

# Creating Opportunities through Vocational Training

## Results of a Baseline Survey among Commercial Vehicle Drivers in Addis Ababa, Ethiopia

**Project:** “Training Institute for Commercial Vehicle Drivers (CVDs) in Ethiopia: A private public partnership project to support specialized skills development in Ethiopia” (SAP 140347)



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**Abbreviations**

AADVLCA	Addis Ababa City Administration Drivers and Vehicles License and Control Authority
AIDS	Acquired Immune Deficiency Syndrome
CVD	Commercial Vehicle Driver
DHS	Demographic and Health Survey
FTA	Federal Transportation Authority
GoE	Government of Ethiopia
GTP	Growth and Transformation Plan
HIV	Human immunodeficiency virus
ILO	International Labour Organization
M&E	Monitoring and evaluation
UNIDO	United Nations Industrial Development Organization
Selam	Selam Vocational Training College
Sida	Swedish International Development Cooperation Agency
STD	Sexual transmitted disease
TVET	Technical and vocational education and training

## Summary

In Ethiopia, road traffic injuries claim more than 20,000 lives each year, making it one of the countries with the highest road death rates in the world. The unsafe situation on the roads does not only affect public health and safety, but also has major implications for development, costing Ethiopia approximately 1% of its' GDP each year. The government of Ethiopia has responded to the challenges, making traffic safety a high priority in its recently adopted second Growth and Transformation Plan. This is in line, with SDG 11 of the 2030 Agenda calling for “access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons” (Target 11.2).

In many regards, commercial vehicle drivers (CVD) are at the center of Ethiopia's efforts to improve road safety and to ensure inclusive development for all. Limitations in driving skills lead to high accident rates, often with fatal consequences, putting both the drivers and other traffic participants at risk. With limited access to comprehensive and professional CVD education, drivers lack skills and competencies that would allow them to adequately perform job-related tasks. Furthermore, low technical and maintenance knowledge and skills contribute to high numbers of break downs and high costs for repairs and replacements. Their limited specialized training and competencies and the high substitutability in the profession put drivers in an overall weak position on the labor market. CVDs are often faced with precarious and unsecure working conditions, long working hours, and high levels of work-related stress.

The present report summarizes the findings of a representative survey among commercial vehicle drivers (CVD) in Ethiopia. The survey was implemented as part of the UNIDO project “Training Institute for Commercial Vehicle Drivers (CVDs) in Ethiopia: A private public partnership project to support specialized skills development in Ethiopia” (SAP 140347). The project aims at (i) increasing road safety in Ethiopia by providing CVD technical and vocational training at international standards, (ii) improving the employment and work situation of CVDs and strengthening their position on the labor market, and ultimately (iii) improving the health and well-being of the drivers. The report highlights the importance of good quality driver training and education for promoting safe driving among CVDs and for improving various work-related outcomes, such as drivers' technical knowledge and skills, occupational health, and labor market opportunities.

The survey provides first-hand insights in the living and working condition of CVDs in Ethiopia. **Chapter 1** provides background information on the situation in the country and describes the relevance of the UNIDO project against the context. **Chapter 2** presents information on the data collection and the design of the research. In total, 700 drivers, who obtained their bus or truck driving license in Addis Ababa, were interviewed as part of the survey. The sample of drivers is representative allowing for a generalization of the findings to the entire driver population. Data was collected about various topics related to drivers' educational and training background, their technical skills and knowledge, their working situation, their driving behavior, and their health.

**Chapter 3** focusses on drivers' educational and training background and identifies gaps in the driving education. While the current driving education is strongly focused on core skills needed for professional driving, the drivers have only limited knowledge about complementary skills and techniques, related to technical maintenance and repairs, risk avoidance, or occupational health and safety. In particular, the lack of technical skills is a major concern for the private sector. Transportation companies have been criticizing the overall low quality level of the driver education and training. Not every driver has equal access to high-quality education and training opportunities, which is currently not inclusive, but strongly determined by drivers' socio-economic background.

High-quality driver education is instrumental in providing drivers with good levels of technical work skills and with enabling them to accurately perform their job. **Chapter 4** studies the distribution of technical knowledge and on the job skills among the drivers. While most drivers have a sufficiently high level of technical knowledge, few drivers have very limited know-how. Furthermore, many drivers do not regularly perform important tasks and routines, which are of relevance to ensure vehicle maintenance and road safety. Drivers with better driver education are overall more likely to have good technical knowledge and to perform work-related tasks in a more thorough manner.

Drivers are exposed to difficult and stressful working conditions. Better quality education can lead to improvements, among others by supplying drivers with essential coping resources. **Chapter 5** is concerned with the working condition in the transportation sector. The vast majority of drivers is not permanently employed but faces precarious and unsecure working conditions. A substantial share of CVDs works long hours. On average, it is found that the working condition is more favorable for better trained drivers. The quality of driving education also positively influences the perceived adequacy of training. Work-related stress is a major risk factor for drivers with substantial negative consequences



for their perceived job satisfaction. Long working hours and precarious working conditions, which are both influenced by driver's education and training background, are major triggers of work-related stress.

In their work, drivers experience a substantial number of risk situations, such as accidents or incidents of severe fatigue. **Chapter 6** of the report focuses on these situations and analyzes factors, which make CVDs more likely to be exposed to threats in their professional life. Aberrant driving and traffic violations, which are common in the driver population, are a strong predictor of whether a driver experiences risks situations. Younger drivers and drivers in municipal areas are particularly at risk. Furthermore, work-related stressors strongly influence both aberrant driving behaviors and the experiencing of risk situations. Comprehensive driver trainings, which teach CVDs risk avoidance skills and techniques, are found to be helpful in mitigating risk situations.

The health situation of CVDs is an important, but underexplored topic. **Chapter 7** studies the general health condition of drivers and highlights different challenges. While the interviewed CVDs report an overall good health, they face substantial health risks. Very few of the drivers are covered by a health insurance. Being highly dependent on physical labor, the risk of failing sick can have substantial negative effects on their livelihoods. Drivers with lower income and those who are exposed to work-related stress are found to have an overall worse health. At the same time, increased levels of mental stress and feelings of sadness, depression, and loneliness are common in the driver population, in particular among drivers with lower income who are exposed to high pressure in their work. As drivers with lower income and unsecure working conditions are likely to lack resources enabling them to cope well with a health shock, they are particularly vulnerable. Further evidence also shows that CVDs are a high-risk group for HIV/AIDs. Given their high mobility with extended periods away from home, CVDs are exposed to different risk factors, including risky sexual behaviors.

Overall, the driver population is characterized by multiple vulnerabilities, which are analyzed in **Chapter 8**. Major vulnerability risk factors are related to the drivers' precarious working condition, threatening situations in their daily work, and their health situation. All of these factors can have major effects on drivers' life satisfaction and well-being. The chapter discusses the need to address the multiple vulnerabilities in the driver population. It also considers gender and environmental issues in the transportation sector, which both warrant attention in the design of interventions and policies.

**Chapter 9** of the report summarizes sociodemographic background characteristics of the CVD population. Drivers are on average young and have mostly secondary and tertiary education, representing a good base for further CVD related vocational and technical trainings and education. A significant share of the interviewed drivers is not satisfied with their life, which can be explained with their unstable working condition, low income levels, and work-related stressors.

Based on the evidence from the survey, different policy lessons are derived, which are discussed in **Chapter 10**. These concern improvements in the quality and inclusiveness of the CVD education, a strengthening of school-based education and institutionalized trainings, a stronger focus on complementary and technical work skills in the driver education, a higher level of professionalization of the training and occupational status of CVDs, the promotion of better working conditions in the transportation sector, enhanced partnerships between stakeholders, and the continuous monitoring of activities in the field. All of these can help contributing to sustainable improvements for the drivers, the private sector, and the general public in Ethiopia.

The baseline survey represents an integral part of the monitoring and evaluation process of the UNIDO training project. The final **Chapter 11** discusses possible ways how to make greatest use of the findings from the survey and how to integrate the collected data into the monitoring and evaluation activities of the project. The results from the baseline survey provide useful insights, which can complement other monitoring and evaluation methods and help to ensure an effective and efficient implementation of the planned project activities.

## 1 Introduction

### 1.1 Background on the Ethiopian Context

With its population of about 107 million people (2018), Ethiopia is the second most populous nation in Africa, and with a growth rate of 10.3% of GDP (2017) the fastest growing economy in the region [1]. Ethiopia's economy is transitioning, shifting focus from agricultural production to industrial activities, construction, and services. The country aims to sustain an annual rate of economic growth of more than 10 percent to become a middle-income country by 2025 [2].

Despite recent progresses, large parts of the Ethiopian population continue to live in extreme poverty. Between 2000 and 2016, the headcount poverty rate declined from 45.5% to 23.5% with about 15% of the Ethiopian population being currently unemployed [3]. In terms of its population, Ethiopia is one of the fastest growing countries in the world, with a growth rate of about 3% per year. If Ethiopia follows its current rate of growth, its population will double in the next 30 years and hit 270 million by the end of the century [1]. The steady population growth imposes additional development challenges in terms of housing, infrastructure, and transportation, in particular in the urban centers of the country.

With its' strategic location at the Horn of Africa, Ethiopia connects markets in East Africa, the Middle East and Europe. As a landlocked country with a dysfunctional train rail infrastructure, the country is highly dependent on road transport for the movement of passengers and freight. The most recent Growth and Transformation plan (GTP) of the Government of Ethiopia (GoE) targets a doubling of the length of all-weather roads from 110,414km to 220,000km by 2019/2020. In the same period, the number of commercial transport vehicles is expected to increase to over 90,000 raising the demand for labor in the transportation and logistics sector [4].

The increasing level of road use and traffic in the country comes at a cost. With 65 fatalities per 10,000 vehicles, Ethiopia has one of the highest road fatality rates per vehicle in the world [5]. The GoE plans to reduce this rate to 27 per 10,000 vehicles by the end of the second Growth and Transformation Plan in 2020. The majority of accidents can be attributed to limited driving skills and aberrant driving. Ethiopian police records show that between 2003 and 2007, at least 76 percent of fatal accidents were due to driver error, mainly resulting from reckless driving and traffic violations. 6 percent of fatal

accidents were due to vehicle defects, 5 percent due to pedestrian error, 2 % due to road defects and the remaining due to other causes. Over half of road traffic accident deaths in Ethiopia involve pedestrians, of whom 20 percent are children younger than 18 years old [4]. Motor vehicle crashes have far reaching health implications that go beyond the immediately affected victims and can have psychological and financial effects on families, co-workers, and employers.

The high number of road traffic incidents does not only represent a public health problem, but also causes major economic damages. The WHO estimates for Ethiopia a loss of 0.8-0.9% of the GDP due to road traffic crashes [5]. In particular, the private transportation and logistics sector suffers from break downs and vehicle crashes, which can result in substantial damages to the vehicle fleets. Lacking technical and maintenance skills of drivers lead to a poor condition of many vehicles, imposing additional risks in traffic. As motorization and population increase rapidly, the situation is likely to worsen, unless appropriate measures are undertaken.

Commercial vehicle drivers (CVDs) find themselves exposed to the severe and potentially harmful situation. They often take a weak position in the transportation sector and are vulnerable in many ways. Facing insecure employment and high competition on the labor market, the drivers are highly dependent on their employers and are often exposed to precarious working conditions. Since their income earning strongly relies on manual labor, they are required to be in a physically good condition. Yet, in their daily work, the drivers are exposed to multiple risks to their health. Aside of facing the danger of crashes, long working hours and poor occupational safety are common issues in the transportation sector in Ethiopia [6].

CVDs are also a high risk group for HIV/AIDS. They are of an age to be sexually active, but commonly separated from their regular partners for extended periods of time. Combined with easily accessible sex networks operating along the highways and at halt points in Ethiopia, truck drivers are attractive customers to the sex work industry in the country and are thus also contribute to spreading HIV/AIDS. Despite advances in the fight against HIV/AIDS in Ethiopia, HIV prevention actions are lacking or inadequate. In 2017, 610,000 people were living with HIV/AIDS, of which 62,000 were children below the age of 15 [7].

## 1.2 The Importance of Vocational Training

As the Ethiopian economy develops and the complexity of industrial value chains increases, a workforce with more technical knowledge and skills will be necessary, among others in the growing transportation sector. Better training can help addressing some of the challenges faced by the sector, such as high accident rates, drivers' limited technical knowledge, and misconduct and violations in traffic. At the moment, there is an acute shortage of professionally trained CVDs in the country. This shortage is projected to continue for the coming two decades, unless the GoE and private sector operators are able to address the constraints facing the training sector.

Each year, more than 120,000 regular students (nearly 50 percent men and 50 percent women) graduate from vocational schools in Ethiopia at different levels (level 1 – level 5). However, due to the supply driven nature of the technical and vocational education and training (TVET) system, many graduates from TVETs do not find employment in their area of specialization. Since no TVET school provides training in the field of commercial vehicle driving, most of the CVD in the country do not have professional education.

As of 2013, there were approximately 58 CVD training schools registered in Addis Ababa. However, as a result of the increasing number of traffic accidents in the city, the Federal Transportation Authority (FTA) undertook an evaluation of the schools and revoked the licenses of 15 and temporarily suspended the operations of 34, resulting in only nine schools remaining operational, albeit with limited capacity and low quality training. At the same time, there is no government training school in the country serving the public transport institutions.

The need for better training of drivers has been recognized by the private sector, which has expressed an increasing demand for qualified drivers, who are able to handle heavy vehicles and machinery in a responsible manner and who possess good command of modern technologies being able to support the maintenance of the vehicle fleet. At the same time, the increasingly young population calls for better training opportunities allowing them to fully develop their abilities and skills to succeed on the labor market.

### 1.3 UNIDO's Engagement: Project Description and Activities

The project **“Training Institute for Commercial Vehicle Drivers (CVDs) in Ethiopia: A private public partnership project to support specialized skills development in Ethiopia”** (SAP 140347) was developed in the context of a Public Private Partnership (PPP) with AB Volvo, a global company manufacturing commercial vehicles, the Swedish International Development Cooperation Agency (Sida) and Selam Vocational Training College, an international NGO assisting young men and women in vocational training, and the United Nations Industrial Development Organization (UNIDO). The project commenced in July 2017 with the objective to establish a training academy for CVDs.

The overall objective of the project is to create productive employment opportunities for Ethiopian youth, both young women and men, in commercial vehicle driving and improve the shortage of skilled labor in transport enterprises. The project aims to reduce road traffic accidents and improve the health of truck drivers around the country. It also wants to contribute to the efforts of the government in transforming the country's driving schools.

The planned training academy will provide up to five years of training for up to 40 regular trainees annually. It will also undertake short-term modular training for at least 480 drivers annually from different companies around the country. The project particularly targets females as trainees and as trainers. The focus of the project is not only on improving general driving education and professional training for drivers, but also on advancing the skills of driving trainers. According to the FTA, there is a demand for up to 100 trainers annually. By also targeting trainers, the project aims at increasing its impact on the sector in a sustainable way. In the course of the project, the institutional capacity of Selam Vocational Training College (Selam) will be strengthened enabling the school to deliver up-to-date training courses relevant to the requirements of modern enterprises, which are increasingly expanding their operations in Ethiopia.

## 2 Data and Methods: Baseline Survey

### 2.1 Data Collection

To collect information on the local context and to allow for evidence-based decision-making, a survey was conducted to collect baseline data on the population of CVDs in Addis Ababa and beyond. The main objectives of the survey were: (i) collecting descriptive data about the general CVD population in Addis Ababa, (ii) collecting explorative information that is of relevance for the design and implementation of the UNIDO training intervention, and (iii) measuring outcome indicators that can be used as baseline reference in the evaluation and monitoring of the training intervention by comparing the group of learners (over time) to the general population of drivers.

The target population of the study are CVDs who obtained a heavy vehicle driving license from a driving school in Addis Ababa between 6 months and 10 years ago. Heavy vehicle driving licenses include the categories Truck1-3 and Public Bus 2 and 3. Drivers with a Public Bus 1 license (mostly minibus taxi drivers) were excluded from the sample as they are not of primary relevance for the intervention and represent a special group in the CVD population.

To address the high mobility of drivers, data was collected in telephone interviews over a period of two weeks in December 2018. The interviews, had an average duration of 30-35 minutes in length. Respondents received a simcard voucher worth 75 Birr as an incentive for their participation. The simcard voucher was sent to them by text after the completion of the interview. The questionnaire was translated in Amharic, the most commonly spoken language in the greater area of Addis Ababa.

Data was collected on the (A) drivers' socio-demographic background, (B) their educational and training background, (C) their technical knowledge and skills, (D) their employment situation and opportunities on the labor market, (E) their driving behavior and ethical conduct, and (F) their health situation and wellbeing with a particular focus on HIV/AIDS. The complete English version of the questionnaire can be found in Appendix C.

## 2.2 Sampling and Population Statistics

In total, 700 commercial vehicle drivers, were interviewed as part of the survey. The complete registry of the Addis Ababa City Administration Drivers and Vehicles License and Control Authority (ADVLCA, Addis Ababa Driving Authority) was used to identify and sample the drivers. The registry contains, among others, information on the name and contact details of the drivers, the vehicle category of their license, and the year the license was obtained. The highly sensitive information was obtained with the permission of the authority and was treated with utmost care. It was only used for the sampling and contacting of the respondents.

The respondents for the interviews were randomly selected using stratified random sampling. For this, the population of drivers was divided into strata based on vehicle categories and whether the license was obtained from an accredited driving school or not. Respondents were then drawn with a probability proportional to the relative size of each stratum. In total, 1583 drivers were contacted as part of the survey, including a very small fraction of 8 female drivers (relative to their small number in the total population). Of the initially contacted drivers, 15.2% could not be reached, either because their telephone was out of service or the contact information was wrong and 7.8% refused to participate in the survey, leaving 77% of drivers who could be reached and who were willing to participate.

Additional analyses were conducted to estimate for systematic drop-outs and refusal of drivers by different types of vehicle categories, sex, and year when the license was obtained (see Appendix A). There was no evidence that any of these factors had statistically influenced whether or not a driver was willing to participate in the survey indicating that systematic sampling biases in the selection of respondents did not occur. The random sampling allows hence to draw inferences about the general population of drivers of who obtained their license in Addis Ababa.

The final sample was confined to licensed drivers who are currently working or have recently worked as CVDs. This further specification of the sample allows obtaining accurate information about the situation of CVDs. Successfully contacted respondents were asked whether they were currently working as a CVD, who transports at least from time to time freight or people, or if they have been working as a CVD in the past 12 months. If none of the two applied, the person was not eligible for an interview. In total, 57.5% of respondents who were willing to participate fulfilled the participation



criteria. Of these, 75.8% were working as CVD at the time of the interview and 24.2% have been working as CVD at some point in the past 12 months prior to the interview.

To obtain information about the originally selected population of drivers, non-eligible respondents were asked several exit questions before terminating their interviews. Among others, they were asked whether they were currently employed and whether they had ever worked in the transportation sector as CVD after they obtained their license. Among the non-eligible drivers, only a small fraction of 35.5% had ever worked as CVD. The majority of 85.6% of non-eligible drivers was currently employed in other branches.

### 2.3 Measurement and Key Variables

As part of the survey, information on various characteristics of drivers was collected. For the design of the research instruments, questions from the Ethiopian Demographic and Health Survey (DHS) and ILO Labor Force Survey were used [8,9], which also allow a comparison of the interviewed drivers with the general Ethiopian population. Further questions were taken from the practice theory test for the UK truck and bus driving exams [10]. Table 1 provides an overview of some of the key variables that were constructed based on the driver data. The variables are ordered based on their appearance in the report. Further details on some of the analytical methods used in the report can be found in section B in the Appendix.

