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Information Requirements for International Truck Drivers in Norway

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Abstract: <p>The purpose of this project is to investigate hypothesis whether poor performance of foreign heavy goods vehicles drivers in very challenging Norwegian conditions is effect of lack of information. If so, then which information should be provided. When? Where? Data was obtained through mixed-mode survey (face-to-face interviews and self-assisted form) in multiple locations in the country. Local and foreign truckers were asked about information they have and would like to have, while driving in Norway. After analysis of three subgroups of respondents (Norwegians, foreign after introductory programme and random foreign) conclusion was reached, that drivers want general information (i.e. traffic conditions). However, what they need the most is training covering both theory and practice on driving in winter conditions.</p> <p>Celem tego projektu jest sprawdzenie hipotezy, czy problemy, które tworzą zagraniczni kierowcy ciężarowi w bardzo trudnych norweskich warunkach drogowych są spowodowane brakiem informacji. Jeżeli tak jest, to jaką wiedzę należy im udostępnić. Kiedy? Gdzie? Dane zostały zebrane podczas ankiet mixed-mode (rozmowy przeprowadzane przez ankietera oraz formularz do samodzielnego wypełnienia) w kilku miejscach w całym kraju. Lokalni i zagraniczni kierowcy byli pytani o informacje, które posiadają i które chcieliby posiadać podczas wykonywania kursu w Norwegii. Po analizie odpowiedzi trzech podgrup respondentów (Norwedzy, kierowcy zagraniczni po programie wprowadzającym, losowi kierowcy zagraniczni) wyciągnięto wnioski, że to czego kierowcy najbardziej chcą to informacje ogólne (np. o warunkach drogowych). Jednakże, to czego najbardziej potrzebują to szkolenie obejmujące zarówno teorię jak i praktykę jeżdżenia w warunkach zimowych.</p>
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Keywords:

1. information requirements
2. international drivers
3. Norway
4. survey

PREFACE

Norwegian Transport Minister Ketil Solvik-Olsen in his letters to the European Union requested that a special course covering driving in slippery conditions be incorporated into heavy vehicle license training. Should it be introduced, truck drivers without such certification would not be allowed in the country. The minister also addressed letters to his counterparts in Alpine regions hoping that they would support his case due to the common ground - which is unprepared and uninformed foreign drivers hauling in difficult winter/mountain conditions of these countries.

This project was initiated in order to validate the assumption whether over-representation of international truckers in accident and assistance statistics is caused by their lack of information. If the statement is proved to be true, then the determination of the most crucial data will take place. In order to do so, interviews were conducted by Szymon Adamski and me. This would not be possible without funding from Statens vegvesen and Norwegian University of Science and Technology.

The project started for me when I expressed my interest in the position of prof. Trude Tørset's research assistant last year. At that point of time I just knew that I was going to talk to lorry drivers. Being Polish was an advantage for the research, since there are many heavy vehicle drivers from my country working in international long-haul. As time went by, prof. Tørset became my supervisor and I was the one in charge of the project. The idea for the general direction of the research was constant from the very beginning. Details varied, when new points of view were to be considered. The only thing that was changed in description was removal of foreign transport companies as a potential source of information, since I got either ignored or refused on my attempts to establish cooperation.

Working on the project was a great pleasure as well as a big challenge at the same time. I can only hope that every professional and maybe further academic challenge I will face in the future is going to be as rewarding as this project.

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Thanks are due to all those, who either let me in terminals they supervise or distributed forms in their companies: Terje Aas, Arne Fosen, Audun Grande, Øyvind Haugen, Tor Ketil Håbjørg, Robert Jacobsen, Vladas Stoncius and Kim Ødegaard. Without you, completion of this project would not be possible.

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Finally, I would also like to thank all those who spared their time in order to translate survey forms to their native languages: Kerli Võsa (Estonian), Gintare Kunickyte (Lithuanian), Henri Losoi (Finnish), Stefan Gering (German), Andreas Nisted (Norwegian), Valters Kalnačs (Latvian). Without their contribution surveying process would have been much more difficult and some interviews would not have been made at all.

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1. INTRODUCTION

1.1. Purpose

The main goal of the project undertaken and summarised in the present report is to determine answers to two interrelated questions:

- 1) Can additional information improve safety, convenience and general performance of international truck drivers in Norway?
- 2) If this can be achieved with additional information, then which information is most suitable?

It is important to address the issue of foreign truck drivers due to their over-representation in Norwegian road accident statistics, especially those including fatalities (this matter is further discussed in section 1.6.5). Conclusions from the project will help counteract the present situation.

Secondary goal is related to author's personal development and that is familiarisation with surveying research method. This notion includes multiple factors, such as: acquiring skills necessary to manage research team and abilities to establish mutually beneficial cooperation with partners to mention but a few.

1.2. Scope and limitations

Within the scope of the project following items were incorporated:

- 1) Preparation of survey form for international and Norwegian drivers,
- 2) Literature review,
- 3) Pilot study,
- 4) Improvement of questionnaires,
- 5) Full scale study,
- 6) Analysis of results,
- 7) Writing the final report.

The most important limitation within this project is data collection. Except from the author there was only one more interviewer who participated in majority, but not whole research. Therefore, due to limited workforce the amount of data that could be acquired was reduced. Surveying in Oslo could be used as a prime example. With two people it was not possible to interview drivers during day and night effectively. Both of those times provide valuable responses, since drivers' characteristics are different. What is more, with two people it is not possible to survey at multiple locations at the same time. For instance, in a busy terminal one person was not enough to approach all the drivers and at the same time there is another location just around the corner, where research could be conducted.

Other limitation was a language barrier. Some interviews were terminated (or even not performed), because of the language problems. This situation can be seen from two perspectives. Either the drivers did not speak English well enough or the author's inability to speak Norwegian (or any other language) was a problem. Nevertheless, this issue could be solved by providing multilingual interviewers. Multilingual would be English and Norwegian as a minimum (second interviewer was a great help with his fluency in both of these).

However, other languages like Polish (author and second interviewer took advantage of their Polish roots), Romanian or any other would also be a valuable asset. Actions were taken to counteract linguistic problems. These measures are discussed later in report.

Third obstacle was willingness to cooperate by companies. In many cases the request to access the terminal and proceed with research was ignored. In others, it was rejected. Obviously, face-to-face interviews could not be performed in all locations, even if the response rate from companies was higher. Nevertheless, one company agreed to distribute self-administered forms amongst employees, thus contributing greatly to the progress of the research. Negative attitude was not only limited to companies. Some institutions that the author approached ignored requests despite credentials from recognised research facility like NTNU and a partner like Norwegian Public Road Administration.

