera år ägnade åt att implementera Nollvisionen, sjunker till den punkt där de befann sig före

Nollvisionen, och trafiksäkerhetsbyråer och intressenter upphör eller saknar intresse för trafiksäkerhetsarbete, då kan Nollvisionen anses ha lett till att demotivera agenter. Det verkar, åtminstone i Sverige, som om antagandet av policy-målet har lett till en betydande ökning av intressenternas engagemang i trafiksäkerhetsinsatser. Statliga och privata medel för trafiksäkerhetsinsatser, särskilt för säkrare väginfrastruktur, fordonssäkerhet och forskning, har uppvisat betydande förbättringar sedan antagandet av Nollvisionen.

Den sista kategorin av kritik som vi identifierar och diskuterar i den första artikeln är den som vi kallar operativ kritik mot Nollvisionen. Denna kritik riktar sig mot den operativa strategin i Nollvisionen, det vill säga den gäller de praktiska metoder som används för att genomföra insatser för att förbättra säkerheten. De viktigaste argumenten i denna kategori är argumenten relaterade till Nollvisionens ansvarsbeskrivning för trafiksäkerhet. Vissa kritiker har hävdade att nollvisionens betoning av systemformgivarnas ansvar skulle leda till övermod hos enskilda trafikanter, särskilt hos motorfordonsförare. Därför argumenteras det för att tonvikten snarare bör läggas på större ansvar hos trafikanterna. Vi fann detta argument felaktigt. Det finns ingen logisk eller empirisk anledning att tro att antagandet gällande större ansvar från systemformgivarnas sida leder till övermod i vägtrafiken. Det finns inga starka empiriska belägg, åtminstone i trafiksäkerhetsarbetet, som visar att detta faktiskt är fallet. Kritiken tycks dessutom försumma det faktum att enskilda trafikanter fortfarande är kopplade till sitt gamla ansvar när det gäller att bete sig och agera säkert i vägtrafiken. Faktum är att vissa länder som engagerat sig i Nollvisionen, som Sverige, är kända för sin strikta kontroll av trafikantansvar genom striktare krav på skicklighet och beteende. En annan aspekt av kritiken mot Nollvisionens ansvarsfördelning är synpunkten som ifrågasätter frånvarokodade lagkrav för främjandet och utvärderingen av systemformgivarnas ansvar. Även om Nollvisionen lägger det yttersta ansvaret på systemformgivarna saknas det enligt argumentet ett sätt att kontrollera om systemformgivarna verkligen agerar i enlighet med det som förväntas av dem. Vi hävdar att denna kritik är relevant. Vi tror att det för närvarande saknas empiriska bevis för att avgöra om det faktum att ge laga kraft åt systemformgivarnas ansvar skulle bidra effektivt till säkerheten i vägsystemet. I Sverige har exempelvis förekomsten av andra kontrollmekanismer än juridiska straffkontroller för

systemformgivarnas ansvar gjort det irrelevant för regeringen att ge laga kraft åt systemformgivarnas ansvar.

Den andra artikeln i denna avhandling syftar till att förena metoden för kostnads-nyttoanalys och Nollvisionen i beslutsfattande om trafiksäkerhet. Kostnads-nyttoanalys har varit och är fortfarande ett viktigt beslutsverktyg inom vägtransporten och trafiksäkerhetsarbetet. Enligt denna princip är det moraliskt motiverat att förhindra risk endast när nyttan av att göra det överväger kostnaden. Detta skulle kräva att man påvisar att varje krona som läggs på trafiksäkerhetsarbete ger samhället mer nytta än någon annan alternativ användning av pengarna. Följaktligen fastställs relevansen och den moraliska godtagbarheten hos specifika trafiksäkerhetsmål och insatser på basis av nyttan och kostnadsöverbägen för samhället. Som kort sagt ovan i detta avsnitt, används ofta resultatet av överbägen relaterade till kostnads-nyttan för att berättiga varför utgifter för säkerhet inte är värda att göras ur ett moraliskt, ekonomiskt och samhällsperspektiv. Dessutom är det vanligt att i många länder använda kostnad-nyttoanalys för att fastställa och sätta upp trafiksäkerhetsmål som anses vara ekonomiskt optimala. Förespråkarna för Nollvisionen hävdar att det bland annat inte är önskvärt att lämna trafiksäkerhetsmålen till kostnads-nyttobräkningar ur en moralisk synpunkt. Det står i Nollvisionen att det enda moraliskt acceptabla målet för trafiksäkerhetsarbetet är noll dödliga och allvarliga skador. Dessutom, i den utsträckning man känner till effektiva och beprövade strategier bör de genomföras för att rädda människor från att bli dödade eller allvarligt skadade. I allmänhet avvisar förespråkarna för Nollvisionen beslutsfattande baserade på en ren kostnads-nyttoanalys av metodiska och etiska skäl.

Nollvisionens syn att dödliga och allvarliga skador i vägsystemet är oacceptabla är moraliskt tilltalande. På samma sätt är kostnads-nyttoanalysen (CBA) främst avsedd att främja ekonomisk effektivitet. I den här artikeln argumenterar vi för att Nollvisionen och kostnads-nyttoanalys är båda baserade på rimliga principer och kan göras kompatibla. Vi identifierar och diskuterar sedan sätt på vilka Nollvisionen och kostnads-nyttoanalysen kan göras kompatibla.

I den tredje artikeln undersöker vi policydokument angående trafiksäkerhetsarbete i Addis Ababa för att undersöka hur trafiksäkerhetsproblem faktiskt uppfattas av de som är

ansvariga för trafiksäkerhetsarbetet. En viktig egenskap i det nuvarande trafiksäkerhetsproblemet är att detta problem oproportionerligt påverkar låg- och medelinkomstländer. Dessa länder står för cirka 90 % av dödsolyckorna på vägen, medan de bara äger mindre än 50 % registrerade motorfordon i världen. Den stora omfattningen av dödsolyckor och allvarliga skador i dessa delar av världen visar vikten av att undersöka effektiviteten, verkningsfullheten och rationaliteten av policyer och insatser som främjas i dessa länder. Dessutom är det också viktigt att undersöka trafiksäkerhetsarbetet i dessa delar av världen ur ett normativt perspektiv. Genom att anta Nollvisionens tillvägagångssätt för trafiksäkerhetsarbete som en normativ teoretisk ram, bedömer vi trafiksäkerhetsarbetet i denna stad med avseende på dess målsättningsaspekter, problemformulering, strategier och insatser för trafiksäkerhetsarbete och ansvarsbeskrivning för trafiksäkerhet i staden. Vår analys visar både på likheter och skillnader mellan Nollvisionen och Addis Ababas trafiksäkerhetsarbete. Vi hävdar i detta dokument att en förbättring av trafiksäkerheten i staden kräver att man främjar en bredare syn på orsakerna till trafiksäkerhetsproblem och fördelar och tilldelar ansvar till viktiga intressenter som har avsevärt inflytande på vägtrafiksystemets utformning och drift.