**Table 1 - Explanations for key variables constructed from the baseline survey data**

Section	Variable	Description
3	Skills obtained in driving education	Drivers were asked whether they learnt different skills and techniques during their driving education. The answers were aggregated in a variable measuring the number of skills obtained
3	Additional driver trainings	Drivers were asked whether they visited additional trainings related to driving, aside their regular driving education
3	Relevant vocational training	Relevant trainings are any vocational courses related to key tasks of commercial vehicle driving, e.g. electronic or mechanic
3	Quality of driving education	The previous three measures were aggregated in a quality measure, reflecting whether drivers obtained a high, moderate, or low quality driving education

4	Technical knowledge	Drivers' technical knowledge was assessed with 7 questions related to driving. The answers were summarized in an index
4	Accuracy in job performance	Measures whether drivers accurately perform different important tasks related to their work as CVDs
5	Net income	Net monthly and hourly income of drivers
5	Job Satisfaction	Subjective job satisfaction scale ranging from completely dissatisfied (1) to completely satisfied (5)
5	Adequacy of training for job	Perceived adequacy of driving education and related trainings for job as CVD
5	Work-related stress	Drivers were asked whether they agree or disagree with different statements about their work condition, some related to work stress. Creation of work stress index based on 6 items
6	Risk situations	Drivers were asked whether they experienced certain risk situations while driving in the past 12 months
6	Aberrant driving	Assessed with 12 items reflecting different forms and intensities of aberrant driving. Drivers were asked whether and how often they have shown aberrant driving behaviors in the past 12 months. Items were summarized in an aberrant driving index
7	Subjective health rating	Drivers were asked to rate their health on a five point scale from very bad to very good health
7	HIV/AIDS knowledge	Drivers were asked seven questions about HIV/AIDS. The correct answers were aggregated to an HIV/AIDS knowledge index
7	Risky sexual behavior	Drivers were asked whether they are aware of anyone among their colleagues who engages in risky sexual behaviors
7	Mental health	Drivers were asked two questions related to sadness/depression and loneliness to measure their mental health situation

## 2.4 Limitations of the Data Collection

While this survey provides important insights into the living and working condition of CVDs in Ethiopia, it is important to keep in mind the survey-based nature of the data collection, which might have affected the measurement and the results. The accurateness of responses to survey questions critically depends on a variety of factors, such as the interviewing mode, behavior of the interviewer, as well as external influences, such as disturbances.

The survey was carried out via telephone to ensure a high response rate among the drivers. This comes at the caveat that the interviewers were not able to verify the truthfulness of responses as

directly as in a face-to-face interviewing situation. Several topics treated sensitive topics, such as traffic violations and health, which may have led respondents to answer in a socially desirable way. Moreover, on the telephone, respondents may have been particularly cautious with revealing sensitive information, potentially affecting their response behavior. Situational disturbances and the presence of others during the telephone interviews are further issues that could have potentially influenced the data collection.

Following good practice, the survey design responded to some of the challenges in order to minimize biases in the interviews. The research instrument was pilot tested several times under real interviewing conditions resulting in several adaptations of the questionnaire (n for pilot tests = 50). The Interviews were conducted by well-trained and professional interviewers who obtained a full preparatory training and clear instructions. Anonymity and confidentiality of the responses was emphasized several times during the interview and informed consent was taken from the respondents prior to the interview. Interviewers were asked to ensure that the respondent can answer to their questions without being disturbed and to interrupt an interview if others were present. For security reasons, interviews were also interrupted, if the respondent was driving when answering the call of the interviewers.

### 3 Training and Educational Background of Drivers

#### 3.1 Current State of CVD Training in Ethiopia and Existing Gaps

The first result section of this report addresses the training and educational background of drivers and documents existing gaps. Figure 1 provides an overview of different skills and trainings obtained by the interviewed CVDs during their driving education both within and outside the driving schools. The first panel A shows whether drivers were taught different skills and techniques related to commercial vehicle driving. Dark colored bars show the percentage of respondents who said they learnt the skills in a profound and applicable way; turquoise bars reflect the share who learnt a skill, but not in detail; and light bars reflect the share of drivers who have never learnt a skill.

**Complementary work skills are lacking among drivers.** While the majority of drivers claimed to have profound knowledge about some of the core activities of commercial vehicle driving, such as performing inspections of the vehicle prior to trips or loading and unloading vehicles, only few learnt complementary work and soft skills, such as how they can preserve their health and wellbeing at the workplace, the proper documentation of trips, and environmentally friendly driving. Profound knowledge about active fatigue avoidance was obtained by less than 30% of drivers, which mirrors the high number of experienced fatigue instances in the driver population (see section 6).

**Majority of drivers has not participated in any advanced trainings related to their work.** Panel B in Figure 1 shows the percentage of drivers who have participated in special CVD-related trainings, during their driving education. Only few of the drivers have participated in advanced training courses. Less than 23% have participated in road safety trainings and 16% and 17% have visited special trainings related to first aid and vehicle repair and maintenance, respectively.

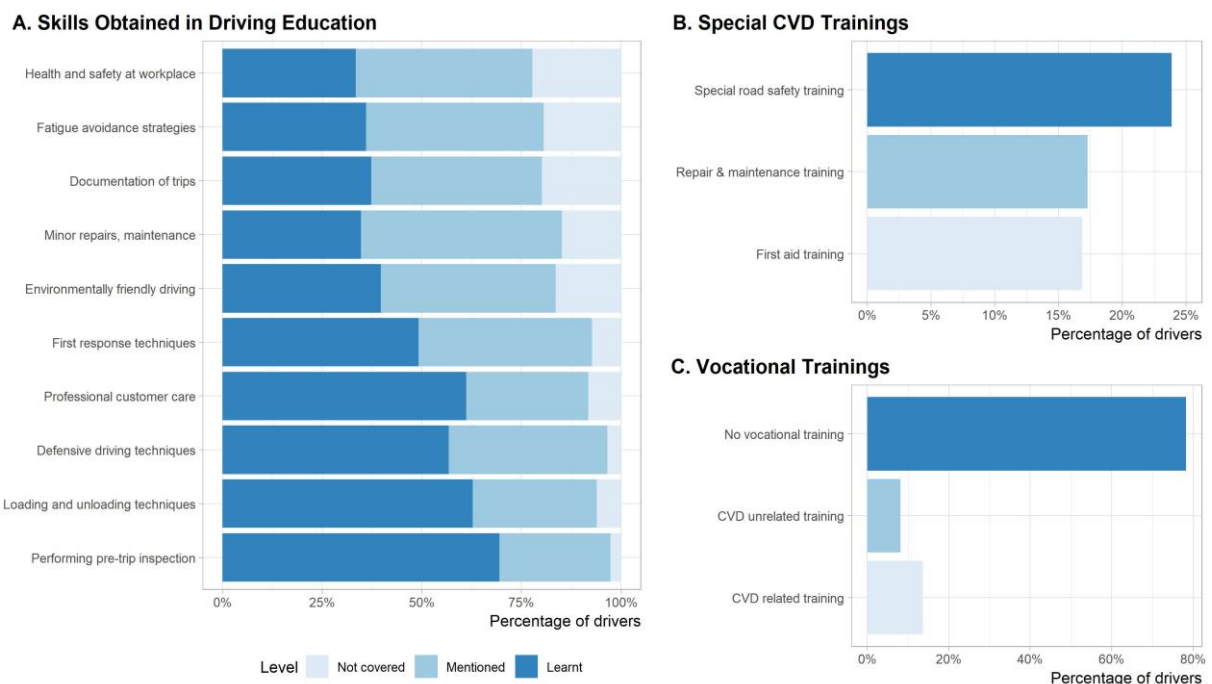


Figure 1 - Skills and trainings obtained by commercial vehicle drivers

**Low technical skill level reveals need for specialized CVD trainings.** The lack of electromechanical skills among drivers is a major concern for truck and bus companies. In explorative interviews with representatives of the private sector, these have expressed a substantial demand for drivers with an ability to perform minor repairs and services with the aim to minimize break downs and to maintain their fleets. As of now, only 35% of interviewed drivers said they had the ability to perform minor repairs and maintenance activities, revealing a substantial potential for further training and extensions of the existing driver education.

**Only few of the CVDs have obtained a TVET, which is related to their work.** Panel C shows the share of drivers who have obtained some form of technical or vocational training. We further distinguish between respondents who have obtained a TVET, which is of relevance for commercial vehicle driving, such as a mechanical or electrical engineering training, and those, who obtained an unrelated training. In total, 21.7% of drivers have obtained a TVET as part of their education. Of these, 13.6% received a training of relevance for their job as a CVD and 8.1% obtained an unrelated training.

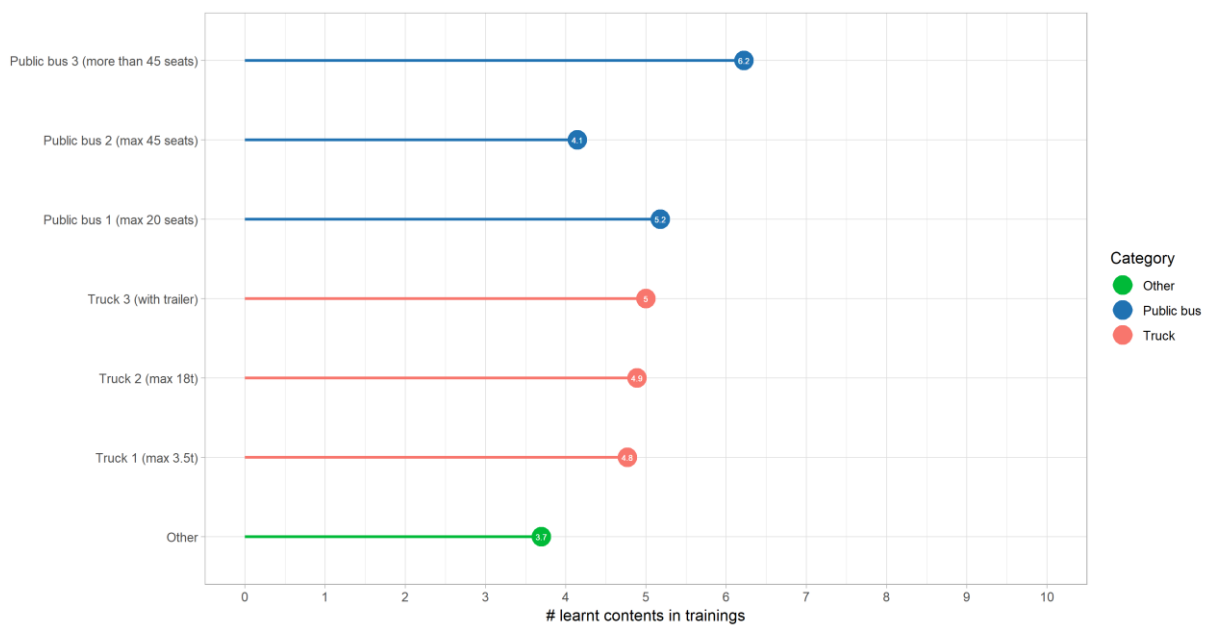


Figure 2 - Differences in number of skills and techniques learnt by vehicle categories

**Only minor differences in the contents learnt for different vehicle categories.** Figure 2 shows differences in the number of skills and techniques obtained during the driving education for different vehicle categories. On average, drivers profoundly learnt about 4.8 skills/techniques of the ten sampled skills with drivers of public buses showing a significantly higher level than truck drivers. At the same time, among all heavy vehicle operators, the level is lowest among drivers of medium-sized public buses with maximum 45 seats.

**Substantial interest of drivers in further training opportunities.** Several of the interviewed drivers indicated an interest in further training opportunities. 23.7% said they would benefit of further training opportunities and 24.4% of drivers said they either attended or considered attending training courses related to commercial vehicle driving in another country. This result indicates a demand for CVD-related formative education that is currently not met in Ethiopia.

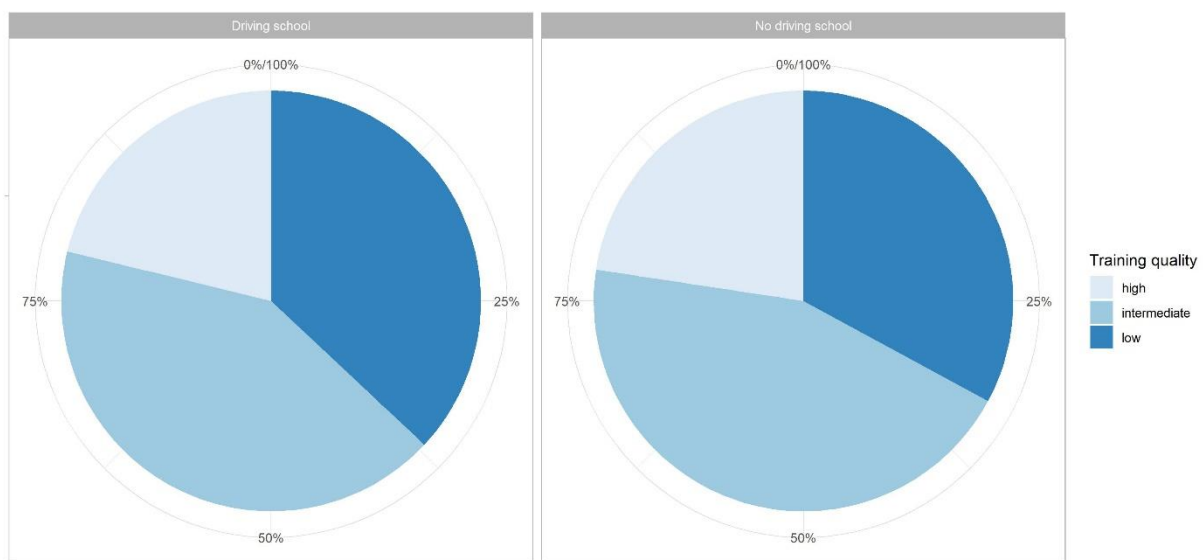


Figure 3 - Quality of commercial vehicle driver education

**The quality of driver education is an important variable, which has to be taken into account.** Based on the information from the previously discussed measures, an aggregate training quality measure was constructed, which allows assessing the role of overall education quality in influencing driver’s

knowledge, behaviors, and opportunities on the labor market. The aggregate variable has three levels: low, intermediate and high education quality. Drivers are classified as having obtained a high quality driver education if they have profoundly learnt about at least half of the ten surveyed skills and techniques (Figure 1, Panel A) and if they have either visited an additional training related to commercial vehicle driving or have obtained a relevant TVET (Figure 1, Panels B & C). If drivers have learnt less than half of the ten skills, but have obtained additional training, they are classified as having received moderate quality education. If they have learnt only few skills and have not obtained additional training, their education quality is classified as low.

#### **There are substantial differences in the quality of the education obtained by CVDs in Addis Ababa.**

Figure 3 shows the share of drivers who obtained a low, intermediate, or high quality driver education, separately for drivers who received or did not receive their last license from an officially accredited school in Addis Ababa. Approximately one third of all drivers have received a low quality education, according to our definition. The largest proportion, 43.9% of drivers, has received a moderate quality and 22.3% a high quality education. On first sight, it does not seem to play a role whether or not the driving license was obtained from an officially accredited institution. However, the measure only accounts for the last obtained license and not for previous licenses. In total, only a small share of 23% of all interviewed drivers obtained their last license from an accredited driving school.

### 3.2 Access to Quality Education, Educational Inequality, and Inclusiveness

**Educational inequalities also matter for driver education.** Access to educational institutions and resources is not equal in Ethiopia, but strongly influenced by social factors and circumstances, such as wealth, ethnicity and location. For example, the share of individuals with less than 4 years of schooling in the country is 73% in the poorest compared to 12% in the richest wealth quintile, revealing substantial educational inequalities. At the same time, substantial gaps between rural and urban locations exist. While the share of individuals who have never been to school is 24% in rural areas, it is only 6% in urban neighborhoods [11].

**Access to high quality commercial vehicle driver education is not universal.** Figure 4 shows differences in the probability of obtaining a high quality driver education by different education levels, which serve as a proxy for the social background of drivers. Access to higher quality training improves with higher education levels, which we measure in Panel A with the highest education degree

obtained and the English proficiency (levels 1-4) of drivers. Panel B shows the relationship between access to quality education and the year when the driving license was obtained. For all educational degrees, there is evidence for improvements in the quality of the driver education over time with more recently licensed drivers having obtained on average higher quality training. At the same time, the substantial gap between drivers with different educational backgrounds persists with drivers with higher educational degrees benefiting of better access to higher quality driver training.

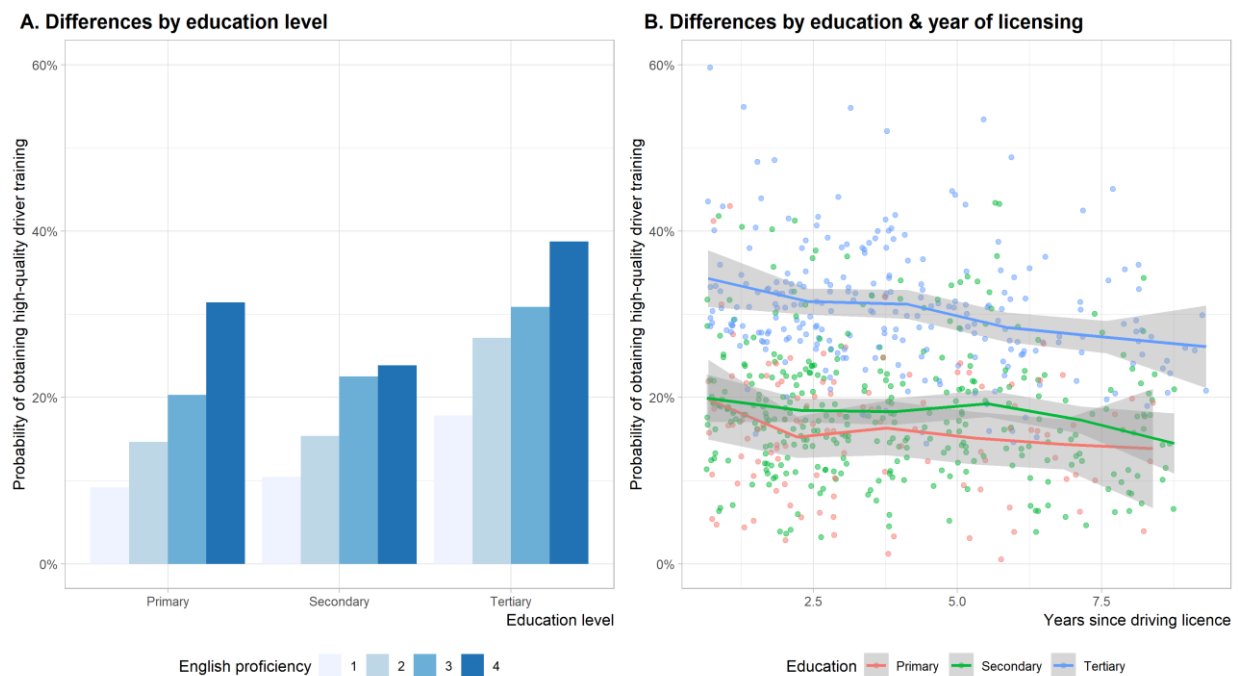


Figure 4 - Access to quality commercial vehicle driver education

**Access to high-quality TVET needs to be inclusive to unfold its full potential.** While the educational degree serves only as proxy for the social background of drivers, it reveals important differences in who obtains quality driver education and who does not. In this regard, it is important to ensure access to high-quality education for broad parts of the population. This is especially true for the training of CVDs. For this group, educational quality does not only potentially generate private benefits on the labor market, but may also create important social spill-overs, for example by reducing the number of traffic accidents.