Time was the final difficulty. Survey research is time consuming and deadline was short. Even though face-to-face interview offers the highest response rate in comparison to other surveying methods, considerable portion of time needs to be assigned to this part of research. Having characteristics of transport in mind, which is a business of moving goods from A to B, where majority of the personnel is in a hurry, one can clearly see problems that the researcher faced.

1.3. Materials and methods

The main research method within this project was surveying. In order to obtain data, a great deal of interviews was performed in multiple locations spread across Norway. This includes: Trondheim, Oslo and Mo i Rana. Majority of interviews were performed with drivers, both international and Norwegian. The sample of the latter ones was incorporated in the research to create a possibility for comparison between foreigners and those, who are used, trained and prepared to drive in harsh Northern European conditions. For these two groups dedicated survey forms were prepared. It was done so in order to see the picture from two perspectives. Non-Norwegians were stating what they know and what they would like to know. Norwegians were asked about what knowledge international truck drivers should acquire. Differences between forms are discussed in proper sections of chapter 2.

Moreover, representatives of companies were interviewed as well. Their input was to present reasoning behind employing (or not employing) international drivers and describe methods of introducing new employees to the new work environment. For example, in some regions of the country it is a common practice to use local drivers, when job requires fluency in Norwegian (personal contact between driver and customer is required) and foreign workforce when there are no such requirements.

Prior to full scale study pretests and pilot survey were conveyed. Both of these procedures resulted in major improvements of forms as well as the way of surveying. However, some minor issues have not been noticed until interviews in Alnabru area in Oslo were performed. It taught a valuable lesson of testing forms every time changes are introduced and triple-checking a double-checked material. These matters will be discussed further in proper sections of chapter 2.

When materials used are considered, due to limited up-to-date research in the field as pointed in section 0, information used was obtained from studies in the field of freight

transport. Other sources were European and Norwegian regulations, information widely available in the Internet and data shared by partners.

1.4. Structure of report

Present report is divided into six chapters: Introduction, Materials and Methods, Results, Discussion, Conclusions and Future research. The first one provides the overview of the project, its purpose, scope, background information and briefly describes the materials and methods. In the second part the last topic is covered extensively, giving broad picture of surveying tool used as well as any other materials helpful while performing the project. Thirdly, results of interviews performed are presented. This chapter shows data collected in multiple locations across Norway. Next, discussion on findings is given together with analysis of information obtained from other sources than interviews, but relevant to the project. In the penultimate section, final remarks are made, concluding work done. Finally, suggestions for future research are presented.

On multiple occasions Poland is used as reference point. It has been done so for three reasons. Firstly, drivers from this country constitute a fair share of international heavy goods vehicles drivers in Norway. Secondly, author as a native Pole had facilitated access to data in Polish as well as easier cooperation establishment with organisation originating from this country. Finally, Poland as one of the biggest as well as highly populated countries in Europe is included in the majority of research projects, easing task of data collection.

Throughout report cities, counties and regions of Norway are mentioned. For locations of places described, see map in Figure 1:1. Division into five regions (Northern, Southern, Western, Eastern and Middle) is with accordance to the one used by Norwegian Public Road Administration (NPRA) - Statens vegvesen¹.

¹ It is worth mentioning that division of Norway into region by NPRA does not coincide with a traditional one, which joins Møre og Romsdal region to West and names Nord-Trøndelag and Sør-Trøndelag as Trøndelag.



Figure 1:1 – Map of Norway²

² <http://wineandvinesearch.com/norway/>
 Division into regions not in the original image.

1.5. Literature research

1.5.1. Search terms and sources

A literature review was conducted in order to put the present project in context of current academic discourse. The searches were performed in February and March 2015. Four main search engines were used: ScienceDirect, Google Scholar, Bibsys and Oria. Additionally, Institute of Transport Economics'³ databased was reviewed. As a supplement Google searches were used as well. When articles were the main focus, 50 and more titles were read for every search, having 'most relevant' criteria ticked. Abstract was studied when title seemed related to the main topic of research undertaken. If the piece presented itself as relevant, the whole article was read and references checked. On the other hand when books were scrutinised, all titles were looked at. If any gave a chance of being of interest, a review was found online. In case the publication still could be of relevance it was borrowed from the library if possible.

Searches conducted could be divided into two rounds. Keywords used primarily were the ones closely related to the present project, for instance those used in the title. Therefore, phrases searched included combination of following words: 'information', 'requirements', 'international', 'foreign', 'drivers', 'truckers', 'truck', 'heavy goods vehicle' (in plural and abbreviated form as well). First round of searches did not produce satisfactory results.

Second round of searches was initiated, when notion of 'advanced traveller information system' (ATIS) was discovered. Second phase of literature review included this term, its simplified version (traveller information system) and combination of these with some of the keywords used in primary searches. American spelling of 'traveler' was also tried and it produced the same results as British spelling ('traveller'). Moreover, when some researchers were recognised to appear more often, their last names were searched for as keywords. Second round ended with satisfactory outcomes.

English was chosen as a language of literature review. It has been done so in order to grasp international context of the study.

1.5.2. Overview of relevant publications

In the early 90s of 20th century there was an abundance of research on information needs in transport. Berge et al. (1990) present results from extensive interviews with (among many other groups) less than 10 long distance lorry drivers in Oslo and Athens about information requirements. Ng et al. (1995a) summarises three nationwide US surveys for private drivers, commercial drivers and commercial systems operators. The purpose of these surveys was to determine information requirements for advanced traveller information system. In later article Ng et al. (1995b) present statistical analysis of these surveys with emphasis on freight industry. On the other hand Conquest et al. (1993) and Mannering et al. (1996) focused their research on private drivers. Several years later Golob and Regan (2002) presented findings on which information are perceived as important by different sectors of freight industry in California, US.

³ Transportøkonomist Institutt (TØI).

A great deal of research was conducted on perception of ATIS, its introduction and possible future use. Readers interested in this matter are forwarded to Golob and Regan (2002), who present what has been done in this field up to day of their publication.

Also there were plenty of researchers devoted to answering questions that this project fits in between. These matters are: implications of internationalisation of transport on traffic safety (Nævestad et al., 2014a), traffic accident risk of international truck drivers (Nævestad et al., 2014b) or drivers' behaviour and training (Dorn, 2003, 2005, 2008, 2010, 2012, Dorn and Sullman, 2013) to mention but a few.