### Section 3 - Key Insights

- Gaps in existing driver education
- Limited knowledge about complementary work and soft skills
- Lack in repairing and maintenance skills as major concern for private sector
- Substantial differences in quality of commercial vehicle driver education
- Currently, inequalities in access to high quality driver education
- Inclusive solutions needed, providing universal access for all drivers

## 4 The Role of Quality Training for Driving Knowledge and Skills

### 4.1 Technical Knowledge and Skills

In the next section, technical knowledge and drivers' accuracy in performing their job are considered. A particular focus is placed on the importance of the quality of the education. Figure 5 Panel A. shows differences in technical knowledge of drivers, who were asked 7 technical knowledge questions as part of the baseline survey. To adequately assess drivers' knowledge on the phone, all questions were asked in a simple way with only two possible answer categories per question.

**Despite overall high levels, there are gaps in the driver's technical knowledge.** The questions were related to the correct draining of air tanks, the interpretation of alarm signals while driving, the brake system in vehicles, the importance of regularly checking the pressure of tires, the replacement of wheel nuts, performing walk around inspections, and the symptoms of a shock after an accident. The bars at the bottom of the graph show the percentage of respondents who either answered all questions or all but one question correct. 21.6% of interviewed respondents answered all and 58.4% all but one question correct. On average, respondents gave a correct answer to 5.6 questions of the seven questions, which reveals an overall good amount of technical knowledge.

**Technical knowledge is influenced by the quality of driver education.** While overall technical knowledge is high in the driver population, differences in the sample are observable with some of the drivers answering correctly only few of the questions. Drivers who obtained high quality education

have an about 50% higher probability of answering all questions correct compared to drivers who obtained low and moderate quality education (Panel B). Similarly, drivers with high quality education had higher probabilities of answering all but one question correct.

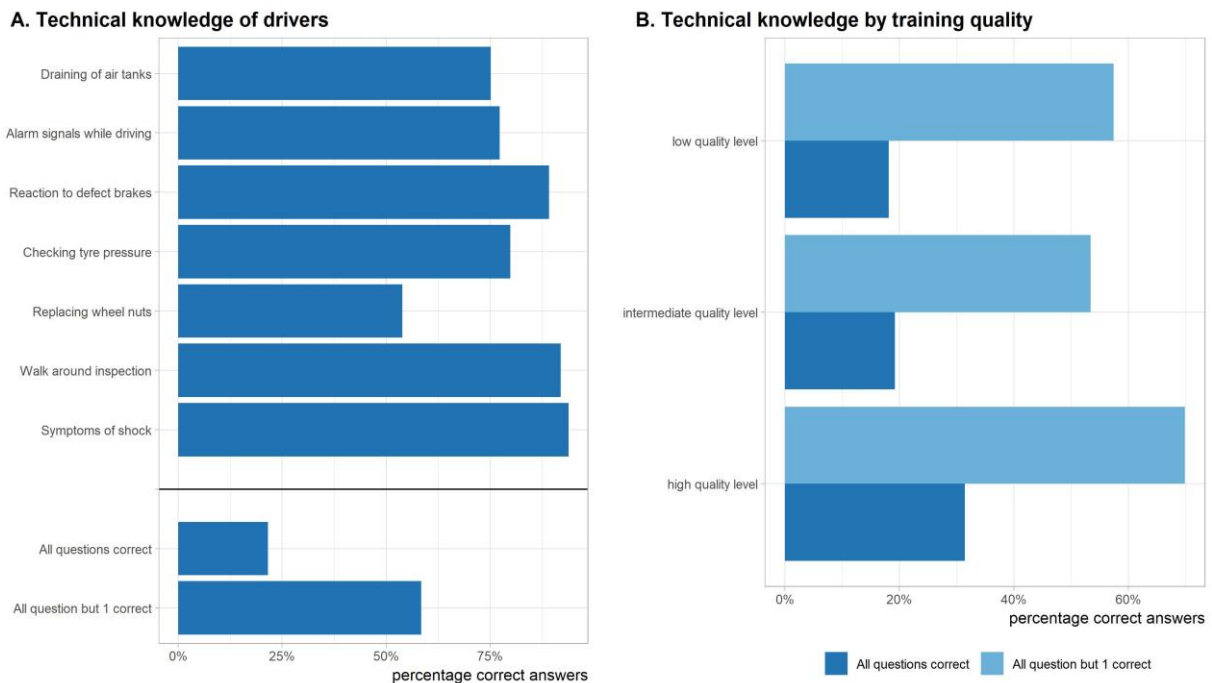


Figure 5 - Technical knowledge of drivers and the importance of quality driver education

## 4.2 Professionalism and Accuracy

**Important routines and tasks are not performed regularly by a large share of drivers.** Figure 6 Panel A shows the level of accuracy with which drivers perform certain job-related tasks and routines, such as arranging and loading the cargo, performing general pre-trip inspections of the vehicle, planning of the route maps, and completing transport and business documentation. The bars in Panel A show the percentage of drivers, who do not regularly perform the different tasks. While cargo loading and performing pre-trip inspections are commonly performed by the drivers, more than 30% do not deliberately plan their routes and more than 50% are not documenting their trips. Overall, 65% of

drivers do not regularly perform all of the key CVD activities, revealing a gap, which needs to be addressed in the driver education.

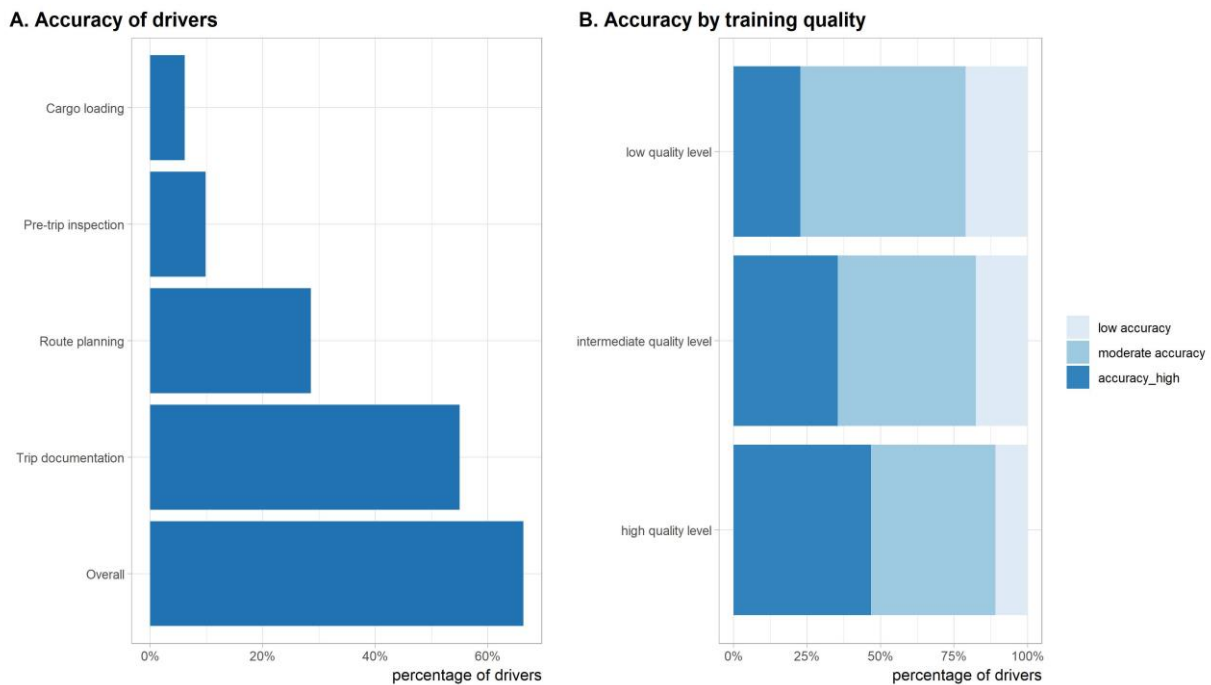


Figure 6 - Accuracy of drivers in performing job related tasks

The quality of the driver education plays a critical role in influencing professional accuracy in the performance of routine tasks. Here, accuracy is classified as high, if drivers perform all of the tasks regularly, it is classified as moderate, if they perform at least half of the four tasks regularly, and it is classified as low otherwise. As can be inferred from Panel B, respondents with high quality driving education are about twice as likely to show high levels of accuracy in their job, i.e. to regularly perform all required tasks, as compared to drivers with low quality driving education. Again, this shows the importance of providing inclusive access to good quality driving education in influencing both drivers' knowledge and the performance of work-related tasks.

#### Section 4 - Key Insights

- Overall, good levels of technical knowledge in the driver population
- Knowledge of drivers is closely related to the quality of their driver education
- Many drivers do not accurately and regularly perform important job-related tasks and routines
- Quality of driver education plays an instrumental role

## 5 Labor Market Opportunities for CVDs

### 5.1 Employment Characteristics

**Small trucks (< 3.5 tons) are the most common commercial vehicles in the driver population.** Figure 7 shows the distribution of most commonly used vehicles and transported goods in the CVD sample. As the drivers were representatively selected, the results can be used to infer information about the general driver population. Most interviewed drivers operate a small truck with maximum 3.5t loading capacity (39.3%), followed by medium sized trucks with maximum 18t loading capacity (29.7%). 10.9% of drivers drive heavier trucks as main vehicle. In the public bus category (13.5% of all drivers), 9.9% of respondents operate a medium-sized bus with up to 45 seats and only 3.9% operate bigger buses with more than 45 seats.

**Construction and building materials and commercial products are the most common freight.** The majority of drivers, who obtained their driving license from the Addis Ababa Transportation Authority, transport either construction and building materials (31.4%) or general commercial products (22.3%). The remainder transport either food and beverages (7.3%), agricultural products (6.6%), containers and industrial goods (6.4%), or other goods (9.1%).

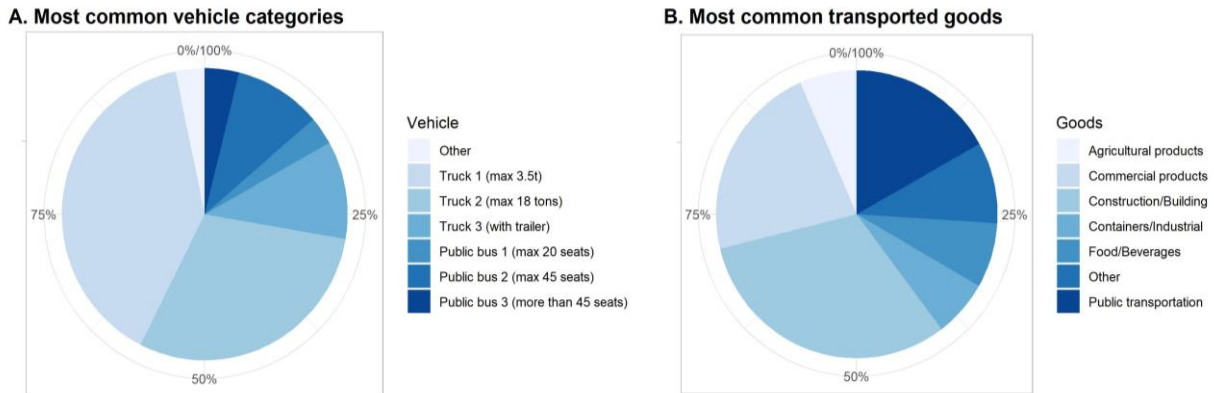


Figure 7 - Most common vehicle categories and transported goods

**Most drivers are in insecure, precarious work relationships.** Figure 8 shows the general terms of employment of the interviewed drivers and the main distances of their operations. By far, the majority of drivers is not permanently employed, but in more precarious work relationships. 10.9% of interviewed CVDs are self-employed and 21% are contractually employed, that is they have a contract with a transportation company, but on a temporary basis. 23.7% of drivers work without any contract. Especially, the latter represents a highly vulnerable population facing unstable working conditions (see section 5.4).

**Short-distance transportation within the municipal area of Addis is most common.** Most drivers operate in short distance. 43.0% mainly operate in the municipal area of Addis Ababa and 27.6 drive outside the city on short-haul trips in a radius of maximum 200km. 19.4% of all drivers mainly operate longer distances with more than 200 km and 10.0% mainly do international trips outside the country.

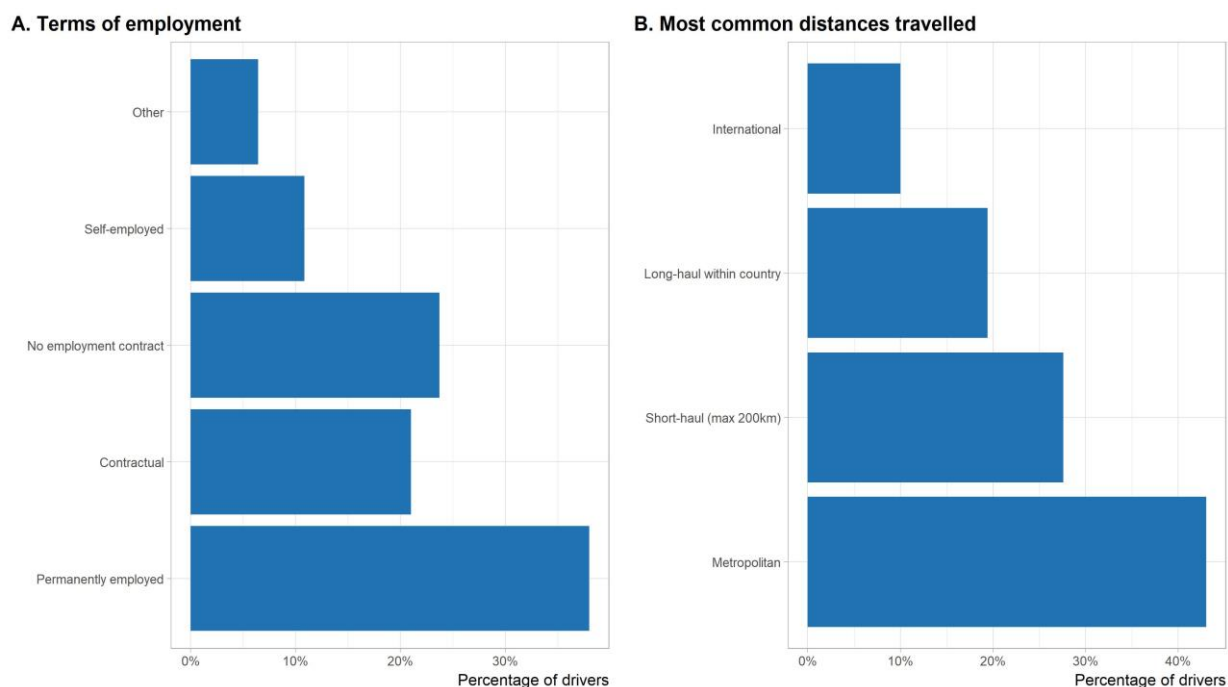


Figure 8 - Terms of employment of drivers and common distances travelled

**Long working hours are very common among CVDs.** Table 2 provides further summary statistics about the employment situation of drivers. On average, drivers worked for 43h in the past 7 days prior to the interview (median at 48 hours). More than 25% of all drivers worked more than 55 hours and 11.3% worked more than 60 hours, revealing a substantial share of CVD who work long working hours. On average, the drivers travelled 5732km in the past 12 month with some drivers travelling up to 180000 km or 493 km a day.

**Most drivers earn a low to moderate income compared to the Ethiopian average.** Drivers earned a monthly net income of about 6000 Birr (US\$210), which translates into an average net hourly income (based on the hours worked in the past 7 days) of 52.5 (US\$1.84), which is relatively low compared to the Ethiopian average [2]. The absolute headcount poverty line was estimated to be 3781 Birr in a recent report of the Ethiopian Central Statistical Agency [12]. Drivers have a mean driving experience of 5.3 years. Almost all of the interviewed drivers are employed (95%) and most of them are currently working as commercial vehicle drivers (75.7%).

Table 2 - Summary Statistics: Employment characteristics of commercial vehicle drivers

	mean	sd	median	min	max
Working hours last 7 days	43.0	19.4	48.0	0	120
Km travelled last 12 months	5732.8	1183.2	3300.0	18	180000
Net monthly income (Birr)	6059.9	4155.6	5000.0	100	40000
Net hourly income (Birr)	52.5	139.4	30.7	20	2500
Driving experience in years	5.3	4.6	4.0	0	38
% employed	0.95	0.2	1.0	0	1
% employed as CVD	0.8	0.4	1.0	0	1
% underemployed	0.8	0.4	1.0	0	1
% looking for new job	0.4	0.5	0.0	0	1

### High interest among the majority of drivers to work more in order to generate a higher income.

Despite the already high working hours, more than 80% of the CVDs said in their interviews that they would like to work more hours if they were compensated with the same hourly income. This reveals a strong pressure drivers face in generating an income to make a living, which makes them rather work more hours than reduce their work load. 40% of drivers said they are currently looking for a new job, which may result from the short-lived unsecure work relationships in the sector and can be interpreted as a sign for a high turnover among drivers.

## 5.2 Labor Market Success

The success of CVDs on the labor market is measured with different indicators: Differences in the income of the drivers and the overall satisfaction with their work. Figure 9 shows differences in the total net income of drivers for different levels of education quality over years of experience (Panel A) and for different general education levels (Panel B).

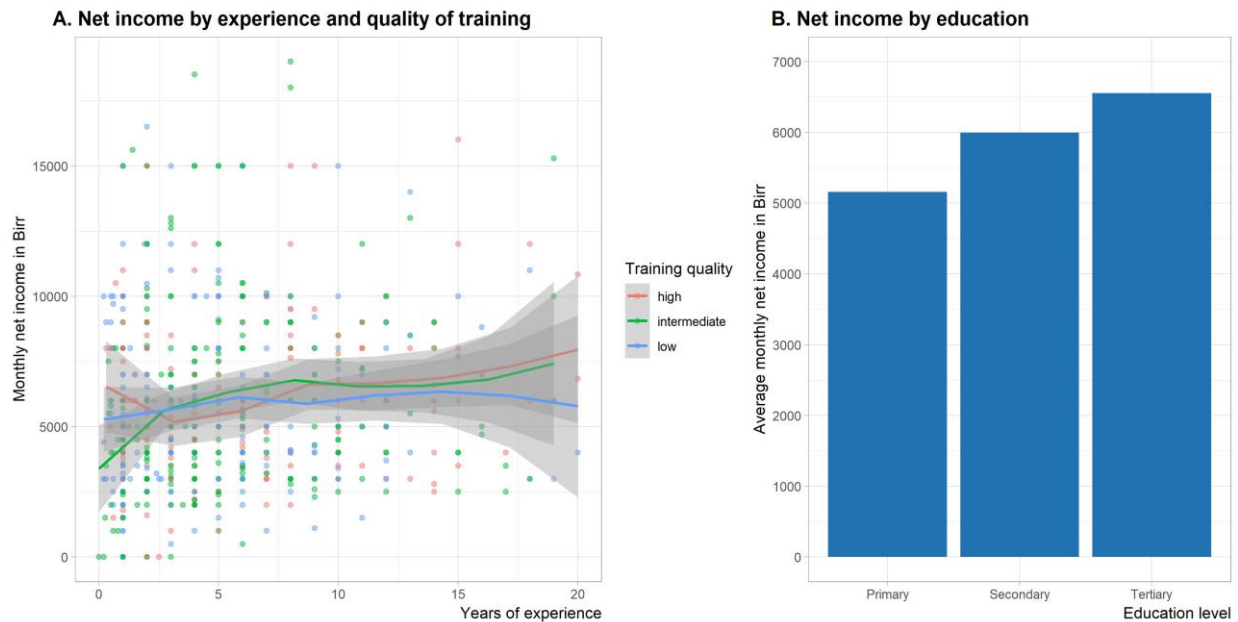


Figure 9 - Drivers' net income by quality of training, years of experience, and education level

The labor market does not seem to reward better quality driver education with a higher salary. While a slight significant increase in net income is observable with increasing years of experience, there are no significant differences between drivers with different levels of driving education quality. This may result from an oversupply of labor in the transportation sector or incomplete information by employer's who are not ex ante able to properly distinguish between drivers with different levels of skills and competencies. For formalized education degrees, on the other hand, clear differences are apparent with drivers with tertiary education earning on average 1500 Birr more than drivers who have only visited primary school.



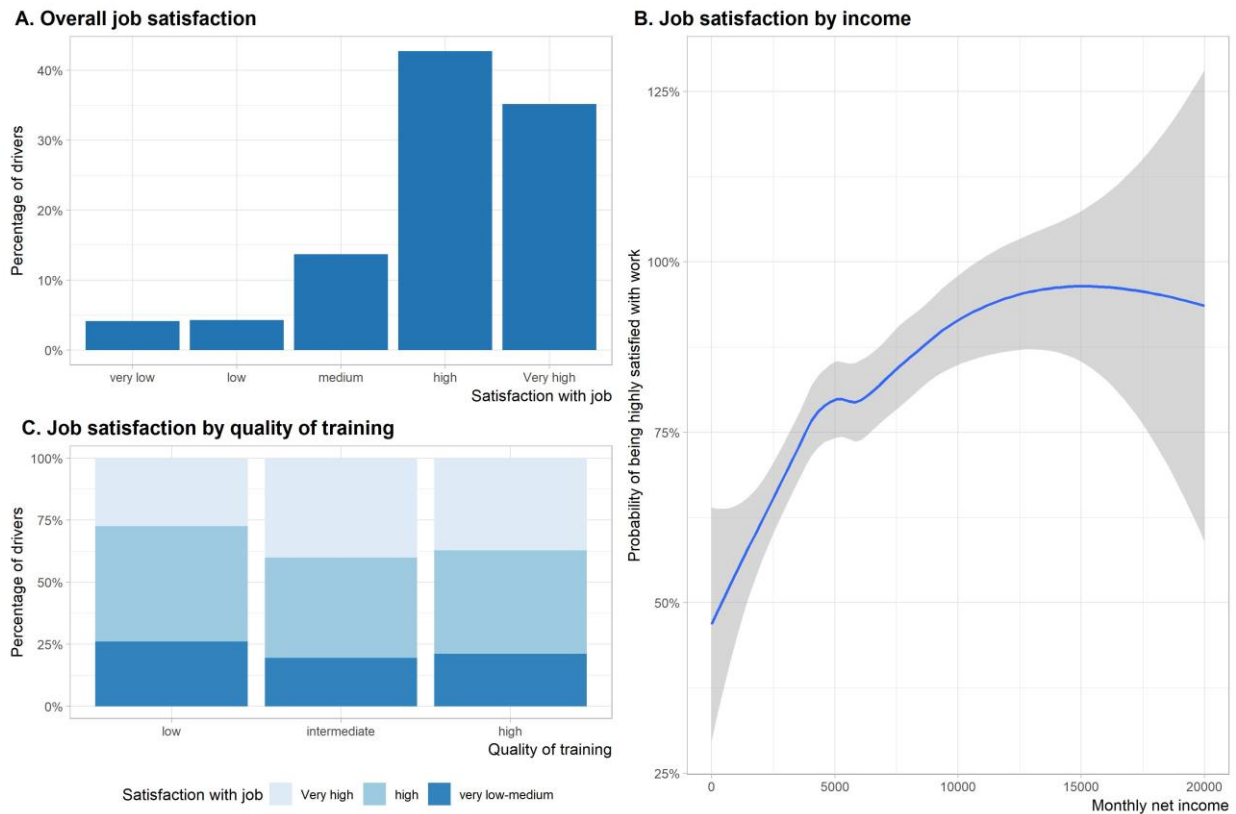


Figure 10 - Job satisfaction and the influential role of quality trainings and income

**On average high job satisfaction levels in the driver population.** Figure 10 shows differences in the level of job satisfaction among commercial vehicle drivers, which was measured by asking respondents how satisfied they are overall with their current work situation. In contrast to income, this measure also reflects more subjective qualities of the working environment and condition. The majority of drivers is either highly (42.7%) or very highly satisfied (35.1%) with their work (Panel A). Nevertheless, 13.7% said they are only moderately satisfied and 4.3% and 4.1% said they are either not at all or tentatively not satisfied with their working situation. At the same time, 97.3% of the respondents said they find their work and their tasks interesting, showing that overall respondents do appreciate their work as CVDs.

**Better trained drivers are able to find a job, which offers them favorable working conditions.** Income is one of the main factors influencing job satisfaction (Panel B.). A doubling of the income leads to an almost equal increase in the satisfaction level. At the same time, it is found that drivers who have obtained better quality training show on average higher satisfaction with their job, even though they do not have higher income levels (Panel C.). One possible explanation for this finding is that better trained drivers are better able to find a job, which offers them favorable working conditions. For instance, drivers with high quality education are 18.3% and 10.3% more likely to have a permanent employment contract compared to drivers with low quality and moderate quality driver education.

### 5.3 Adequacy of CVD Trainings for Labor Market

Next, the adequacy of the driver training for the labor market is assessed. Here, the main interest is on the perspective of the drivers and not the owners of the transportation companies. In the interviews, respondents were asked whether or not they feel their driving education has prepared them adequately for a job as CVD.

**Better quality driver education prepares drivers better for the tasks and routines of the CVD work.** Figure 11 shows differences in the self-rated adequacy of the driving education for different driving education quality levels. There is a clear relationship between the quality of education obtained by the drivers and the perceived fit and adequacy for their work as CVDs. Drivers with high quality education are 15% more likely to assess their education as adequate for their job compared to drivers with low quality education (Panel A.). A similar relationship can be observed for the number of skills and techniques that were obtained in the driver training as an alternative quality measure (Panel B.). The findings reveal the important role of high quality driving education in shaping drivers' perceived possibilities and outlook on the labor market.

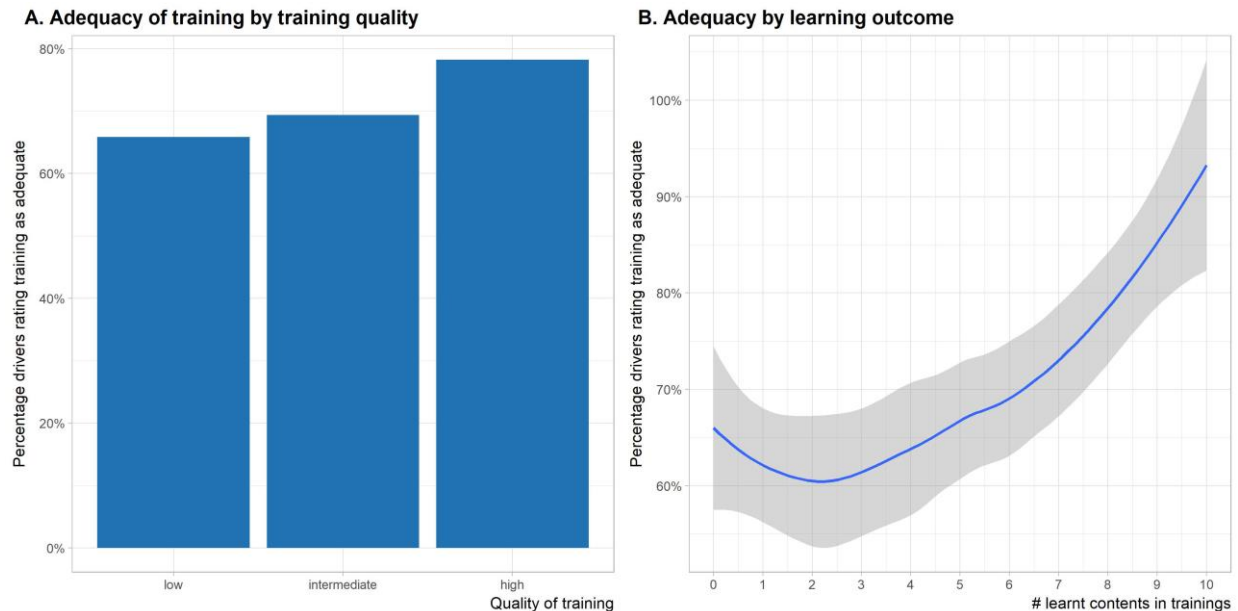


Figure 11 - Adequacy of driver education for work as commercial vehicle driver

#### 5.4 Work-related Stress

**Working conditions are not favorable for many of the interviewed drivers.** As final work-related outcome, work-related stress and pressure as well as the general working condition of drivers are considered. Stress is often named as a critical factor, which is characteristic for the work environment of CVDs. Figure 12 Panel A. shows truck and bus drivers' agreement with different statements related to their daily routines and work experiences. A considerable number of interviewed drivers speak of unfavorable working conditions, affecting them in their daily lives.

**High levels of work-related stress among drivers.** More than 20% of drivers perceive their own job precarious and as risky for their health. A larger share of more than 30% of drivers said that they easily get into time pressure at work, that they are often exposed to too high time pressure due to the large work volume, and that they have to work so long that they start feeling tired and exhausted. These experiences are also reflected in the majority of drivers admitting that they already think about work-related problems in the mornings when they wake up. On average, truck drivers seem to be more affected by stress than bus drivers.

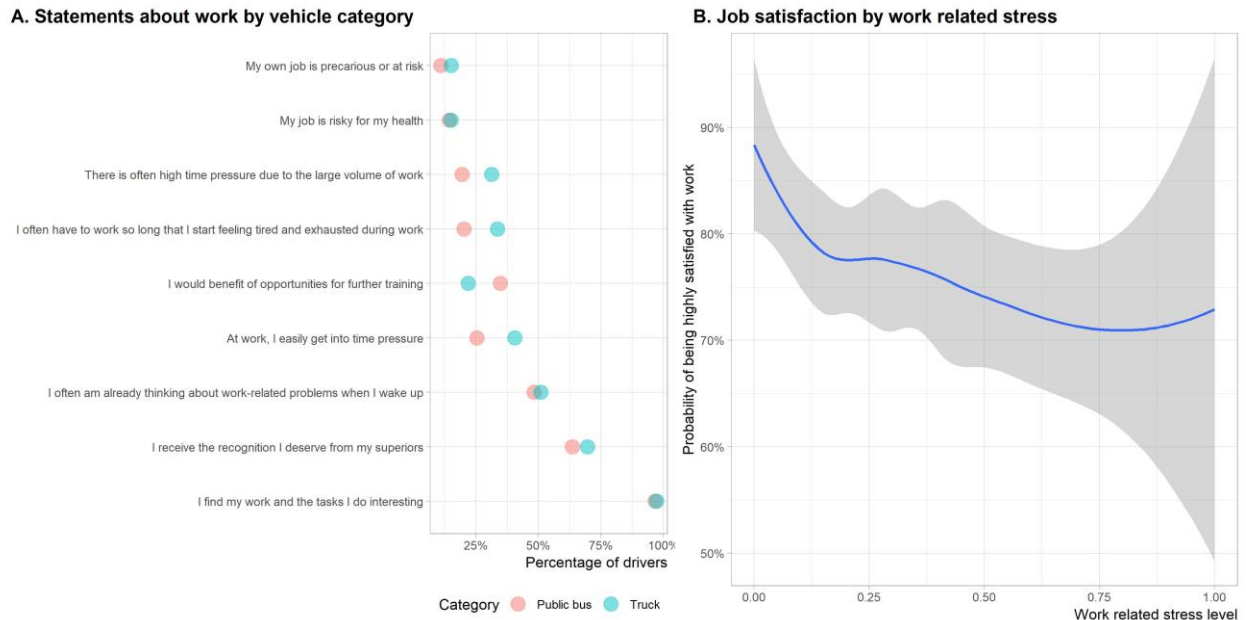


Figure 12 - Working condition of commercial vehicle drivers and work-related stress

**Work-related Stress has a substantial negative impact on job satisfaction.** The six different items, which are related to work stress are summed up and aggregated to a work-related stress index. Higher values on the index, which was normalized to take values from zero to one, indicate higher stress levels. Work-related Stress has a substantial negative impact on job satisfaction, as can be inferred from Figure 12 Panel B. On average, respondents with the highest stress level were by 20% less likely to be satisfied with their job, compared to respondents who are not exposed to any work-related stress with potentially large negative effects on CVD’s wellbeing. On average, drivers who have to work longer hours and who are employed in precarious working conditions are exposed to higher levels of work-related stress.

### Section 5 - Key Insights

- Difficult working conditions: majority of drivers not permanently employed
- Substantial share of CVD who work long working hours
- Labor market does not monetarily reward better quality driver education
- Respondents are overall satisfied with their work as CVDs
- Working conditions more favorable for better trained drivers
- Quality of driving education obtained positively influences perceived adequacy of training
- A considerable number of interviewed drivers speak of unfavorable working condition
- Work-related Stress has a substantial negative impact on job satisfaction
- Long working hours and precarious working conditions can trigger stress

## 6 Driving Conduct and Ethical Behavior

### 6.1 Exposure to Risk Factors while Driving

A primary focus of the survey was to explore factors influencing road safety in Ethiopia, a country with one of the highest number of road traffic deaths in the region [13]. Commercial vehicle drivers are a primary risk factor as they can cause major damages with their vehicles. In a first step, the analysis focusses on the type and frequency of risk situations experienced by drivers. Please note that all results rely on self-reported information, which may be prone to measurement biases. It is likely that the recorded information only captures part of the picture and provides only conservative estimates of the road safety situation. Nevertheless, the data can complement the official statistics of the FTA and provide a deeper understanding of the important factors contributing to the currently very high level of road insecurity in Ethiopia.

**Various risk situations are experienced by drivers.** Figure 13 Panel A. shows how many percent of drivers have experienced at least once specific risk situations in the past 12 months. 52% of interview partner received a fine by the police, which we use as a proxy for traffic violations. This number does

not include drivers who avoided the fine. Despite recent reforms, the bribing of police officers is still a major issue in Ethiopia, which is used to circumvent legal punishments from traffic violations [14,15].

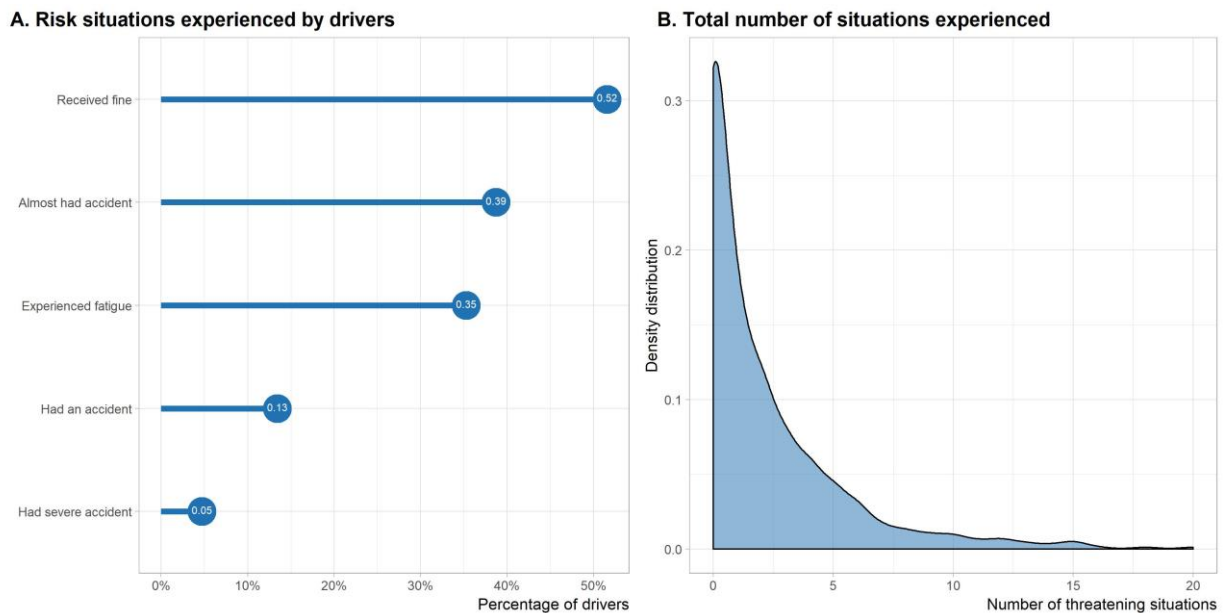


Figure 13 - Risk situations experienced by drivers

**The risk of accidents is substantial and highest among long-distance drivers.** 39% of all drivers said they almost experienced an accident, 13% had experienced an accident, and 5% a severe accident (i.e. an accident with fatalities, severe injuries or major damages) in the past 12 months. Especially among CVDs, fatigue due to long working hours is a major risk factor. In total, 35% of all interviewed drivers had experienced an incidence of severe fatigue. The risk to experience fatigue is highest among long-distance drivers (>more than 200km), who are mostly operating heavy trucks. Their risk of experiencing fatigue is 20% higher compared to drivers who mainly operate in the municipal area.

**Work-related stress is strongly associated with experiencing fatigue.** Drivers who feel stressed about their work and who are under pressure are more likely to experience fatigue. The relationship is very strong: Drivers who agreed with all work stress related statements (section 6.4) have a 71.2% higher probability to experience fatigue compared to drivers who do not experience any work-related stress.

**Few of the drivers experience a very high number of threatening incidents.** Panel B depicts the distribution of the total number of risk situations experienced by the drivers. While the majority of them experiences between zero and five risk situations per year with a mean of 4.4, few drivers experience a very high number of threatening incidents. Again, long-haul drivers (both nationally and internationally) and drivers who report high levels of work-related stress are particularly at risk.

**Risk avoidance skills and techniques learnt in driving education are crucial in minimizing risks.** Importantly, drivers who have learnt skills related to safe driving during their driving education, such as techniques to avoid fatigue or defensive driving, or who have participated in a special road safety training experience on average 2.6 risk situations less than drivers who have not obtained related skills or trainings. Hence, integrating risk avoidance skills and techniques in driving curricula and encouraging drivers to visit additional courses can make an important difference. Currently, several of these skills were not profoundly learnt by many of the drivers (see section 3.1), indicating a large potential for further improvements. For instance, only 36% of all interviewed drivers said they had learnt about fatigue avoidance during their driving education; a number which corresponds with the high number of experienced fatigue events in the driver population.

## 6.2 Aberrant Driving

**Aberrant driving is one of the major causes of risk situations and accidents in traffic.** Figure 14 shows the distribution of different aberrant driving behaviors in the CVD sample. The reported results rely on a standard Driver Behavior Questionnaire [16], which distinguishes between different forms of aberrant driving behaviors, namely lapses, errors, and violations. While lapses refer to problems with attention or memory (e.g. having no clear recollection of the road traveled on), errors refer to driving mistakes, including failures of observations and misjudgments (e.g. fail to notice pedestrians or hitting something when reversing). Violations, on the other hand, are deliberate deviations from good driving practices that put others at risk (e.g. speeding or driving after drinking). Here, the analytical focus is mainly on errors and violations, which have been shown to be highly predictive of crash involvement [17].