Even though all these researches provided valuable insight into academic discourse on information requirement for drivers, they are not exactly what the scope of the project covers. The question studied is more specific than the ones asked before. It targets subgroup of commercial drivers, namely international lorry drivers operating in one particular country. Additionally, characteristics of the state are of importance. Ng et al. (1995a) divided responses from all over US into four regions, Kavalaris and Sinha (1995) focused on the state of Indiana and Golob and Regan (2002) on the state of California. However, Norway presents completely a different set of difficulties to drivers.

Berge et al. (1990) talked with Norwegian drivers, however questions asked were of general, goods transport nature (i.e. documents to present to customs). The same is true for other researches reached during the literature review. They were focused on general information such as traffic accidents, weather, delays on terminals and so on. The respondents of survey performed as part of this project were expected to point that access to, for instance, weather forecast is valuable. Nonetheless the main aim of the work done was to determine if there are any systematic differences between information that Norwegian and non-Norwegian drivers have.

1.6. Background information

1.6.1. Kingdom of Norway

Norway is a Northern European country located on Scandinavian Peninsula along Barents, Norwegian and Northern Sea. The capital is Oslo and two other biggest cities are Bergen and Trondheim. None of them is considered to be a big city in a 'European' understanding of this word, since only slightly over 600'000 people live in the capital. The total population of 5.1 million inhabitants and area of approx. 385 km² results in a rather low density of population of 15.5 persons per km². The map of the country with the most important cities is presented in Figure 1:1.

1.6.2. Road conditions

Road network

Total road network in Norway consists of 206'000km of state, municipal and private roads, 26.6% of which are national and county roads, with 10'400 km and 44'300km respectively. All public roads are operated by Statens vegvesen.

A huge area compared to a small population clustered in a relatively few, small cities calls for extensive network of road connections. Thus, the primary problem of extensive networks stretched between distant cities is maintenance, which in such circumstances is a burdensome task. Because of that, some minor roads might be kept in a lower standard, hence

driving on them with heavy goods vehicles (HGV) might be problematic. Another problem arising from low number of human habitats spread across big area is a lack of detours and alternative routes. It can be experienced especially in Northern Norway, where, should one road be blocked, there is usually no possibility to take another one.

Weather conditions

The weather greatly influences driving conditions in the country, which is very different from any others. One must bear in mind that in certain regions of Norway snow covers the roads all year long. Plenty of routes are completely shut during wintertime and on others convoy driving is necessary. When the first one is considered, there are fourteen stretches⁴, which include mountain passages or fjord crossings, that are closed during winter. For example connection via E69 between Skarsvåg and Nordkapp (in Finnmark county) is closed for as long as 8 months a year! When the latter is scrutinised, there are more than 900 km of stretches⁵ between cities, where passing in convoy is usual. Multiple mountain roads, with a length very tough to estimate, are not included in this number.

A very low temperature during wintertime acts against drivers as well. The use of specialised liquids for vehicle is inevitable, not to mention obvious difficulties in performing any outdoor task. It is worth noticing that some regions have annual average temperature below 0°C. Snow and ice also calls for proper tyres, chains and in some cases – customised truck. Changes in temperature might also be unexpected. For instance in 2015 during week 12 in Mo i Rana (Nordland) there were +12°C and the week after -12°C. The lowest temperature recorded was in Middle Norway (in city of Røros in Sør-Trøndelag) and it was as low as -50.4°C.

In other regions rainfall is a problem. Norwegian Meteorological Institute informs that 'Brekke in Sogn og Fjordane county has an annual precipitation of 3575mm' (Norwegian Meteorological Institute), which ranks the city amongst the most rainy places in Europe. This score is not uncommon for the region or along Western coast or in Nordland. In fact, in 1990 in the city of Brakke 5596mm of rainfall were recorded. In comparison, Norwegian average is 1414mm per year and country with the highest annual precipitation (Columbia) has 3240mm of rainfall during an average year (World Data Bank)⁶.

Additionally, due to high latitude, the country experiences considerable variations in duration of daylight. North of Arctic Circle the sun never sets during summer (and never rises during winter). For instance, citizens of city of Tromsø (Troms) are exposed to two months of midnight sun and, on the other hand, two months of polar night.

Road geometry

The predominant formation in inland Norway are highlands and mountains, therefore a fair share of roads is built on mountainsides. Having also in mind that most of the country has hard granite or gneiss rock as bedrock and adding to that, difficulties to supply construction site on mountainside, it is easy to conclude that the construction of such stretches

⁴ For full list see: STATENS VEGVESEN 2014b. Trucker's guide to driving in Norway presented by Donna Diesel. 2nd ed. Oslo.

⁵ For full list see: *ibid*.

⁶ Comparison of particular regions of countries with whole countries has certain amount of bias, since regions with little precipitation lower the average.

is very problematic. Moreover second conclusion arises that the majority of mountain passages will be narrow.

Such roads are particularly challenging for wider and longer vehicles – heavy vehicles (HV). In winter it does not matter which way they are going. If uphill there is a danger of stopping half way and blocking traffic or even worse – slipping down causing accidents. In case of going downhill a very dangerous phenomenon of jackknifing might occur. Moreover, there is a possibility of overheating of either the engine or the brakes (or both), which can result in a fire.

Another way to cross a mountain by road is through a tunnel. In Norway there are more than 1'000 road tunnels. Their total length exceeds 750km, with Lærdal Tunnel (24'509m) being the longest in the world. Driving in tunnels requires different skills and knowledge than on-road driving. Some of the passages under mountains are very steep. Being unfamiliar with driving techniques in such environment one can cause an aforementioned fire, which in closed environment is extremely dangerous. Additionally, multiple tunnels are not spacious enough to facilitate two trucks passing each other freely. As they go to the sides, both start scratching the ceiling, causing damage both to the structure and vehicles. In the first case it might lead to the release of debris, which can possibly damage following cars, causing accidents.

Not all tunnels are under mountains, some are underwater. Norway has more subsea tunnels within its borders than any other country in the world. The same problem of steepness applies here as well. An underwater passage is an alternative to bridges and ferry connections. In case of the last option, there is a necessity to plan driving accordingly. There might not be any ferry going during the night (or the frequency could be very low) or the connection may be temporarily stopped, due to a storm for instance. In such circumstances finding a way around might be a time consuming task. Especially, when one takes into account the length of some fjords, with number 1 in the world (Sognefjorden in Sogn og Fjordane county) being 204km long.