Panel A. shows the frequency of aberrant behaviors in the driver sample. Panel B. distinguishes between truck and public bus drivers and analyzes whether a misconduct was shown at all in the past

12 months. Again, all results rely on self-reported information and may hence represent conservative estimates.

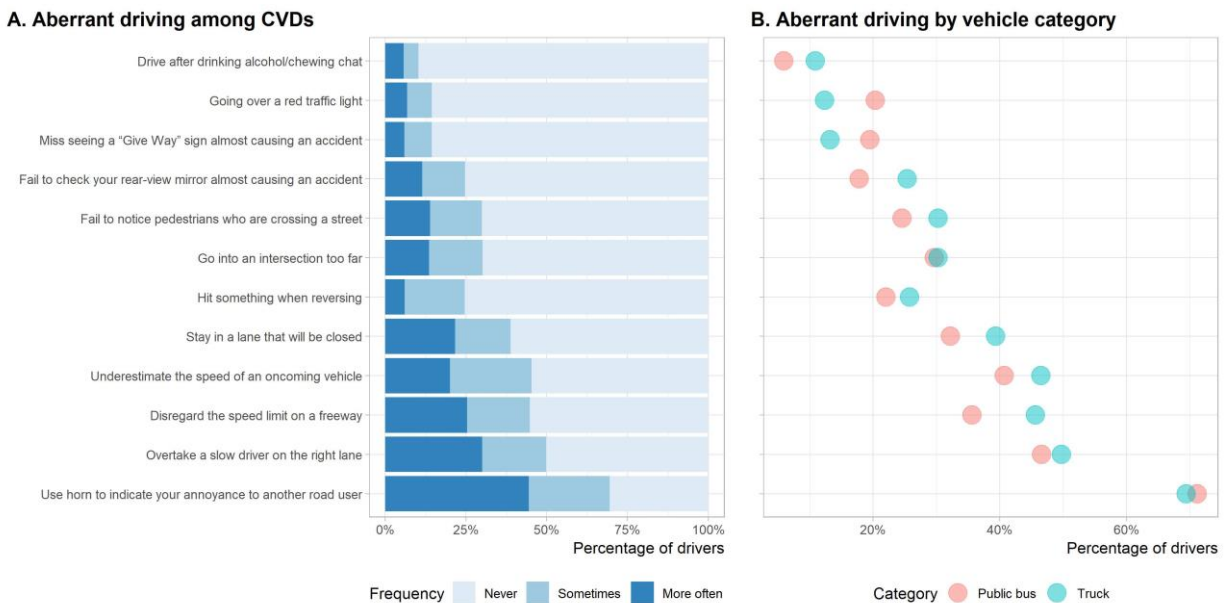


Figure 14 - Aberrant driving among commercial vehicle drivers

**Violations of traffic rules are common in the driver population.** 50% of drivers admitted that they had at least sometimes overtaken other drivers on the wrong lane, 44% disregarded the speed limit on a freeway or rural highway, 39% said they stayed in a lane even though they knew it would be closed until the last minute to then force their way into another lane, and 30% said they went into an intersection so far that another driver with right of way had to stop. On average, drivers committed 2.8 traffic violations at least once in the past year (from a total of 7 violation items). Violations are slightly more common among truck as compared to bus drivers.

**Driving under the influence of substances is an issue in the CVD population.** In total, 10.3% of interviewed drivers admitted that they were driving under the influence of substances, such as alcohol or Khat, which is a stimulating leaf derived from a flowering plant native to the Horn of Africa. The substance can lead to substantial driver impairment, including a loss of concentration and focus.



Despite being implicitly outlawed in Ethiopia, the drug is still being widely used. It is particularly popular among CVDs, who use it for its stimulating effect, allowing them to avoid sleep and to drive longer hours [18,19].

**Traffic violations result in driving errors and almost accident situations.** 30% of interviewed drivers said they had at least once failed to notice pedestrians who were crossing a street and 25% failed to see a car when pulling out or changing lanes causing or almost causing an accident. 45.3% had underestimated the speed of an oncoming vehicle when overtaking and 14.4% missed at least once a give way sign just avoiding colliding with traffic having the right of way. The answers reported by drivers, even though they likely reveal only part of the picture, show a need for addressing more strongly defensive and save driving practices in the CVD driver education. At the same time, existing traffic laws need to be more strongly enforced in practice to prevent aberrant driving.

### 6.3 Identification of Risk Populations

Based on the information provided by the drivers, an aberrant driving index was constructed, which summarizes the drivers' answers to the 12 single aberrant driving items. The index ranges from zero to three with higher numbers indicating higher levels of aberrant driving. Roughly, a value of one on the index can be interpreted as a driver having shown all of the considered aberrant driving behaviors at least sometime in the past year. The index is used to estimate the influence of different driver characteristics on aberrant driving.

**Few drivers show very high levels of aberrant driving representing risk populations.** Figure 15 Panel A. shows the distribution of the aberrant driving index. Most drivers have values between zero and one on the index. Only few drivers show values larger than one, which can be interpreted as regular aberrant driving. Additional analyses reveal an increased level of aberrant driving among drivers of small trucks and drivers who mostly operate within municipal areas. Younger drivers show on average higher aberrant driving levels. At the same time, more aberrant driving can be observed among self-employed as compared to regularly employed drivers, potentially resulting from a higher work pressure.

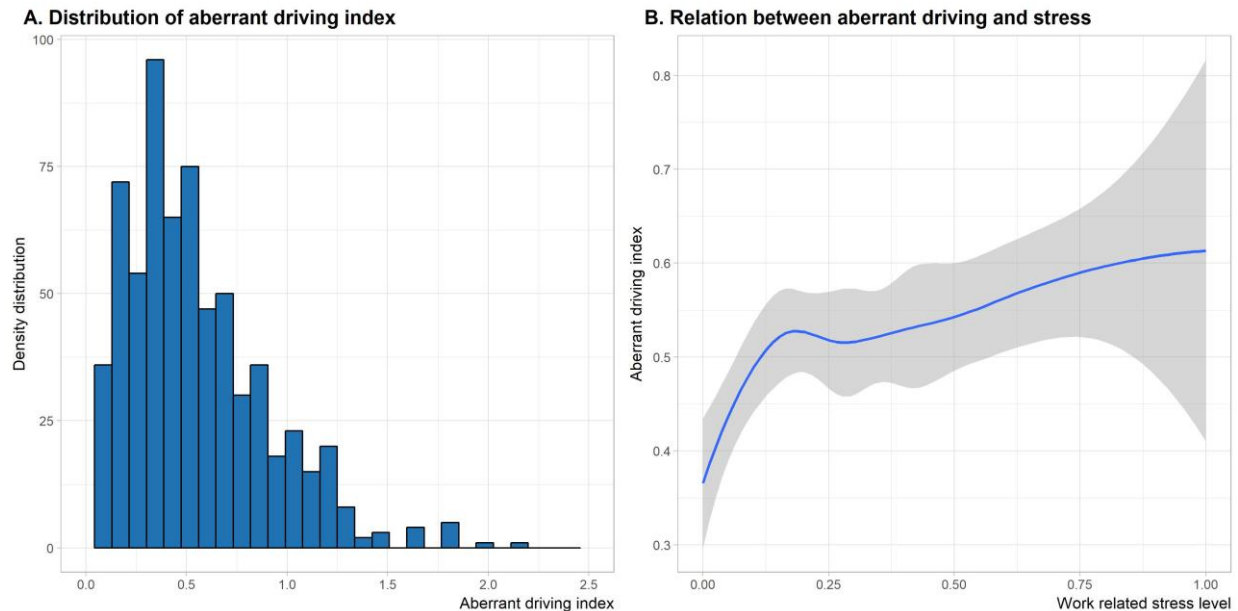


Figure 15 - Aberrant driving among CVDs and its' causes

The factor most strongly correlated with aberrant driving is work-related stress. As has been shown in the previous section, stress is closely related to the particular working condition of the drivers, such as long working hours and unsecure employment conditions. Figure 15 Panel B. illustrates the relationship for different levels of the work-related stress index. Clearly, drivers who are exposed to higher stress levels tend to have a higher probability of showing aberrant driving behaviors.

Overall, better driver training and education can help mitigate driving risks. When focusing exclusively on those aberrant driving practices that involve traffic violations, drivers with better quality training are found to show on average lower levels of violations, which could potentially help mitigating the negative impact of increased stress levels. Indeed, further analyses show that stressful working conditions and pressures have a stronger effect on aberrant driving and the experiencing of risk situations for drivers who obtained low vs. high quality driver education. Drivers with better training background do not respond as strongly to stressful working conditions in their driving behavior, i.e. they are less likely to show aberrant driving (particularly traffic violations), even if they are under stress. This results in the lower number of experienced stress-induced risk situations, which

were reported in section 6.1. Improvements in driver training and education can hence make an important contribution to advancing road safety in Ethiopia by improving driving skills and by making drivers more resilient to stressful working conditions.

### Section 6 - Key Insights

- Substantial number of risk situations experienced by drivers with some drivers experiencing threatening situations on a regular basis
- Stress as a major predictor of driving-related risk situations
- Risk avoidance skills and techniques are important for mitigating risk situations
- Violations of traffic rules are common resulting in driving errors and risk situations
- Younger drivers and drivers in municipal areas are particularly at risk
- Drivers exposed to higher levels of work-related pressure are more likely to violate traffic rules
- Better driver education can help mitigate the harmful effects of work-related stress by improving driving skills and by increasing drivers' resilience to stress

## 7 Health among CVDs: An Underexplored Field

### 7.1 Health Condition of CVDs and Challenges

The health situation of CVDs is in many ways an underexplored field. This section considers first the general health condition as well as pertinent challenges faced by drivers before focusing on two major health issues, namely HIV/AIDs and the mental health of drivers.

**Majority of drivers have an overall good health condition.** Figure 16 provides information about the general health condition of drivers and the insurance coverage in the sample. On average, the majority of drivers rate their health subjectively as good or very good. Only 4% of drivers rated their health as either very bad, bad, or fair. About 10% of drivers said they were unable to carry out their daily

activities because of sudden illness, accidents, chronic illness, or health problems on more than 2 days in the past 30 days.

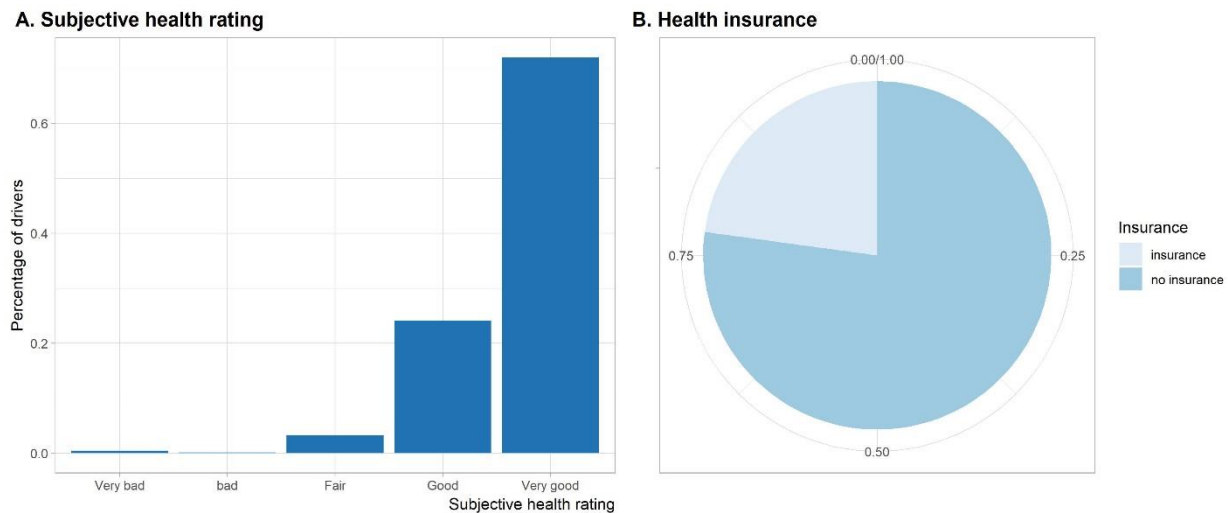


Figure 16 - General health condition and insurance coverage among CVDs

**Health issues can have substantial negative implications for the drivers and their families.** Given the, on average, young age (mean of 31 years) of the interviewed working age driver population, the overall good health condition does not come as a surprise. Yet, even with good health, the prospect of falling sick bears substantial risks for the drivers. The vast majority of 77.1% of all drivers is not covered by any health insurance (Figure 16, Panel B.). A sudden sickness can cause major financial obligations due to high expenditures for medical treatments and care. Moreover, due to their reliance on physical work, a bad health condition can make them lose their main income source, with substantial negative financial impacts for their families, who often depend on the drivers.

**The risk of having a bad health is highest among drivers with a low income.** Figure 17 explores different factors influencing the health condition of the interviewed CVDs. Drivers are classified as having a bad health, if they did not rate their health as good or very good. Panel A. focusses on the role of the driver's income. The graph shows a steep socioeconomic gradient in the health condition.

The risk of having a bad health is highest among drivers with a low income and steadily decreases with increasing socioeconomic status.

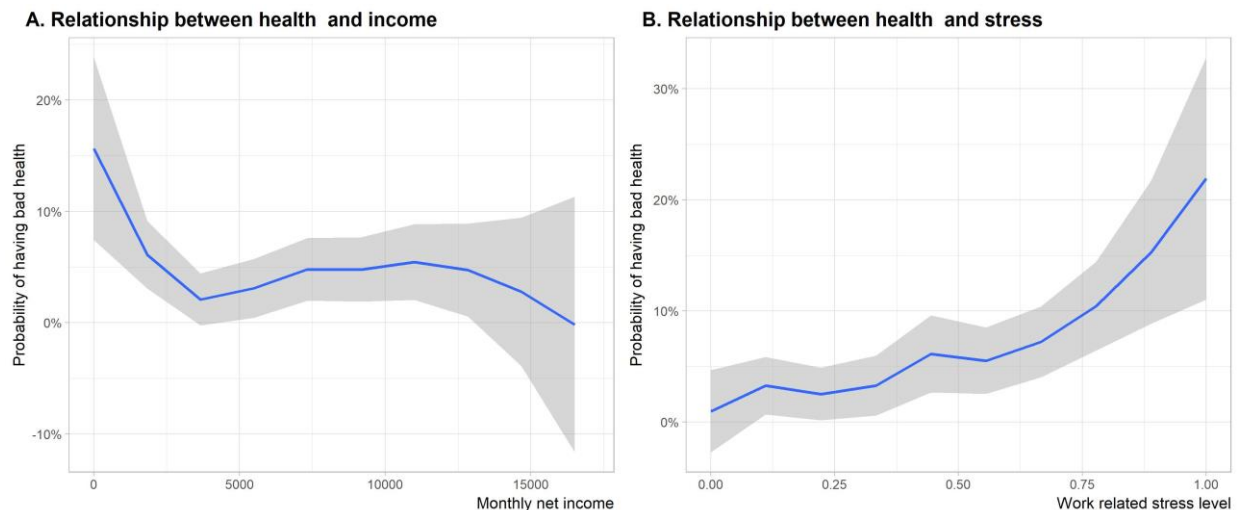


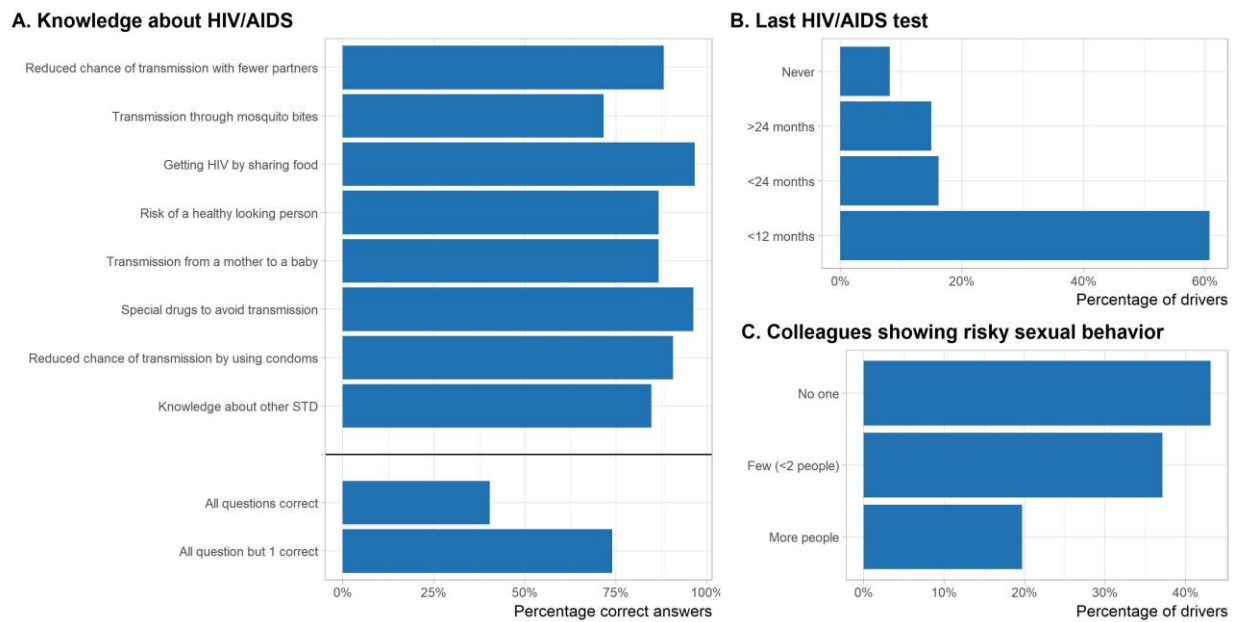
Figure 17 - Major determinants of bad health in the CVD population

**Work-related stress is closely related to the drivers' health condition.** Figure 17 Panel B. shows the relationship between health and work-related stress. Again, a clear relationship is visible. Work-related stress is strongly associated with a substantially higher probability of reporting a bad health. Compared to a driver who is not exposed to any stress and pressure at work, a driver who agreed to all stress-related work condition statements (see section 5.4) has a 20% increased probability of reporting a bad health condition.

## 7.2 HIV/AIDS and Sexual Behavior

**Drivers are a HIV/AIDS risk group.** Due to their high mobility and long-distance traveling with extended absence periods from home, CVDs are potentially at risk of getting infected with and spreading HIV. In the UNIDO training intervention, a focus is placed on HIV/AIDS prevention and awareness raising.

**Good awareness and knowledge about the disease in the driver population.** Figure 18 reports different statistics related to drivers’ HIV/AIDS knowledge and protective measures, which can help preventing the spread of the disease. Panel A. shows the percentage of drivers who replied correctly to different standard knowledge questions, which were taken from the Ethiopian DHS. Overall, the drivers seem to have a good awareness and knowledge about the disease. 40.3 % of respondents answered correctly to all question and 73.9% answered correctly to all but one question.



**Figure 18 - HIV/AIDS knowledge, testing, and risky sexual behaviors among drivers**

Regarding the single questions, 88.1% of respondents knew that people can reduce their chance of getting HIV by having just one uninfected sex partners who has no other sex partners, 71.6% knew that the disease cannot be transmitted through mosquito bites, 90.7% knew that the transmission risk can be reduced by using condoms, 96.6% knew that people cannot get HIV by sharing food with a person who has HIV, 86.7% knew that it is possible for a healthy looking person to have HIV, 96.3% knew that HIV can be transmitted from a mother to her child, 88.9% knew that there are special drugs

to reduce the risk of the mother-child transmission, and 84.7% were able to name at least one other sexual transmitted disease (STD).