1.6.3. Increasing internationalisation of road freight transport

Foreign transport agents continue to increase their share on Norwegian roads. In 2013 as much as 64.3% out of 14.7 mill tonnes of goods transported between Norway and abroad was carried by foreign HGV (Statistics Norway). As pointed out by Nævestad et al. (2014b) international trucks account for only 10% of all HGV driving on Norwegian roads and only 6% of all goods moved within the country are transported with their use. Vast majority of transport carried out in Norway is domestic, performed by local actors. This percentage might seem low, however, there is a clear upward trend. It is presented in Figure 1:2, where export figures are shown. Import presents the same characteristics.

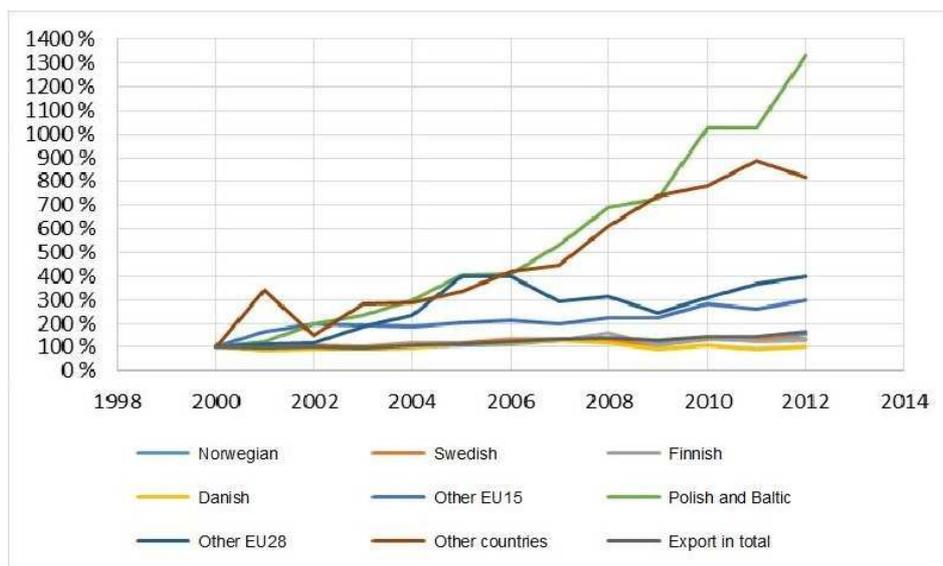


Figure 1:2 – Development of cross boundary transport in Norway with HGV in years 2000-2012⁷

It can be seen that none of the nation groups reduced their performance in cross border goods transportation to and from Norway. The one with lowest rise (Danish) kept its volumes as they were in 2000. Outstanding increase was recorded for Polish and Baltic actors, whose penetration of Norwegian transport market skyrocketed more than 13 times in comparison to year 2000. With such scale on vertical axis it is not possible to see that export increased by approx. 25% over this period of time.

Nonetheless, there is more than just cross border transport that contributes to internationalisation of goods freight. These are: cabotage⁸ and globalisation of labour market, followed by migration. When the first one is considered it is still a marginal phenomenon. Only 0.4% of all goods carried in 2013 were transported by cabotage. It is so, because it is limited by directive 1072/2009 (European Parliament and the Council, 2009). In chapter 3, article 8, point 2 it is stated that after delivery of goods in international carriage, service actors shall be allowed to perform up to three cabotage operations within seven days from the last unloading of initial cargo. Regulations issued in the directive are incorporated into Norwegian legal system by Act on Professional Transport by Motor Vehicle and Vessel (Samferdselsdepartementet, 2011). However, deregulation of this law is about to happen. Primarily it was scheduled for 2014. ‘Due to complaints from several member states facing competition from new EU-countries with lower labour costs the planned liberalisation of the cabotage legislation was postponed to 2015’ (Nævestad et al., 2014a). The main concerns were social dumping and national competitiveness.

Discussion of the latter ones is beyond the scope of this project. Nonetheless it is fair to say that with the introduction of Schengen and opening the labour market, migration in Europe has become easier than ever before. Due to these circumstances a share of

⁷ NÆVESTAD, T.-O., HOVI, I. B., CASPERSEN, E. & BJØRNSKAU, T. 2014b. Accident risk of heavy goods vehicles on Norwegian roads: Comparison of Norwegian and foreign actors. Oslo: TØI.

In original image description is in Norwegian. Translation was done by author.

⁸ Cabotage - the national carriage of goods for hire or reward carried out by non-resident hauliers on a temporary basis in a host Member State.

international drivers occupy positions in multiple Norwegian transport companies. Starting from freight giants (i.e. Bring, Postnord), via smaller firms to having own businesses.

1.6.4. Traffic accident risk

As described in section 1.6.2 Norwegian road conditions can be named as at least challenging. Therefore, traffic accident risk⁹ of international drivers in Norway shall be higher than in their home countries and higher for foreign truck drivers than for local actors, who are accustomed to the situation. Extensive analysis on this aspect is presented by Nævestad et al. (2014b).

Graphical representation of differences in accident risk between drivers from certain nations (groups of nations) is presented in Figure 1:3. Of course, these numbers have a certain amount of bias incorporated. This has to do with the driving culture in specific countries. The notion of safety culture is discussed by Nævestad et al. (2014a). The comparison of fatal accident rates by population for Norway, Poland and Baltic States is presented in Table 1:1. Obviously, one part of this difference is a standard of maintenance of the infrastructure; second part is the standard of an average vehicle. However, the influence of driving culture plays a considerable role in these differences.

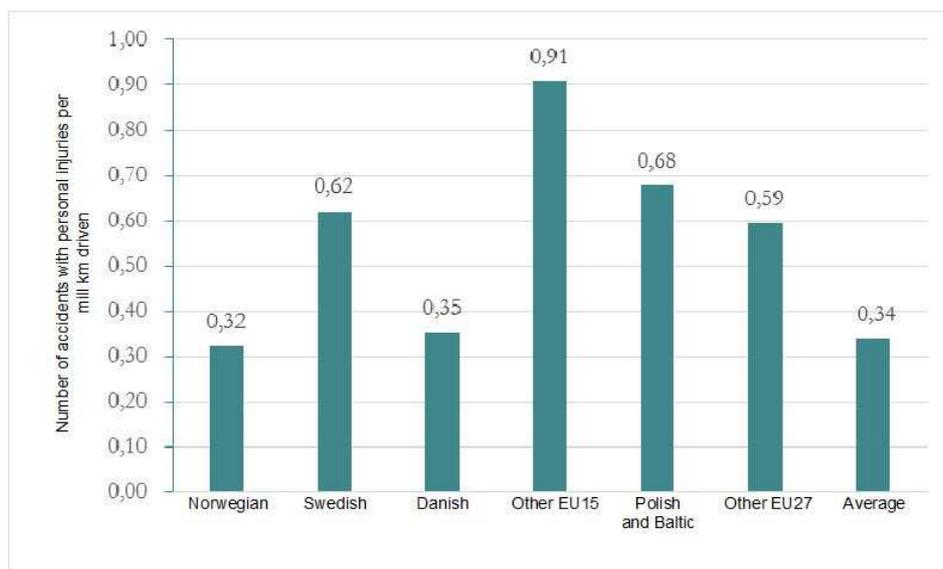


Figure 1:3 – Number of reported accidents in Norway with personal injuries involving HGV per million kilometres driven¹⁰

⁹ Accident risk is a measure of traffic safety. It is presented as amount of traffic accidents with personal injuries per mill km driven (in this case, driven by heavy goods vehicles).