**High rate of HIV/AIDS testing among the CVD.** The high HIV/AIDS prevalence in the country is also reflected in the very high percentage of respondents who recently underwent an HIV/AIDS test. 60.7% of respondents got tested in the last 12 months, 16.1% got tested within the last 24 months, and 15% got tested longer ago. Only a small fraction of 8.1% has never done an HIV/AIDS test. While these results sound reaffirming, they could also mirror the increased infection risk in the driver population.

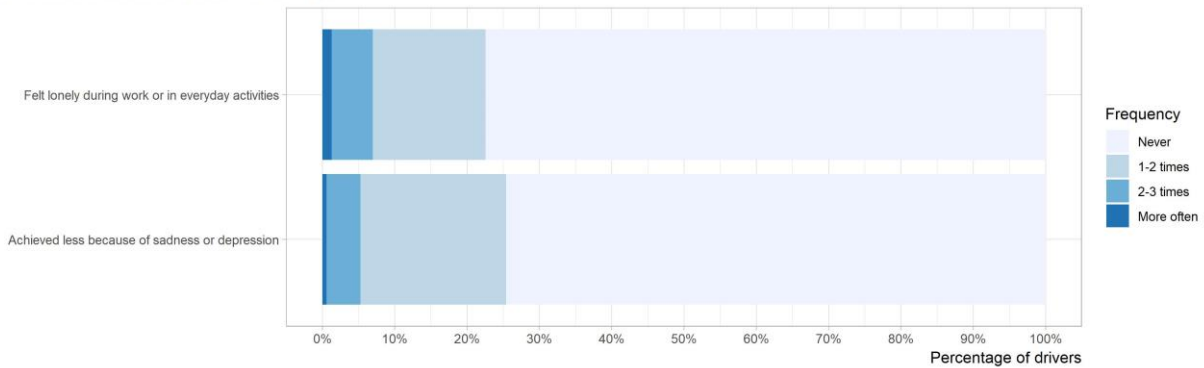
**Risky sexual behaviors are common in the driver population.** When asked whether they know anyone among their colleagues who is a commercial vehicle driver and who engages in risky sexual behavior, such as having sexual intercourse outside a long-term relationship or with sex workers, the majority of respondents answered with yes. 37.1% of respondents said they know few people (specified with less than 2 in the questionnaire) and 19.7% said they know several of their colleagues who engage in risky sexual behavior.

**Drivers' potentially high exposure to HIV/AIDS risks warrants special attention.** Long-distance drivers outside the municipal area and heavy vehicle drivers (public bus 2 and 3, and truck 2 and 3) are more likely to say that they have colleagues who engage in risky sexual behavior. At the same time, it is found that drivers who are exposed to higher levels of work-related stress are more likely to know someone, who engages in risky sexual behavior. While this provides only indirect evidence, it can serve as an indication that drivers are indeed highly exposed and susceptible to HIV/AIDS risks, which warrants special attention in form of directed HIV/AIDS education and awareness raising programs as part of the driver education curriculum.

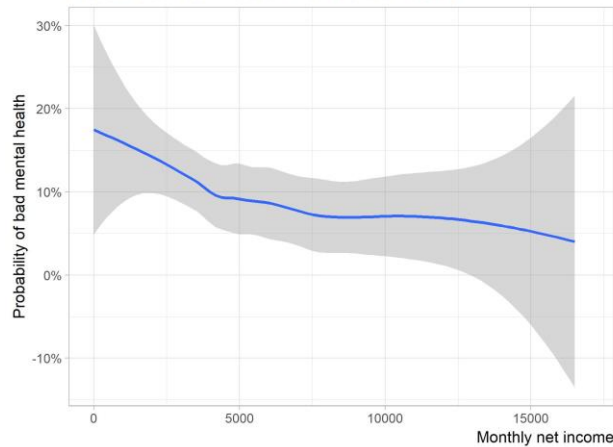
### 7.3 Mental Health of Drivers

Today, there is an increasing recognition of the role mental health plays in influencing general wellbeing [20,21]. Yet, there is little empirical evidence on the mental health condition of CVDs. Especially in low and middle-income countries, mental health issues are often neglected and people who experience them suffer from stigmatization and discrimination.

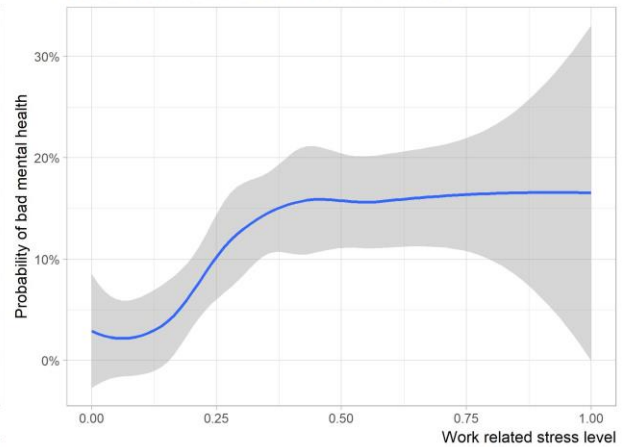
**A. Mental health condition of drivers**



**B. Relation between mental health and income**



**C. Relation between mental health and stress**



**Figure 19 - Mental health condition of drivers and its main determinants**

**Several drivers experienced sadness, depression, or loneliness in the past 30 days.** In the baseline survey, respondents were asked two standard questions measuring psychological stress and mental health issues: How often they felt lonely during their work or in their everyday life and how often they achieved less because of sadness or depression. Figure 19 Panel A. shows the distribution of answers. More than 20% of drivers said that they experienced at least sometimes during the last 30 days a feeling of loneliness or sadness and depression. 7% experienced loneliness and 5% experienced sadness or depression 3-5 times or more often in the past 30 days.

**Low income and high work-related stress levels are the major drivers of mental health symptoms among the drivers.** Panels B. and C. explore some of the underlying mechanisms contributing to the increased levels of mental stress in the driver population. Here, drivers who have experienced at least



once both symptoms of loneliness and sadness or depression are classified as having experienced mental problems in the past month. They are distinguished from those who experienced either none or only one of the two symptoms. Drivers with lower income and drivers, who are exposed to more work-related stress, face a higher risk of having mental problems. Among different factors considered, these two were most strongly related with the prevalence of mental health problems. A further exploration of the issue and its' root causes is needed in order to develop adequate interventions addressing the problem.

#### Section 7 - Key Insights

- Overall, good health condition of the driver population
- Very few drivers are covered by a health insurance
- Bad health entails substantial risks for the drivers
- Bad health is more common among drivers with low income and work-related stress
- High level of HIV/AIDs knowledge and awareness among driver population
- Indication that drivers are indeed a HIV/AIDS risk group warranting special attention
- Increased levels of psychological stress among the drivers
- Mental issues most common among drivers with lower income and higher stress levels

## 8 Vulnerabilities and Special Issues

### 8.1 Multi-Dimensional Vulnerabilities among CVDs

**CVDs in Ethiopia are characterized by high levels of vulnerability.** Not only are they exposed to different challenges in their daily life, e.g. related to employment, health, or driving, but they often also lack the resources to adequately mitigate the risks and cope with their consequences. The high levels of vulnerability are caused by different factors related to drivers' weak position on the labor market, their precarious working conditions, and their physical and mental health. Often these factors do not show up in isolation, but mutually reinforce each other, exacerbating the situation for the drivers.

The majority of drivers is exposed to several risk factors at the same time. Figure 20 shows the distribution of vulnerability risk factors in the driver population (Panel A.) and their role in influencing general life satisfaction among drivers. We consider nine risk factors (1-9) arising from:

- (a) *unsecure working conditions*, such as not being permanently employed (1), having a low income below the estimated absolute headcount poverty line [12] of 3781 Birr (2), and not being satisfied with the work (3);
- (b) *daily work experiences*, such as above average levels of stress (4), Working hours of more than 40 hours a week (5), and above average levels of exposure to risk situations in traffic (6);
- (c) *the health situation* of drivers, such as poor general health levels (7), not having a health insurance (8), and the experiencing of challenging mental health situations (9).

The number of risk factors the drivers are exposed to is displayed in Panel A. On average drivers are exposed to 3.3 vulnerability risk factors with the majority of drivers being either exposed to 3 or 4 different factors. About 25% of drivers face more than 4 of the mentioned risk factors, contributing to an even higher vulnerability in this sub-group.

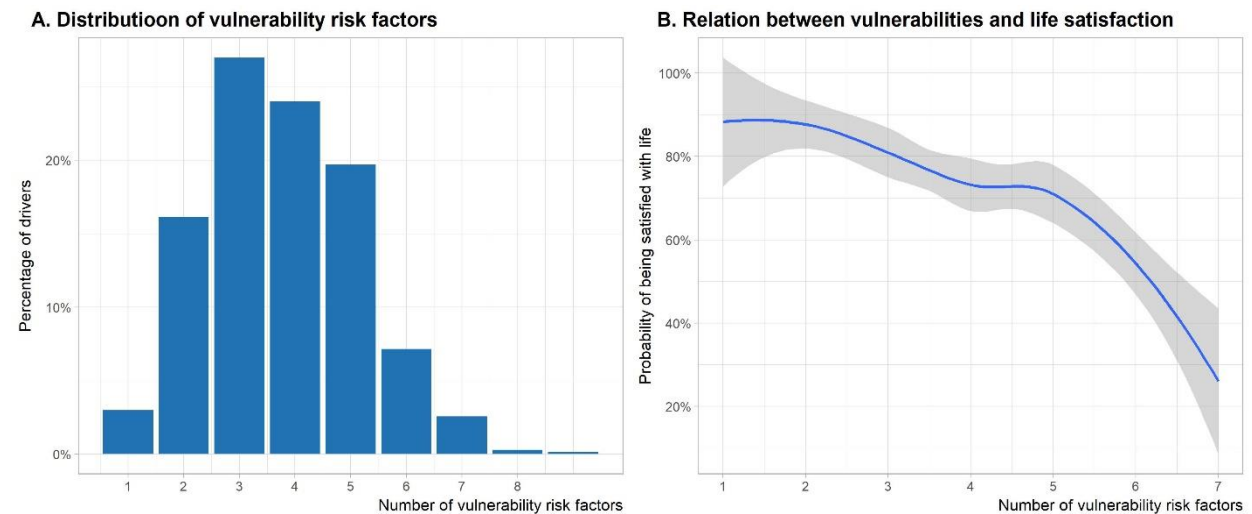


Figure 20 - Multi-dimensional vulnerabilities in driver population

**Exposure to risks in the working environment and daily life has major effects on wellbeing.** Figure 20 Panel B shows the relationship between the number of vulnerability risk factors and the probability of being satisfied or very satisfied with life. Clearly, satisfaction with life is substantially reduced with an increasing number of risk factors. On average, each additional risk factor reduces the estimated probability for being satisfied with life as a proxy for general wellbeing by 11.5%.

## 8.2 Gender Issues and Discrimination

**Major gender gap in CVD education and work.** Women are underrepresented in technical educations and occupations, which becomes particularly apparent in the transportation sector, where female drivers represent only a minor fraction of about 0.5% of the entire driver population (based on the driver registry of the Addis Ababa Driving Authority). This finding is reflected in the experiences of a previous UNIDO project, which established a heavy-duty equipment and commercial vehicle training department in Addis Ababa. Despite concerted efforts to attract a higher share of women to the training courses, female enrollment has remained relatively low. [4]

**There are different reasons for the gender gap in the transportation sector.** These have its origins in existing gender norms, discrimination, personal security issues, economic challenges, and the difficult working conditions in the sector. Despite a substantial increase in the primary school enrollment rate of girls in Ethiopia from 21% to 91% in the past three decades, a high proportion of women, in particular in rural areas, is unable to transition to secondary and tertiary education, including vocational trainings. At the same time, women are often confronted with constraints in their economic activities, including less access to credit, limited access to labor markets, and gender-based discrimination in employment. [22]

**Interventions on different levels are needed to address gender imbalances in the sector.** The GoE has made gender mainstreaming in all sectors a high priority and is actively fighting against gender-based inequalities in education. In line with its efforts, further steps have to be taken to make the CVD education and occupation more accessible for women. While it is important, on one side, to fight gender stereotypes and norms that constrain women in their occupational choice, it is at the same time crucial to ensure that working conditions in the transportation sector become more favorable and attractive for women, who often have to balance their professional life and their role in the

household. This concerns, among others, the promotion of more stable and secure terms of employment, ensuring sufficient employment protection, the regulation of working hours, and the advancement of health and safe working environments. At the same time, there is a need to address sensitive issues, such as sexual harassment and gender-based discrimination, by raising awareness among both male and female drivers and actively challenging discriminating gender norms and stereotypes in different fields, including education.

### 8.3 Environmental Issues

**Transportation sector as main source for emissions and pollution.** As Ethiopia works towards becoming a middle-income country, environmental protection becomes more and more important. This also concerns the commercial vehicle driving sector, which has been steadily growing in the past decades. Emissions from vehicles and transportation are a major source of pollution with immediate effects on human health and the environment. Air pollution from vehicles can be distinguished into primary and secondary pollution. While the former is emitted directly into the atmosphere, the latter results from chemical reactions between pollutants in the atmosphere. Heavy-duty vehicles, while making up only a minor share of all vehicles on the road, contribute an over-proportional share to both primary and secondary pollutants in the air.

**Despite advances in cleaner vehicle technologies, which will help reduce vehicle emissions and pollution in the future, there is a need to address the environmental issue in the short-term.** Promoting eco-friendly driving during the driver education is one way to reduce fuel consumption and ultimately emissions [23,24]. This includes, among others, avoiding driving on congested routes and stop-and-go traffic, speeding and sudden acceleration or braking, or laboring the engine in the wrong gear, all of which tend to burn up fuel. Currently, only 36% of drivers said that they received profound knowledge about how to drive in an environmentally friendly way during their driving education (see section 3.1), which leaves room for improvement. Better equipped and maintained vehicles can also contribute to less polluting, which requires drivers to have a sufficient level of technical skills. In general, raising environmental consciousness and sensitivity of drivers is an important first step to provoke a rethinking and raise awareness for environment issues in Ethiopia and worldwide.

**Section 8 - Key Insights**

- Driver population characterized by multiple vulnerabilities
- Risk factors related to working condition, driving, and health contribute to vulnerability
- These have a major effect on life satisfaction and wellbeing of drivers
- Very low share of women in the transportation sector
- Interventions on different levels needed to address gender imbalances
- Environmental issues need to be more strongly addressed in driver education
- Emphasis on eco-friendly driving and vehicle maintenance important

**9 Sociodemographic Profile of CVDs in Addis Ababa**

Table 3 provides different summary statistics about the demographic profile of the CVDs. On average, the interviewed sample is with a mean age of 31 years younger than the general Ethiopian working age population (18-64 years, calculated average age 33.2 years based on Ethiopian Census 2007) [25]. The youngest person interviewed was 20 years old and the oldest person 55 years old at the time of the survey. 99% of the interviewed respondents were born in Ethiopia. The drivers lived in households with an average size of 3.73 and had 3.3 dependents. Both measures show substantial variation with some households consisting of up to 12 members and some of the drivers caring for up to 20 dependents (inside and outside the household). The life satisfaction in the sample is high with an average of 3.97 on a five-point scale.

**Table 3 - Summary Statistics: Demographic profile of commercial vehicle drivers**

	mean	sd	median	min	max
Age in years	31	6.00	30	20	55
% born in Ethiopia	0.99	0.09	1	0	1
Household size	3.73	2.02	4	0	12
Number of dependents	3.29	2.09	3	0	20
Average life satisfaction	3.97	0.91	4	1	5

Figure 21 shows the distribution of further general sociodemographic characteristics of the driver population. 47% of drivers were married and about 38% were single at the time of the survey. 2.4% were in partnership with cohabitation and 10.7% without cohabitation. The remainder was either divorced (1.4%), separated (0.6%), or widowed (0.1%). 15.7% had completed primary education, 48.3% secondary education, and 35.1% tertiary education (either vocational 21.7 or college 13.4%).

The educational background of drivers represents a solid base for further CVD TVET, such as the UNIDO project training intervention. Only a small fraction in the sample has not obtained any formal school education. While most drivers speak some English, their proficiency is mostly low or intermediate.

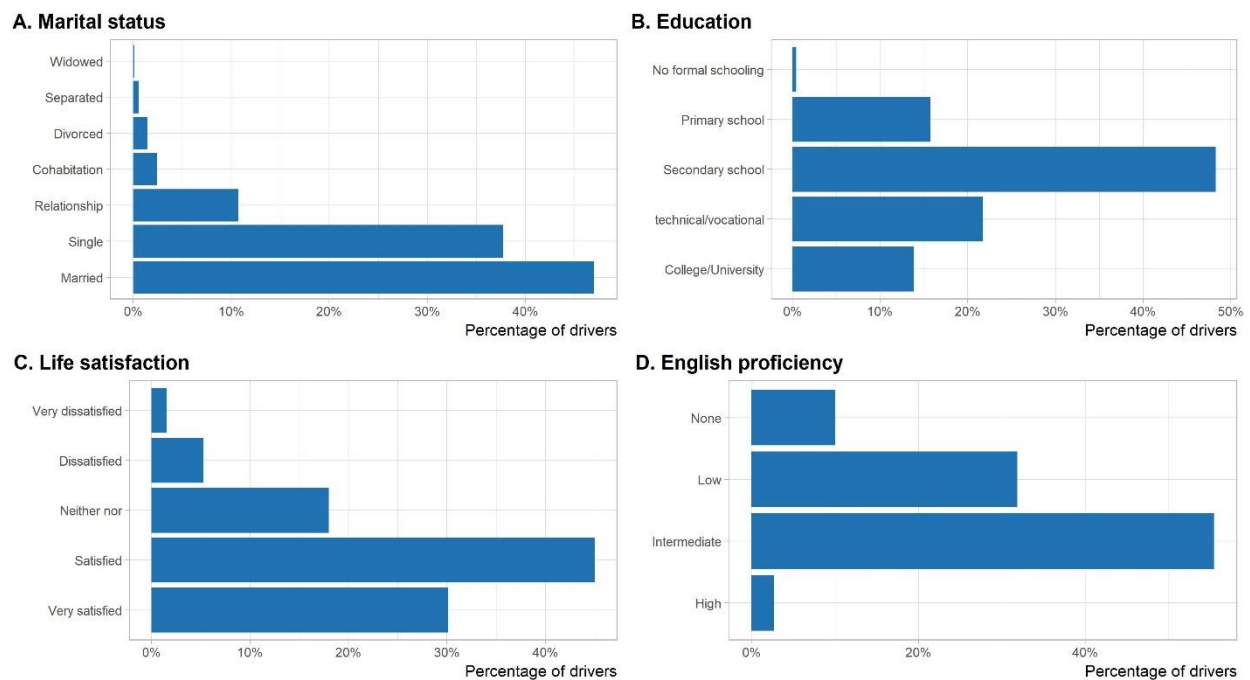


Figure 21 - Socio-demographic profile of commercial vehicle drivers

Income and work-related stress are the two factors influencing life satisfaction the most. On average, most of the drivers are satisfied with their life. However, again, some variation is visible: 18%

of drivers said they are neither nor satisfied with their life and about 7% said they are either dissatisfied or very dissatisfied. Income and work-related stress are the two factors influencing life satisfaction most strongly in our study. On average, the estimated probability of being satisfied with life increases by 2.2% with each 1000 Birr additional income and is reduced by 2.65% with a 10% increase in work-related stress. There is also a positive effect of having a fixed-term employment. However, this estimate is not statistically significant in our estimation.

#### Section 9 - Key Insights

- Drivers are younger than the average Ethiopian working age population
- Educational background of drivers is mostly secondary and tertiary education
- This represents a good base for further technical and vocational training and education
- A significant share of drivers is not satisfied with their lives
- Income and work-related stress are the main factors influencing life satisfaction

## 10 Policy Implications

Based on the findings from the baseline survey, several policy recommendations can be derived, which are of relevance for stakeholders. The recommendations can help improving the driver education and raise the knowledge and skills of CVDs, minimize risks for the drivers and the general public, and ultimately enhance the working conditions in the transportation sector. The lessons learnt from the baseline survey can also be informative for the design and advancement of vocational training in other fields.

### 1. Improvements in quality of CVD education required.

The education and training of drivers is at the very foundation of any changes. To achieve improvements, the quality of school-based driver education needs to be addressed. Curricula and procedures should follow international guidelines and be standardized across Ethiopia. To ensure equal quality levels, driving schools should be subject to regular and systematic checks and controls under an institutionalized monitoring and quality assurance system. Driving exams

and their procedures should be rigorously evaluated and potentially revised. Also, the education of driver trainers should be strictly monitored to ensure that only highly qualified trainers are given the responsibility to work in driver education.

**2. The position of schools and other actors responsible for CVD training should be strengthened.**

While checks and balances are important, it is at the same time key to provide sufficient support and formative capacity building to institutions working in the field of CVD education. The status of driving schools should be enhanced, for example by making a minimum of school based training a mandatory requirement for drivers to obtain their licenses. Driving schools and other educational facilities can serve as central gatekeepers in the driver education, which leave ample possibilities for policy makers to address the increased needs for improved training and education. The still practiced system of walk-in examinations and certifications based on private trainings outside of officially accredited driving schools should be abolished. A sufficiently high quality level of the driver education can only be ensured through systematic monitoring and formative supervision.

**3. Need for stronger focus on complementary and technical work skills in CVD education.**

While there have been many new developments that have helped to make commercial vehicle driving easier and more save, increasingly complex and rapidly changing vehicle technologies require new skills and abilities from the drivers. In particular, today, advanced technical and mechatronic skills are needed, allowing the drivers to successfully perform minor repairs and maintenance works on their vehicles. The demand for technically better trained drivers has been explicitly communicated by transportation companies operating in Addis Ababa. Aside of technical skills, improvements in other complementary work skills can help improving the working situation of drivers. Here, a particular focus should be placed on teaching drivers ways to better preserve their health and ensure high levels of wellbeing. Further important content that should be covered in any holistic driver education are environmental skills and the importance of ecological driving.

**4. Stronger professionalization of the CVD education and occupation needed.**

With raising demands for higher-order skills and increased complexity, there is a need to more strongly integrate vocational training elements in the education and training of CVDs in order to improve their skills and abilities and to strengthen their position on the labor market. At the same



time, the work of CVDs should be more strongly acknowledged as professional occupation, which requires comprehensive and hands-on training and a high-quality education. Promoting professionalism and ethical conduct among drivers can furthermore help to raise the attractiveness of the work and promote safe driving.

**5. Ensuring inclusive access to driver education is key.**

In order to achieve high levels of skills and abilities among drivers, it is important to ensure that access to high quality driver education and training is equal. Disadvantages and educational inequalities can result from different factors, such as the socioeconomic background or – in the case of commercial vehicle driving – the sex of a person. On one side, to achieve inclusiveness along all dimensions, it is important to further advance the standardization of the driver education and to provide formative support for learners that goes beyond the education obtained in driving schools. At the same time, tackling barriers that prevent equal access to comprehensive training is key. This includes the provision of accessible and cost-efficient advanced training and education opportunities, including for those drivers who are already working in the transportation sector.

**6. Necessary to improve working condition and strengthen position of drivers in labor market.**

The position of CVDs on the labor market is weak. Aside of ensuring better access to high-quality education, improving the general working condition of CVDs is important. This concerns, among others, the limitation of long working hours and the promotion of secure and stable work relationships. At the same time, it is important to ensure and enforce high standards of occupational safety and health. These can contribute to improving the employability of workers, through workplace (re)design, maintenance of a healthy and safe work environment, training and retraining, assessment of work demands, medical diagnosis, health screening and assessment of functional capacities. Occupational health is fundamental to public health, for it is increasingly clear that major diseases, such as HIV/AIDS, require special attention and adequate interventions at the workplace. This starts with work-related training, which should address health and safety issues in form of drills and awareness programs.

**7. Stronger cooperation between private and public partners and interconnected measures.**

To reach transformative changes in the TVET in the transportation sector, close cooperation between private and public stakeholders is necessary. Higher training standards and better

quality education can only have an effect if they are accompanied by complementary measures and a rigorous law enforcement in traffic. In particular, it is important to strengthen partnerships between the private and the public sector, which can create important synergies by joining forces and resources.

**8. Further research and continuous monitoring is needed to allow for informed policy making.**

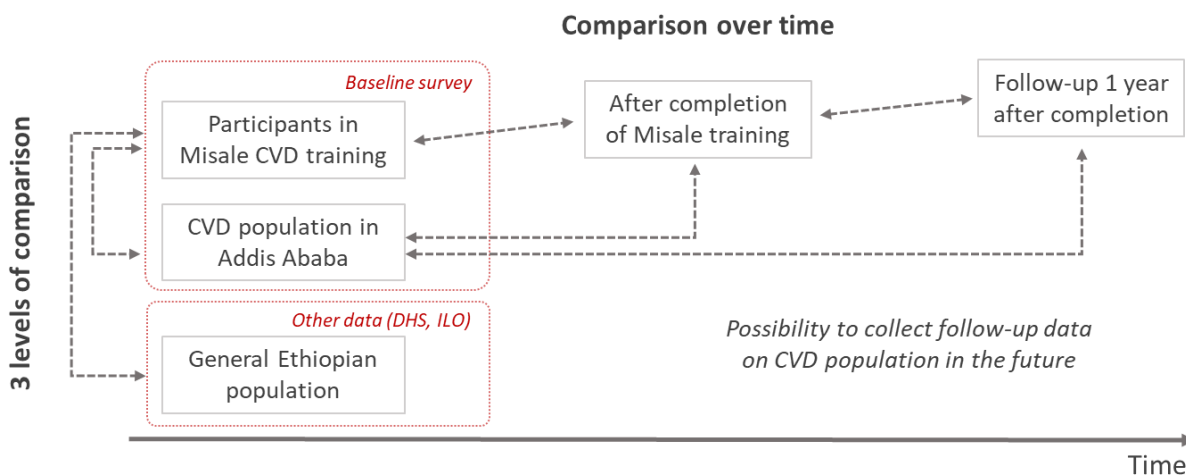
The conditions and requirements in the growing transportation sector in Ethiopia and in other countries in East Africa are changing at a rapid pace. Further research is needed to collect information about the ongoing processes and underlying drivers. With few interventions in the TVET field in the transportation sector, rigorous and continuous project monitoring and evaluation as well as reporting of progresses and activities is vital.

## 11 Monitoring & Evaluation: Integrating the Baseline Survey

Monitoring and evaluation (M&E) measures of development activities are instrumental as they provide program managers and policy makers with better means for learning from past experiences to improve service delivery and planning. It allows the tracking of progresses and the demonstration of results of an intervention in the light of its costs, thus enabling an efficient allocation of resources [26].

**Baseline surveys, which are collected at the beginning of a project, are an integral part of M&E processes.** They provide data against which the performance of a program or project can be compared and evaluated over time. They further help exploring the intervention field and describing working and living conditions in the relevant target group. The data can serve as key input to the formal evaluation of a program, such as supporting the development of key performance indicators.

Figure 22 schematically illustrates the integration of the baseline survey in the M&E framework of the project intervention. Data was collected among CVDs who were mostly operating in or from Addis Ababa as their home base. This group provides useful descriptive information about the CVD population, which can inform the design and development of the training intervention. The group can furthermore serve as reference or natural control group in the evaluation of the training intervention.



**Figure 22 - Monitoring and evaluation framework: Effective integration of the Baseline Survey**

For the evaluation it is important to establish a counterfactual, i.e. a group which shares similar characteristics and which can be used as a benchmark for comparisons. The baseline data allows for comparisons between the training participants and the general CVD population in Addis Ababa. In addition, further external data sources, such as the Ethiopian Demographic and Health Survey (DHS) or the ILO Labor Survey, can be used to obtain representative information about the general Ethiopian population as a further point of reference.

In addition to the baseline survey, the M&E activities should focus on the group of learners and assess their progress over time compared to their baseline level before the intervention and compared to the level of the general CVD population. Ideally, information on training outputs should be collected from the learners in regular intervals before, shortly after, and a longer time after the completion of the training intervention to assess long-term effects.

The indicators and measures used in the baseline survey can serve as foundation for the development of performance indicators to assess the concrete outcomes of the training intervention. Among others, based on the logical frame of the intervention, these outcomes include (i) the creation of employment opportunities for youth in commercial vehicle driving, (ii) a reduced number of traffic accidents among the trained drivers, and (iii) the raising of HIV awareness and the reduction of risks among the drivers. Following a theory-based M&E approach, these targets are assumed to be reached

by influencing certain intermediary mechanisms, i.e. by raising the skills and knowledge of drivers through high-quality vocational training, by raising awareness both for risk situations in traffic and related to occupational health, and by changing attitudes and norms of the drivers, for example related to driving behavior and ethical conduct.

Several of the indicators used in the survey can be re-used for the regular monitoring of learning outcomes. All of them should be designed in a way, such that progress over time is in principle measurable. In particular, this includes the survey indicators used to measure:

- Quality of previous driver education: Knowledge, skills and techniques covered in previous training courses as well as additional skills obtained in special trainings.
- Technical knowledge and accuracy: Knowledge about the operation and technical details of vehicles. Regularity of performing important tasks/routines during current/last employment.
- Employment opportunities and working conditions: Earning, working hours, contractual terms, and level of satisfaction with current/last employment as well as the level of work-related stress.
- Driving behavior and traffic violations: Number of accidents in years since driving license was obtained. Risk situations in past year. Aberrant driving based on Driving Behavior Questionnaire items
- Health and wellbeing: General and mental health condition. HIV knowledge. Risky sexual behavior and protective measures.

In addition, further indicators can be developed, which focus more specifically on the actual contents delivered in the training and the experiences of the learners: Was awareness of health risks improved? Did drivers change their attitudes during the training? Did they obtain more knowledge related to particular training contents? How do they evaluate their personal outcome from the training? In addition, the regular M&E can focus on other aspects that were not fully covered in the baseline survey, such as gender attitudes, knowledge and attitudes about environmental issues, occupational health and safety, etc.

To ensure continuous monitoring, a repeated collection of data over time among the group of learners is necessary. For this, it is important to keep track of the whereabouts and contact details of the trainees and to encourage them to continuously support the evaluation efforts in the project. Keeping

track of project participants, especially over longer time periods (>1 year) is not an easy task. The following recommendations can support the long-run formal M&E activities of the project:

- Collecting comprehensive and extensive information about participants, including contact information of relatives and friends, who can provide information about the whereabouts of a participant if the person cannot be reached otherwise.
- Keep close contact with participants in general, e.g. by sending regular updates on the progress of the project and by inviting them to events. The creation of an alumni network of former participants can be another way to continuously engage former trainees with the project and to stay in close touch.
- Explaining the need for continuous evaluation and data collection as part of the project and emphasizing the role of each trainee in the process. This should be combined with early announcement of when information is needed from the former participants.
- Providing adequate incentives for former trainees to support the M&E activities of the project. This includes both intrinsic incentives, e.g. clearly highlighting the purpose and need for data collection and the value of the individual contribution to it, as well as extrinsic incentives, e.g. minor monetary reimbursements, vouchers, or the invitation to participate in a lottery.
- Using modern information and communication technologies to collect data among former training participants, for instance in form of online surveys or by collecting regular updates via telephone or short messages.
- Getting external and independent experts and institutions on board for the evaluations and the continued monitoring of learning progresses and outputs. Besides ensuring objectivity in the evaluation, this helps building a distance between the evaluation team and the former participants in order to avoid biasing of the evaluation outcomes.
- Continued cooperation with authorities in Ethiopia in general and Addis Ababa in particular. Possibility to retrieve objective information about traffic violations and accidents of training participants through the official driving registry and to compare this information with data from the general CVD population.

While the collection of quantitative performance indicators is important for the M&E activities of the project, qualitative and explorative approaches can help complement the quantitative data collection efforts. These approaches, which can have a strong participatory component, are particularly useful with collecting information about the learning experiences of trainees and with findings concrete

ways to improve training interventions. Overall, for the establishment of a successful M&E project framework, it is crucial to involve all project stakeholders in the process, to use an integrated approach of complementary evaluation measures and tools (both quantitative and qualitative), and to define clear and independent performance criteria based on the project logical framework. This report and the findings from the baseline survey are an integral part of the M&E activities of the project and can help to ensure an effective and efficient implementation of its activities.

## 12 Conclusion

This report summarizes the findings of a survey among commercial vehicle drivers (CVDs) in Ethiopia, which was carried out as part of the UNIDO project “Training Institute for Commercial Vehicle Drivers in Ethiopia: A Private Public Partnership Project to Support Specialized Skills Development in Ethiopia”. The survey studied the driving education and working condition of drivers and highlighted the relevance of high quality driver education and training for various outcomes, ranging from work-related skills, to driving safety and labor market opportunities.

Based on the findings from the survey, various policy lessons and recommendations were derived, which are relevant to a variety of stakeholders. These concern improvements in the quality and inclusiveness of the CVD education, a strengthening of school-based education and institutionalized trainings, a stronger focus on complementary and technical work skills in the driver education, a higher level of professionalization of the training and occupational status of CVDs, the promotion of better working conditions in the transportation sector, enhanced partnerships between stakeholders, and the continuous monitoring of activities in the field. All of these can help contributing to sustainable improvements for the drivers, the private sector, and the general public in Ethiopia.

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## Appendices

### A. Selection Effects and Drop-Outs

This section of the appendix tests whether any selection effects or biases occurred in the sampling of the survey respondents. Selection effects refer to any systematic biases that lead some individuals in the target population to have a relatively smaller likelihood of being selected for the final sample. Common reasons for systematic selection effects are non-reachability of respondents and non-response, i.e. the refusal to participate in the survey. Both do typically not occur randomly, but are influenced by background characteristics of respondents. For example, the decision to participate in surveys has been shown to be influenced by the work situation and income of respondents. Individuals who are employed and who have a higher income are typically less likely to participate in surveys. Such selection effects can undermine the representativeness of a sample and the generalizability of the findings based on this sample.

Table 4 analyzes whether any systematic drop-out occurred among the initially sampled 1580 respondents who were randomly drawn from the central driver registry of the Addis Ababa Driving Authority. Together with contact information, the driver registry contains information about the sex of the respondent, the date when the license was obtained, the license type, and whether or not the license was obtained from an officially accredited driving school. The analysis depicted in the table tests whether individuals with different background characteristics, e.g. respondents who obtained their license last year compared to those who obtained their license 10 ago, had a different probability to be included in the final survey sample, either because they could not be reached by the interviewers (column 1) or refused to participate in the survey (column 2).

In total, 15.2% of the contacted drivers could not be reached, either because their telephone was out of service or the contact information was wrong and 7.8% refused to participate in the survey, leaving 77% of drivers who could be reached and who were willing to participate, which represents a relatively high number compared to other surveys. If a systematic selection bias occurred, it can be mitigated by using the variables about drivers' background, which are available for the entire driver population, and by employing weighting techniques and multi-stage selection models.

Table 4 - Linear regression models: Predicting respondents' reachability and refusal probability

	<i>Dependent variable:</i>	
	Not reached (1)	Refused (2)
Reference: Female		
<b>Male</b>	0.142 (0.161)	0.062 (0.120)
Reference license < 2.5 years		
<b>license 2.5-5 years</b>	0.034 (0.022)	0.016 (0.016)
<b>license 5-10 years</b>	0.032 (0.024)	-0.019 (0.018)
Reference Cargo 1		
<b>Cargo 2</b>	-0.020 (0.023)	0.013 (0.017)
<b>Cargo 3</b>	-0.005 (0.026)	0.022 (0.020)
<b>Public 2</b>	-0.042 (0.030)	-0.025 (0.022)
Reference: No school		
<b>School</b>	-0.019 (0.022)	0.020 (0.016)
Constant	0.007 (0.161)	0.007 (0.120)
Observations	1,580	1,580
Adjusted R <sup>2</sup>	0.001	0.002
Residual Std. Error (df = 1572)	0.359	0.268
F Statistic (df = 7; 1572)	1.122	1.425

Note: Regression coefficients with standard errors in brackets. Considered variables describe different background characteristics of drivers. P-value: \* $\leq 0.1$ , \*\* $\leq 0.05$ , \*\*\* $\leq 0.01$

If any of the considered variables had a statistically significant effect on the sample selection (with a p-value  $< 0.1$ ), this would be indicated with stars in the table. None of the considered background variables had a statistically significant influence neither on the reachability nor on the non-response of the selected interview candidates. This does not exclude the possibility that systematic sampling biases have occurred as the selection into the sample may have been influenced by other non-observed background characteristics that are not included in the driver registry of the Authority. Yet, together with the relatively low-number of non-reachable drivers and drivers who refused to participate, this suggests that systematic sampling effects were not a major issue in this survey.

## B. Analytical and Statistical Methods

At various points, the report refers to correlations between variables or the effect of one variable on another. Examples are the findings on the effect of work-related stress on job satisfaction or the effect of stress on aberrant driving. The results are based on OLS regression analysis, which is a powerful statistical method allowing to examine the relationship between two or more variables of interest. Considering correlations in data is important to understand underlying mechanisms and patterns, which help explaining noticeable findings, such as the high level of mental stress or the high number of risk situations experienced in the driver population.

Regression analysis distinguishes between a dependent and outcome variable (e.g. job satisfaction in the aforementioned example), which is explained through one or more so called explanatory variables (e.g. work-related stress), which characterize the driver population. The method estimates the average change in the dependent variable with one unit change in the explanatory variables, such as a one unit change of the work-related stress index. To achieve this, the method assumes in its most basic form a linear relationship between the considered variables. The technique is widely used in different social and natural science disciplines.

While there are different possible ways to study correlations between variables (both graphically and analytically), regression analytical methods offer several advantages. First, the estimates allow for a comprehensive and intuitive interpretation of the findings, which can be used to predict outcome levels for different sub-groups of drivers. The structure of the estimation furthermore allows to simultaneously consider the effect of different explanatory variables and to control for potentially confounding external influences. All of our regression models control for basic demographic, educational and work-related background characteristics, such as age, vehicle type, common distances traveled, educational background, driving experience, stress level, and the quality of the driver education obtained. This allows deriving a complete understanding of complex relationships, which might otherwise not be easily grasped by the researcher.

While there are several advantages of the method, it also has different limitations, which are important, when interpreting results that were obtained with regression techniques. Most importantly, unless more sophisticated data and research designs are used, results based on regression analyses do not necessarily imply causality in the sense that one variable causes another

one. Instead, they represent correlations, which can potentially reflect causal relationships, but not necessarily.