¹⁰ NÆVESTAD, T.-O., HOVI, I. B., CASPERSEN, E. & BJØRNSKAU, T. 2014b. Accident risk of heavy goods vehicles on Norwegian roads: Comparison of Norwegian and foreign actors. Oslo: TØI. In original image axis description is in Norwegian. Translation was done by author.

Table 1:1 – Fatal accident rates in European countries

Country	Fatal accident rates (2013) ¹¹	Fatal acc. rates with HGV (2010) ¹²
Norway	3,7	14,5
Sweden	2,7	4,9
Poland	8,7	24,9
Lithuania	8,6	18,0
Latvia	8,8	17,8
Estonia	6,1	16,2

What is interesting is that in general Sweden has lower number of fatalities in road accidents than Norway. It is the lowest in all of Europe. Together with the fact that fatality rates per million of inhabitants in accidents involving HGVs are almost three times lower for Sweden than for its Western neighbour, it might come as a surprise that drivers from this country pose risk of traffic accident which is almost twice as high as for Norwegian drivers. It could be expected that all the Scandinavian Peninsula has similar road conditions, when winter driving and/or driving on mountainsides is considered. This is a good indication of how difficult it is to drive in Norway.

Data in Table 1:1 shall be approached with caution, since, as Nævestad et al. (2014a) point out, the differences in number of accidents per million inhabitants might not reflect the real risk. A more suitable criterion is the number of fatalities (involved in a HGV incident) per billion HGV km. In this case the average for Member States of EU is 31,5. Polish rate is almost twice as high (59,9) (AECOM, 2014)¹³. ‘(...) based on SafetyNet research, it is concluded that the driver generally is to blame in these accidents, and that information (...) are central causes’ (Nævestad et al., 2014a).

1.6.5. Accidents with non-Norwegian heavy goods vehicles

International lorry drivers, who do not have skills required to drive in tough Norwegian conditions, were found to be a considerable safety problem (Bergene and Underthun, 2012). Having access to URap traffic accident database, an analysis of current situation was made. Accidents involving Norwegian and non-Norwegian heavy vehicles were studied over the period from 01/01/2000 to 30/09/2014. Some of the results are presented in Figure 1:4. As a base for comparison three criteria were chosen. These are: percentage share of accidents involving foreign heavy vehicles, percentage share of accidents involving personal injuries, in which international heavy vehicles were involved and percentage of fatalities in accidents involving foreign HV.

As can be seen, the share of accidents caused and the share of accidents with personal injuries follow the same adverse, upward trend¹⁴. Pearson statistic for these two functions equals to 0,966, which presents expected, very strong positive correlation. Numbers related to

¹¹ Numbers for EU member states from EUROPEAN COMMISSION 2015. Community database on Accidents on the Roads in Europe (CARE). 2015 ed.

Number for Norway from STATISTICS NORWAY. Available: <http://ssb.no/> [Accessed 28.02 2015].

¹² DACOTA 2012. Traffic safety basic facts 2012 – Heavy goods vehicles and buses. European Road Safety Observatory.(Data for Estonia from 2009)

¹³ No specific data was available for Baltic States; rate for Latvia was in range (75, 100), Estonia (50, 75), no data was available for Lithuania

¹⁴ Data set for 2014 is incomplete (missing data from period 01.10-31.12.201), which is a cause of temporary decrease.

fatalities caused by international heavy vehicles in Norway are calling for action. Especially, when one has in mind that foreign trucks¹⁵ represent only approx. 10% of total number of trucks in Norway. These 10% cause 19.23% of road accident fatalities in a year (that data is not yet analysed from the last three months). These 10% causing 11,03% of total accidents in a year, in which three remaining months, for which data has not been processed yet, are part of the winter season and therefore even more accidents involving international trucks are expected.

Additionally, one in four rescue actions undertaken by towing companies is to help foreign drivers (Nævestad et al., 2014b). This over-representation of non-Norwegian truck drivers in accident statistics is surely a far cry from what can be called acceptable.

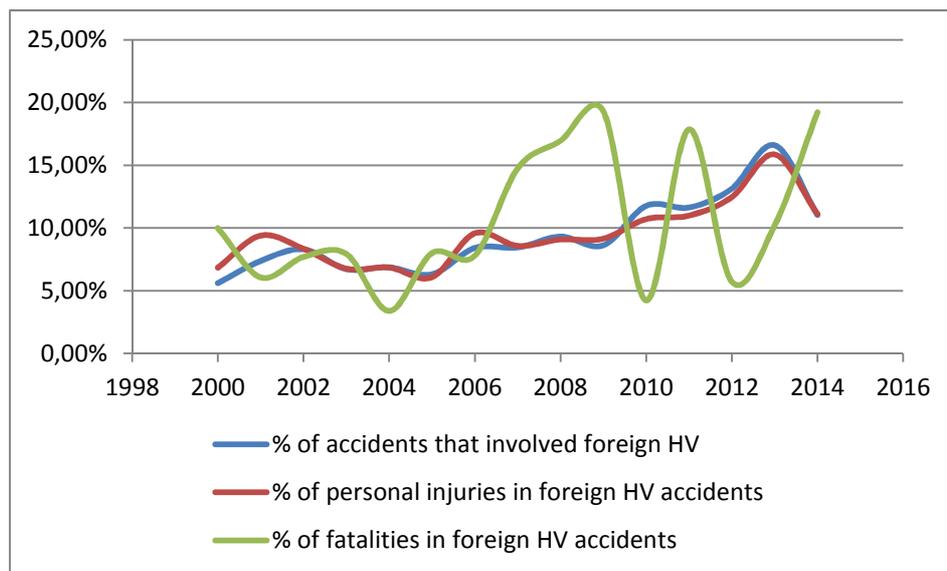


Figure 1:4 – Comparison of accidents for Norwegian and non-Norwegian HV

The situation is perceived as so inconvenient to Norwegian people that on social media a fanpage ‘People against murderous trailers’¹⁶ was created in November 2013. It gathers links to all articles about road disturbance caused mostly by international truck drivers in one place. From the beginning of January (when author started following) till the end of February on average there was one article in the press every day about truck drivers causing accidents and/or delays. In most cases, these were non-Norwegian drivers.