When analyzing the data, a lot of care was devoted to a sensitive interpretation of the regression results. Only those findings were included in this report, which reflect robust patterns that can be observed among different sub-groups in the driver population and that hold even after controlling for a variety of other socio-demographic and economic factors. All results of the report are not only statistically meaningful, but also theoretically. Throughout the report, close references to the scientific literature are provided, which allows a comparison of the results with findings from other studies with high relevance for policy-makers and other stakeholders.

### C. Research Instrument: English Questionnaire

Code	Question	Categories	Answer	Route
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#### Interviewer questions

	Respondent Information			
R1	Respondent ID:			
R2	Respondent Name			
R3	Interviewer ID			
R4	Interviewer name			

#### Contact Attempts

CA1.1	Date			
CA1.2	Time			
CA1.3	Results	Completed	1	
		Postponed	2	
		Interrupted	3	CA1.4
		Refused	4	CA1.4
		Not reached	5	
		Number is out of service	6	
		Wrong contact	7	
		Other (specify below)	8	
CA1.4	Reason for refusal?			
CA1.5	Interviewer comments			

Hello, my name is [...] and I am working for the Sub Saharan Africa Research and Training Center. We are currently carrying out a survey among commercial vehicle drivers in Ethiopia in cooperation with the United Nations Industrial Development Organization and the Selam Technical and Vocational Training Institute. The information collected in the survey shall help to improve the road safety and the situation of commercial vehicle drivers in Ethiopia. You were randomly selected as a participant among all individuals with a heavy vehicle driving license in Addis Ababa.

Supporting us with an interview would make an important contribution to the success of this study. The telephone survey, which contains questions about your skills, perceptions, and driving experiences in Ethiopia, should not take more than 30 minutes of your time. All information will be treated highly confidential. To ensure your anonymity, we do not collect any personalized information about our respondents. To thank you for your participation, you will receive a sim-card voucher worth 100 Birr upon completion of the interview. Of course, your participation is voluntarily and you can always interrupt the interview or skip a question.

Do you have any questions? May I begin the interview now? Before we begin with the interview, I have few question about your current employment status to ensure that you are a suitable respondent for our study.

### I. Pre-selection questions

I1	Are you currently working as a commercial vehicle driver, who is at least from time to time transporting goods or people with a truck or bus?	Yes	1	A1
		No	2	I2
I2	Have you been employed at any time in the past 12 months as a commercial vehicle driver, responsible for transporting goods or people?	Yes	1	A1
		No	2	EX1

### Exit Questions

The respondent is not eligible to be interviewed as part of this survey. Please ask the following exit questions				
EX1.	Are you currently working or engaged in any kind of productive activity?	Yes	1	
		No	2	
EX2.	Have you ever in your life worked as a driver in the transportation sector?	Yes	1	EX3.1
		No	2	EX3.2
EX3.1	Why have you decided to stop working as a driver?		[open]	Out
EX3.2	Why have you decided to never work as a driver despite having a truck or bus driving license?		[open]	Out

## A. Background Information and Socio-demographics

I would like to begin with few questions related to yourself and your current living situation			
A1	Where do you currently live?	Woreda/city?	[woreda]
A2	How old are you?		[years]
A3	Were you born in Ethiopia?	Yes	1 A3.1
		No	2 A3.2
A3.1	In which region of Ethiopia were you born?		[region]
A3.2	In which country were you born?		[country]
A4	What is your marital status?	Married	1
		In a relationship, living together	2
		In a relationship, not living together	3
		Single	4
		Separated	5
		Divorced	6
		Widowed	7
A5	In total, how many people currently live in your household?		[people]
A6	Are you currently working or engaged in any kind of productive activity?	Yes	1 A7.1
		No	2 A7.2
A7.1	How many people currently depend on or are supported by your income? [only employed]		[people]
A7.2	How many people currently depend on or are supported by you [only unemployed]		[people]
A8	How satisfied are you at present with your life, all things considered?	Very dissatisfied	1
		Somewhat dissatisfied	2
		Neither satisfied nor dissatisfied	3
		Somewhat satisfied	4
		Very satisfied	5

**B. Education and Trainings**

Now I am interested in your educational background and trainings				
B1	What is your educational background (completed level)?			
		Never been to school	1	
		No formal schooling	2	
		Primary school	3	
		Secondary school/high school	4	
		Technical/vocational	5	
		College/university	6	
		Post graduate degree	7	
B2.1	Have you ever obtained any technical or vocational training?			
		yes	1	B2.2
		no	2	B3.1
B2.2	In which field did you receive a technical or vocational training?			[open answer]
B3.1	Can you read and write in English?			
		Yes	1	B3.2
		No	2	B4
B3.2	What is your level of proficiency in English?			
		Basic	1	
		Intermediate	2	
		Advanced	3	
B4	Which of the following driving licenses do you have?			
B4.1		Automobile	1	
B4.2		Two-wheel motorcycle	1	
B4.3		Three-wheel motorcycle	1	
B4.4		Truck 1 with max 3.5 tons	1	
B4.5		Truck 2 with max 18 tons and without trailer	1	
B4.6		Truck 3 with trailer	1	
B4.7		Fuel tanker 1 with max 18,000 liters	1	
B4.8		Fuel tanker2 with more than 18,000 liters	1	
B4.9		Public bus 1 with max 20 seats	1	
B4.10		Public bus 2 with max 45 seats	1	
B4.11		Public bus 3 with more than 45 seats	1	
B5.1	Have you ever obtained a special training related to commercial vehicle driving or driving in general?			
		Yes	1	B5.2
		No	2	B6

B5.2	Did you ever attend a ...			
B5.21		Special road safety training?	1	
B5.22		First aid training?	1	
B5.23		Mechanical and electronic repair and maintenance training?	1	
B7	Have you ever learnt in a training for example at the driving school or by a certified instructor any of the following techniques in a profound and applicable way?	Never learnt	Learnt, but not in detail	profoundly learnt
B7.1	Strategies to avoid fatigue while driving?	1	2	3
B7.2	Ways to improve your health and safety at the workplace?	1	2	3
B7.3	How to provide first response during a traffic accident?	1	2	3
B7.4	How to perform a rigorous pre-trip inspection of your vehicle?	1	2	3
B7.5	How to use defensive driving techniques to better anticipate dangerous situations?	1	2	3
B7.6	How to drive in an environmentally friendly way?	1	2	3
B7.7	How to properly and safely load or unload your transportation vehicle?	1	2	3
B7.8	How to make minor repairs and maintain mechanical equipment	1	2	3
B7.9	How to document your trips?	1	2	3
B7.10	How to interact with clients in a professional manner?	1	2	3
B8	Did you ever attend or seriously consider attending a training course related to commercial vehicle driving in another country outside of Ethiopia?		No	1
			Attended	2
			Considering	3



**C. Driving Knowledge and Awareness**

In the following, I am interested in your knowledge about vehicle driving. I will ask you 8 questions and provide you with two possible answers. Please tell me which of the answers is correct			
C1	Why do air tanks on brake systems need to be drained?	to remove any oil leaks that collect here	1
		to remove moisture drawn in from the atmosphere	2
		don't know	-98
C2	A loud buzzer sounds in your vehicle. What is this most likely to indicate?	Low air pressure	1
		low fuel level	2
		don't know	-98
C3	What can result from overloading an axle?	Reduced braking efficiency	1
		Increased curbside weight	2
		don't know	-98
C4	What are symptoms of a person suffering from shock after an accident	Rapid pulse and sweating	1
		Slow pulse and dry skin	2
		don't know	-98
C5	If there is an air leak in your breaking system you should...	drive to the next service station	1
		stop immediately	2
		don't know	-98
C6	The pressure of your tires has to be checked...	Every time you go on a long journey	1
		Once a week	2
		don't know	-98
C7	If two wheel nuts are missing from one of your wheels, can you use a nut from another wheel as replacement...?	yes	1
		no	2
		don't know	-98
C8	A walk around inspection of your vehicle should be carried out...	weekly	1
		daily	2
		don't know	-98

### D. Labor Market Prospects and Employment

In the next section, I would like to ask you questions related to your current employment situation as well as challenges you may face in your daily life.

TO BE ANSWERED ONLY BY THOSE WHO ARE CURRENTLY NOT CVD

D1	In your last job as a CVD, how many hours did you on average spent working in a week?	[hours]
D2	What were your terms of employment in your last job as a CVD?	
	Permanently employed	1
	Fixed-term, i.e. contractual, but not on a permanent basis	2
	No employment contract	3
	Self-employed	4
	Family member	5
	Apprentice/training, civil servant	6
	Other	7
D3	What was the total net amount paid (take-home) in your last occupation as a CVD?	[net income]
D4	In total, for how many years had you been working as a CVD?	[year]
D5	When working as a driver, what type of vehicle were you mainly driving?	
	Automobile	1
	Two-wheel motorcycle	2
	Three-wheel motorcycle	3
	Truck 1 with max 3.5 tons	4
	Truck 2 with max 18 tons and without trailer	5
	Truck 3 with trailer	6
	fuel tanker 1 with max 18,000 liters	7
	Fuel tanker2 with more than 18,000 liters	8
	Public bus 1 with max 20 seats	9
	Public bus 2 with max 45 seats	10
	Public bus 3 with more than 45 seats	11
D6	When working as a driver were you mainly operating?	
	Short distance within a metropolitan area	1
	Short-haul with max 200km travel distances	2
	Long haul above 200km within the country	3
	International	4

D7	What type of cargo were you usually transporting?			
		General freight and commercial products	1	
		Construction/Building	2	
		Livestock	3	
		Agricultural products	4	
		Beverages	5	
		Food	6	
		Chemical products/detergents	7	
		Garbage/waste	8	
		Motor vehicles	9	
		Wood/lumber	10	
		Containers	11	
		Industrial goods/supplies or heavy machinery	12	
		Other	13	
D8	For a usual trip, which of the following procedures did you regularly apply?	Never	sometimes	always
D8.1	Deliberately planning your route map in advance, planning your rest stops or overnight stops in advance	1	2	3
D8.2	Arrangement and loading of the cargo yourself and performing a pre-trip check of the cargo-load	1	2	3
D8.3	Rigorous pre-trip inspection of the vehicle	1	2	3
D8.4	Completing transport/business documentation by yourself	1	2	3

TO BE ANSWERED ONLY BY CURRENTLY EMPLOYED CVD

D9	How many hours did you on average spent working in the last 7 days? [IN TOTAL]	[hours]
D10	What are your terms of employment in your main occupation?	
	Permanently employed	1
	Fixed-term, i.e. contractual, but not on a permanent basis	2
	No employment contract	3
	Self-employed	4
	Family member	5
	Apprentice/training, civil servant	6
	Other	7
D11	What was the total net amount paid (take-home) in your main occupation during the last month?	[net income]
D12	Would you like to work more hours per week than you do now, at the same hourly earnings as now?	
	Yes	1
	No	2
D13	In total, for how many years have you been working as a CVD?	[years]

D14	In your current work, what type of vehicle do you mainly drive?	<ul style="list-style-type: none"> <li>Automobile 1</li> <li>Two-wheel motorcycle 2</li> <li>Three-wheel motorcycle 3</li> <li>Truck 1 with max 3.5 tons 4</li> <li>Truck 2 with max 18 tons and without trailer 5</li> <li>Truck 3 with trailer 6</li> <li>fuel tanker 1 with max 18,000 liters 7</li> <li>Fuel tanker2 with more than 18,000 liters 8</li> <li>Public bus 1 with max 20 seats 9</li> <li>Public bus 2 with max 45 seats 10</li> <li>Public bus 3 with more than 45 seats 11</li> </ul>
D15	As a driver are you mainly operating?	<ul style="list-style-type: none"> <li>Short distance with a metropolitan area 1</li> <li>Short-haul with max 200km travel distances 2</li> <li>Long haul above 200km within the country 3</li> <li>International 4</li> </ul>
D16	What type of cargo are you usually transporting?	<ul style="list-style-type: none"> <li>General freight and commercial products 1</li> <li>Construction/Building 2</li> <li>Livestock 3</li> <li>Agricultural products 4</li> <li>Beverages 5</li> <li>Food 6</li> <li>Chemical products/detergents 7</li> <li>Garbage/waste 8</li> <li>Motor vehicles 9</li> <li>Wood/lumber 10</li> <li>Containers 11</li> <li>Industrial goods/supplies or heavy machinery 12</li> <li>Other 13</li> </ul>

D17	For a usual trip, which of the following procedures do you regularly and rigorously apply?	never	sometimes	always
D17.1	Deliberately planning your route map in advance, planning your rest stops or overnight stops in advance	1	2	3
D17.2	Arrangement and loading of the cargo yourself and performing a pre-trip check of the cargo-load	1	2	3
D17.3	Rigorous pre-trip inspection of the vehicle	1	2	3
D17.4	Completing transport/business documentation by yourself	1	2	3

D18	If you think of your current main job or your last job as a driver, how satisfied are/were you with your job overall?	Very dissatisfied	1
		Somewhat dissatisfied	2
		Neither satisfied nor dissatisfied	3
		Somewhat satisfied	4
		Very satisfied	5

D19	Independent of your current working situation, have you been actively looking for (other) job opportunities in the past 4 weeks?	Yes	1
		No	2

D20	The following statements describe possible situations relating to your work and your employer. If you think of your current main job or your last job as CVD, do you agree with the statements?		
D20.1	At work, I easily get into time pressure		1
D20.2	I often am already thinking about work-related problems when I wake up		1
D20.3	I often have to work so long that I start feeling tired and exhausted during work		1
D20.4	There is often high time pressure due to the large volume of work		1
D20.5	My own job is precarious or at risk		1
D20.6	I receive the recognition I deserve from my superiors		1
D20.7	I would benefit of opportunities for further training		1
D20.8	I find my work and the tasks I do interesting		1
D20.9	My job is risky for my health		1

D21	If you think back to your driver training or your preparations for the driving exam, did these adequately prepare you for a job as CVD?	Yes	1
		No	2

**E. Conduct and Driving Behavior**

Now I would like to talk to you about your driving experiences and about your behavior in traffic, including aberrant behaviors. Receiving truthful answers from the drivers is very important for us. I would like to reassure you that your answers are completely confidential and will not be told to anyone.

E1	In the past 12 months, approximately how many kilometers did you drive on average per month?				[kilometers]
E2.1	Did you receive a ticket because of aberrant driving in the past 12 months?	Yes	1	E2.2	
		No	2	E3.1	
E2.2	In total, how many Birr did you have to pay for all your tickets together?				[Birr]
E3.1	In the past 12 months, was there any situation in which you almost experienced an accident while driving?	Yes	1	E3,2	
		No	2	E4.1	
E3.2	How many times did this happen to you in the past 12 months?				[times]
E4.1	In the past 12 months, did you ever experience severe symptoms of fatigue while driving?	Yes	1	E,2	
		No	2	E5.1	
E4.2	How many times did this happen to you in the past 12 months?				[times]
E5.1	Were you involved in any accidents in the past 12 months?				
	Yes		1	E5.2	
	No		2	E6	
E5.2	How many accidents were you involved in the past 12 months?				[accidents]
E5.3	If you think back to the most severe of all accidents, were there any fatalities, severe injuries or major damages?	Yes	1		
		No	2		
E6	In the following, I would like to know whether you have experienced the following while driving in the past 12 months.				
		Never	Few times	Sometimes	More often
E6.1	Use your horn to indicate your annoyance to another road user	1	2	3	4
E6.2	Fail to check your rear-view mirror before pulling out, changing lanes, etc. causing or almost causing an accident	1	2	3	4
E6.3	Fail to notice pedestrians who are crossing a street, for example when you are turning into a side street from a main road	1	2	3	4
E6.4	Go into an intersection so far that a driver with right of way has to stop and let you out	1	2	3	4

E6.5	Miss seeing a “Give Way” sign and just avoid colliding with traffic having the right of way	1	2	3	4
E6.6	Stay in a lane that you know will be closed ahead until the last minute before forcing your way into the other lane	1	2	3	4
E6.7	Overtake a slow driver on the right lane	1	2	3	4
E6.8	Enter an intersection knowing that the traffic lights have already changed against you	1	2	3	4
E6.9	Underestimate the speed of an oncoming vehicle when overtaking	1	2	3	4
E6.10	Disregard the speed limit on a freeway or rural highway	1	2	3	4
E6.11	Drive after drinking alcohol or after chewing chat	1	2	3	4
E6.12	Hit something when reversing that you had not previously seen	1	2	3	4

### F. Health Behavior and Knowledge

With this study, we want to improve the working situation of drivers in Ethiopia including their health situation. In the following, I would like to ask you different questions about your health in order to gain a better understanding of some important life issues. Let me assure you again that your answers are completely confidential and will not be told to anyone.

F1	Overall, how would you rate your health today?	1 Very bad	2 bad	3 fair	4 good	5 Very good
F2	Are you covered by any health insurance?				Yes	1
					No	2
F3	How many days during the last 30 days have you been unable to carry out your usual daily activities because of sudden illness, accident, chronic illness, or any other health problem?					[days]
F4	During the last 30 days, how often did you feel that ...	Never	Few times, i.e. 1-2 time	Sometimes, i.e. 3-5 times	More often	
F4.1	You achieved less than you wanted to at work or in everyday activities because you felt very sad or depressed?	1	2	3	4	
F4.2	You felt very lonely during your work or in everyday activities?	1	2	3	4	

F5.1	Can people reduce their chance of getting HIV by having just one uninfected sex partner who has no other sex partners?	Yes	1	
		No	2	
		Don't know	-98	
F5.2	Can people get HIV from mosquito bites?	Yes	1	
		No	2	
		Don't know	-98	
F5.3	Can people reduce their chance of getting HIV by using a condom every time they have sex?	Yes	1	
		No	2	
		Don't know	-98	
F5.4	Can people get HIV by sharing food with a person who has HIV?	Yes	1	
		No	2	
		Don't know	-98	
F5.5	Is it possible for a healthy-looking person to have HIV?	Yes	1	
		No	2	
		Don't know	-98	
F5.6	Can HIV be transmitted from a mother to her baby?	Yes	1	
		No	2	
		Don't know	-98	
F5.7	Are there any special drugs that a doctor or a nurse can give to a woman infected with HIV to reduce the risk of transmission to the baby?	Yes	1	
		No	2	
		Don't know	-98	
F6.1	I don't want to know the results, but have you ever been tested for HIV?	Yes	1	G6.2
		No	2	G7
		Don't know	-98	
F6.2	How many months ago was your most recent HIV test?			[months]



F7	Apart from HIV, have you heard about other infections that can be transmitted through sexual contact?	Yes	1
		No	2
F8	Do you know of anyone among your colleagues who are commercial vehicle driver who engages in risky sexual behavior, i.e. having sexual intercourse outside a long-term relationship or with sex workers?	None	1
		Few (<2 people)	2
		More people	3

### PI. Post-Interview Questions

PI1	What is your impression of how well the respondent understood the questions being asked?	very well	1
		quite well	2
		not so well	3
		poorly	4
		a lot of difficulty understanding	5
PI2	Based on your impression, did the respondent have any problems understanding Amharic?	No problems	1
		Some problems	2
		Severe problems	3
PI3	What is your impression of how truthful were the answers of the respondent?	Very truthful	1
		truthful	2
		not very truthful	3
		not truthful at all	4
PI4	There can be many distractions during an interview: noise, children needing attention, people interrupting, phone calls, respondent feeling pressed for time, etc. What is your impression of how much distraction there was for the respondent when answering the questionnaire?	Very little or no distraction	1
		some distraction, but not serious	2
		some distraction, bothering the respondent	3
		a great deal of distraction	4
PI5	How often did the respondent ask you for assistance, clarification, or examples?	never	1
		rarely	2
		sometimes	3
		fairly often	4
		Very often	5
PI6	Interviewer comments	[text]	