1.6.6. Information available

Two sources of information are going to be briefly presented - both online and difficult to find, even though the link to the first one is located in the middle of Statens vegvesen’s homepage. The first one puts emphasis on presenting information about driving in winter conditions, whereas the second describes only general rules of traffic. These are: ‘Trucker’s guide to driving in Norway presented by Donna Diesel’ and ‘Traffic in Europe’. Obviously the web offers much more than this.

¹⁵ Heavy vehicles are a broader notion than heavy goods vehicles. However, except from buses share of vehicles that are in first but not second category is small. For purposes of this analysis it will be temporarily neglected.

¹⁶ Original name of fanpage is ‘Folkeaksjonen mot drapstrailere’. Translation was done by author.

Trucker's guide to driving in Norway presented by Donna Diesel

Norwegian Public Road Administration having in mind all issues mentioned in section 1.6.2, prepared a practical guide for foreign drivers featuring fictional comic character of Norwegian female trucker Donna Diesel¹⁷. It is available in seven languages: English, Norwegian, German, Finnish, Russian, Polish and Lithuanian. Nævestad et al. (2014a) report that in 2012 it was available in nine. Removal of two translations comes as a surprise to the author.

All the necessary information is presented on 30 pages of the handbook. Among many, the guidebook covers matters such as: useful vocabulary, list of roads closed for winter, fines, information about chains and some theoretical background on Norway-specific driving (i.e. steep slippery roads, tunnels). Great care was taken to provide essential information in a comprehensible way and give practical advice for those coming to Norway from abroad. Unfortunately, less care was taken to raise awareness of this guidebook amongst drivers coming to the country either on permanent basis or just for a single job.

*Traffic in Europe*¹⁸

There is an internet based portal, where one can choose from each and every European country (and in case of Great Britain, even between Scotland, Ireland, Wales and England) and get links to useful information.

When Norway is considered one can read about major national websites, road traffic, country-specific driving rules, ship and harbours, railway, regional passenger transport and travelling by plane, bike or on foot. For the sake of this project only road traffic and driving rules sections are important. In the first one the information on route planning, autoPASS¹⁹ and emergency numbers is available. When the latter is considered, one is redirected to NPRA's website to 'Regulations relating to pedestrian and vehicle traffic (traffic rules)', which essentially is a driving code - slightly different than others, but in general similar to other European solutions. Unfortunately, there is no possibility to get directly to Donna Diesel.

¹⁷ The guide will be hereafter referred to as Donna Diesel.

¹⁸ TRAFFIC IN EUROPE. Available: <http://www.trafficineurope.eu/> [Accessed 25.02 2015].

¹⁹ Automatic toll collection.

2. MATERIALS AND METHODS

2.1. Introduction

In the present chapter description of materials and research methods, namely surveying, will be provided. Since the first draft much has changed, when it comes to questions and their wording, layout and even medium of interviews. The same might be said about materials. As work progressed new issues needed to be addressed and new points of view investigated. Therefore, scope of materials used was constantly changing. All that have been studied is presented in the following section.

2.2. Data sources

2.2.1. Regulations

In order to understand international transport phenomenon, its legislation context was studied. As a starting point for a short reading list, most important European Union directives were chosen. Those included laws about cabotage, international heavy vehicle driver's license requirements, working time limitations for truck drivers and issues on size of HGV. As a supplement, small comparison between Norwegian and Polish traffic rules (with emphasis on road signs) was done. None of these are described in the present report, unless stated otherwise. The purpose of these actions was simply to develop a better understanding of the matter being researched.

2.2.2. Statistics

To get an insight into how spread international transport in Norway and Europe is and to see how safe it is, several statistics were scrutinised. Topics considered were related amongst others to: traffic work²⁰ and its changes over the years of particular nations in the country, traffic accident risk and traffic accident rates. Material for this review was obtained from research projects (i.e. DaCoTa (2012)) or national, European or worldwide databases (Statistics Norway, Eurostat and World Data Bank).

2.2.3. Training

One reason of informational difference between Norwegian and non-Norwegian HGV drivers might be the training they receive. In order to check this hypothesis, two publications about content of driving license course by Statens vegvesen ((2004), (2014a)) were read. Three attempts to obtain similar documents were made to contact Polish Federation of Association of Driving Schools and all of them failed. However, disposition by Transportation Minister of Poland provides extensive description of matters to be included in the course. Hence, conclusions drawn are based on comparison of trainings for classes C (truck) or C+E (truck with trailer) described in these documents.

2.2.4. Handbook

The main handbook studied was Donna Diesel. As aforesaid it covers all matters that are considered necessary for truckers in Norway and provides valuable insight into theory of driving in the country.

²⁰ Measured as a number of kilometres driven.

2.3. Survey

Interviewing was chosen first and foremost for its possibility to reach target group and get information straight from actors personally involved in situation studied. Other information would be obtained from solely literature review, other from contacting only companies: their management and logisticians. These would all be valuable data, but for the purpose of investigating, which information is useful, which is irrelevant and before all, which is necessary and not provided, a discussion with drivers was crucial.

Questions are discussed in sections 2.3.2 and 2.3.3. Majority of them are open questions, where drivers have the opportunity to express their opinion, suggest their idea and provide support for them. Such information could not be obtained in any other way except from an interview.

From day 1 the idea was to survey truck drivers in person. However, as study proceeded and cooperation with new partners was established, a necessity to introduce alternative medium of interviews arose. The answer was a mixed-mode survey.

In a mixed-mode survey more than one medium of interview completion is offered to respondents. In case of present study these media were: face-to-face interview and self-administered form. In the latter case there were also two choices offered: computer-assisted personal interview (CAPI) form or paper and pencil interview (PAPI) form.

Introduction of alternate media allowed for reaching respondents, who were not present at the terminal during face-to-face interviews, thus increasing amount of responses. Since drivers are group of high mobility, whose job is to be en route, giving them alternatives was a good course of action. It increased the reach of the survey form, reducing respondents' burden. They did not have to answer questions during short break between jobs, but could do this in more convenient moment.

Face-to-face interview

Face-to-face interviews, as name indicates, are performed by an interviewer during a personal meeting with a respondent. This medium of surveying provides higher response rate than any other means. A couple of aspects account for this result. Starting from more personal touch, where the respondent is approached by the interviewer in person allowing for a certain bond of respect to establish. It is followed by a possibility to explain any issues and unclear matters on the spot. It ends with an opportunity to encourage respondents to proceed with a survey in case they want to terminate interview prematurely. Not to mention the possibility to engage the respondent in conversation at the end of questionnaire. Thoughts given to certain aspects of face-to-face interviewing are discussed in following paragraphs.

First of all – time of the study. Majority of accidents and incidents international truck drivers occur in winter season. 62% of traffic situations foreigners are involved in happen between October and March (for Norwegians split between winter and summer season is 53/47) (Nævestad et al., 2014b). Hence, asking about winter (which poses greater problem than summer) not in winter, would bias the study. As the time passes even very dangerous situations seem less hazardous. Therefore, interviews had to be conducted while it is still winter.

Secondly – time of interviews. Truckers' job is to be en route. Consequently, they have limited time to spare. Questionnaire was constructed in a way that allowed completion

within five minutes. A trade-off between the number of responses and their extensiveness was done. It was decided that in this case more short interviews would produce better output than few but extensive. A contrary method was incorporated in research by Berge et al. (1990). Obviously, whenever the responder had more time available than the required minimum, a discussion was initiated, obtaining a great deal of valuable answers.

A very important, if not the most important, part of face-to-face surveying are the interviewers. When it comes to that, many aspects were taken into consideration. These include: sex, nationality, languages spoken, appearance and credentials. All of these are going to be described.

In general, it is recommended to use women as interviewers. They are perceived as less threatening, which essentially means that they will get higher response rate than men. They are in many cases more open to other people. They are more empathic, which allows for convincing the respondent not to terminate the survey. However, men were chosen²¹, even though the men could answer more questions and find more time for a woman. Talking about tough, manly job as driving heavy vehicles with another man and not women should result in stronger bond between two sides of research, allowing for obtaining high quality data. Additionally, limiting to women would only exclude the author from interviewing process.

By taking nationality into account, two aspects were considered. These are: a possibility for a respondent to identify themselves with the interviewer and language skills. Since research targets international drivers, international interviewers shall be chosen. Since approx. 30% are from Poland (and the Baltics) (Grønland et al., 2014), it is a reasonable course of action to use interviewers from this country. Additionally, since Poles are a part of Slavonic culture, the representatives of other nations with such roots could identify themselves with Polish interviewers. And this phenomenon does not limit to Slavs only. It also influences the representatives of Baltic countries, many of whom can speak Polish.

In this study, as in every study targeting international group, linguistic problems were expected on both sides: drivers' and interviewers' – firstly, due to the nature of questions asked. The majority of most important inquiries are open questions. The respondents were asked about things they know, would like to know and what their opinion is on certain aspects. In such questions it is not possible to provide a definite set of answers to choose from, since nearly every driver generated a different information set and pointed out different needs. Even if such set was created to ease respondents, option 'others' would be used very often. In such case, respondents' burden would not be reduced, because they would still need to answer questions specifying their statement.

Secondly, it was neither possible nor reasonable to provide interviewers, who would be native/fluent in any language that might be encountered at the same time. Even after limitation to statistically most probable, arranging staff would be difficult if not impossible. Therefore, English was chosen as the language of the study. Additionally, interviewers' mother tongue was Polish and one interviewer was fluent in Norwegian, completing language package. Nonetheless, for the convenience of both sides, written translations of questionnaires into Estonian, Finnish, German, Latvian, Lithuanian, Norwegian and Polish were prepared and offered to respondents when needed. Thus, the exact understanding of questions asked

²¹ Hereafter interviewers will be referred to as 'he'.

was obtained. It limited the linguistic barrier only to answering, which in case of drivers less fluent in English is a considerably smaller burden. Language problems as well as a lack of possibility to limit the questionnaire to closed questions only was a strong argument in favour of face-to-face surveying. In case of other form, a researcher would be left with forms in languages and potentially dialects that the author could not possibly translate.

The appearance of the interviewer needs to be formal, professional but cannot create unnecessary distance between him and respondents. Therefore, shirts and jeans were usual working clothes. The interviewer general image should be clean. Facial hair either shaved or trimmed, leaving no place for messy appearance. Each interviewer received NTNU lanyard and displayed student ID card on it, which was presented to each driver, when approached.

Additionally, before surveying was initiated, author had a meeting with a second interviewer. The agenda was to explain survey purpose, review survey instruments, try to find possible FAQ and prepare answers to them.

In case one of respondents asked for credentials, special letter was prepared and handed out to interviewers. The letter, signed by prof. Tørset, confirmed that its holder is a part of the research project and a reader is asked for cooperation. What is worth noticing is the fact that no one asked for it. Credentials are enclosed in Appendix D.

Another important aspect of surveying process (especially face-to-face) is the way the respondent is approached. As mentioned before, in the beginning of the conversation an NTNU student card was presented. In general each respondent heard the following items when interview was initiated:

- 1) A greeting (usually in form of 'hei'²²),
- 2) What is happening ('I am doing research for NTNU, University in Trondheim'²³ at this point of time student ID was presented),
- 3) What is the research about ('about international truck drivers, information they have and would like to have, when driving in Norway'),
- 4) Information how long it will take and question if they decide to proceed ('do you have 5 minutes to answer a couple of questions?').

Thus, in a short and understandable way all core information on project was conveyed. Only after driver agreed to proceed, was the survey started. In case of a refusal, which in most cases resulted from the lack of time, second approach was made. In majority of cases, the respondents explicitly stated, when they want to be interviewed. Therefore, a second contact was made at the time chosen by the respondent. Depending on location, respondents were approached in different conditions. Description of these conditions is given in section 2.6.

Self-administered interview

In the self-administered interview respondents are asked to write down answers to questions by themselves. In this type of survey, additional care must be taken when the question wording is considered, since there is no one to explain any unclear matters.

Since there is no interviewer to brief in the research project to responders a short introduction in the beginning of the survey form is necessary. It is of utmost importance to

²² Norwegian form for 'hi'.

²³ Majority of Universities are known for the city they are located in and not by their name.

keep this part to the minimum for at least two reasons. Firstly, a lengthy introduction suggests long and burdensome questionnaire, which will reduce the response rate, due to people's withdrawal before commencing. Secondly, the longer it is, the less likely it is the respondents will read it. Consequently, if there was a crucial information (i.e. colour of pen – other might not be processed by scanning machine) it would not be recognised, resulting in incorrect responses. Irrespective of what is written in an introductory part, questionnaire shall be prepared in such a way that it can be completed without reading a brief. As minimum, such introduction should include:

- 1) Greeting.
- 2) What is the research about?
- 3) Instruction on how to fill in the form.

As aforesaid, to further extend the reach of the form, two options of self-administered form were offered: CATI and PAPI. Both are very similar with only minor differences. For instance, when computer assisted questionnaire is considered, it was reasonable to insert link to Donna Diesel when asking about it, since the respondent (assuming access to Internet on the device that was used) could go online and see the guide. Such action could not be possible in the latter case.

List of questions was slightly different than in the interviewer-administered form. Lack of possibility to hand in the translation to respondents called for removal of question, the intention of which was doing so. Having in mind that the target group already had some experience in driving in Norway it was reasonable to remove questions about being for the first time in the country. For full discussion on inquires see sections 2.3.2 and 2.3.3.

2.3.1. Survey form

Layout

The layout of questionnaire is far more important in self-administered forms than in interviewer administered. However, straight from the beginning (even before going multi-modal) great care was taken to make layout clear. It was done so for two reasons: for the interviewer's convenience and for clarity of translated handouts. Firstly, spaces left for answers were of indication to how long response is expected. Secondly, plenty of white, non-used space reduces responders burden (Stopher, 2012). Thirdly, use of indentations was a supplement to skip pattern, which was also indicated by textual clues (verb 'go' was used instead of 'skip' for simplicity). All intended questions are related to the previous inquiry - sometimes the one directly before, sometimes not directly, but always regarding one matter and seeking for specification.

When multimodality was incorporated in the study, the clarity of layout was of utmost importance. Further effort was made in order to deliver the most appropriate form. Much care was taken to remove even the slightest irregularities. An important aspect influencing perception of the form and easing answering is whether all available options (in closed questions) or all space for the answer (in opened questions) are on the same page as the question. If not, the responder might not recognise additional checkboxes and try to find the best answer in ones directly under the inquiry and possibly get frustrated, when proper choice

is not there. In the case of open questions if the respondent sees only a part of space, he might answer only partly of what he would have, when offered full space on the same page.

Due to author's ecological beliefs, less professional two-sided way of printing questionnaires was used instead of one sided. It would ease interviewing process with use of clipboards, especially outdoors and in particular in windy conditions. Nonetheless, green attitude was stronger.

Question wording

As aforementioned, language difficulties were expected (and were encountered). Since possibly for none of drivers interviewed English would be the mother tongue, grammar and vocabulary were kept to the minimum. Sometimes neglecting the first one in favour of simplicity (as in one question²⁴ where Present Perfect was changed to Past Simple). Such negligence was not undertaken in case of translations; however simplicity of questions was still in mind. As Stopher (2012) suggests, language of survey should be as simple as if questions were asked to a nine-year-old. Consequently, the use of short and simple words was incorporated in the questionnaires as advised. They are easier to understand, which is important in case of communication in non-native language. They are also more common and casual. This reduces distance between a truck driver and an interviewer. A general guideline is to use fewer words when possible. However, in many cases fewer means more specialised and consequently less common. Therefore, even simple questions 'Where from...?' or 'From whom...?' were replaced by 'Where did you get...?'

2.3.2. *International driver form*²⁵

1) *Which country are you from?*

Even though nationality is more of a 'About you' question, it was asked as the first one in order to get an indication, which language to proceed with. In case of the response 'Poland' interviewers switched to their mother tongue. In case of Norway – into Norwegian (when possible). Finally in case of other language either continued in English or handed out translated forms. From that point the interview could go in two directions. Having a written translation eased the respondent's burden to such an extent that answers could be given in English. Otherwise a person being interviewed wrote down answers in a language that could be easily translated otherwise responded to only closed questions.

2) *Have you worked in Norway as a truck driver before?*

In the first version of questionnaire this question was intended to truck drivers, who are in the country for the first time.

3) *Did you see Norwegian Public Road Administration's (Statens vegvesen) Donna Diesel trucker's guide? It is in English, Finnish, German, Lithuanian, Norwegian, Polish and Russian.*

The purpose of this question was to track how spread and available Donna Diesel is amongst respondents. The guide was intended to help international truckers by addressing the

²⁴ Final version of question: Did you get any information about (...)?

Previous version of question: Have you got any information about (...)?

²⁵ For full text of questionnaire see Appendix B.

most common issues while operating in Norway. It is desirable that drivers are aware of its existence.

If the answer to this inquiry was positive, a respondent was asked a more specified question. Otherwise a simple skip pattern was used.

4) *Which sections did you find helpful?*

If respondent had seen Donna Diesel, he²⁶ was asked a specifying question about its content. When it was necessary for recollection which matters were described in the handbook, printed copies were shown (available in English, Norwegian and Polish). Responses to this inquiry were supposed to indicate which information presented is most helpful and therefore shall be considered as the first one to deliver to drivers not familiar with this publication. If the respondent requested it, the guidebook was handed to him.

5) *Did you get any information about Norway or Norwegian road conditions or Norwegian laws (except from Donna Diesel trucker's guide)?*

The reasoning behind this inquiry was to monitor whether truckers got to know anything about the country they are going to work in. If the answer was positive, specifying questions were asked to determine where they got information from and what it was about.

Text in parenthesis was written originally in italics to visually indicate to the interviewer (or respondent, when translation was handed out), that this part is somehow different than the rest. It infers that it shall be applied only in specific situations (positive answer to Donna Diesel question).

6) *What was this information about?*

If the answer to the previous inquiry was 'yes', the driver was asked to indicate what this information was about. The purpose was to specify which information he was given (the company found it is important for him to know) or he found himself (he thought it is important for him to know). This question reveals what is perceived as valuable knowledge to truckers.

7) *Did the company give this information?*

The question is a further interrogation in case of a positive answer to the fifth question. Now it is time to specify where information was found. If it was delivered by the company, the next inquiry would be skipped.

8) *Where did you get this information?*

In case of a negative response about company's input, a driver was asked to state, where he got information from. The answers for this question will help map how information is spread and how accessible it is. These two combined will be of importance, while creating a new system of communication with drivers - essentially, which media to use.

²⁶ Hereafter male pronoun is used for the respondents.

9) *Which information about driving in Norway do you find helpful?*

A general statement by a respondent about what is good to know when driving in Norway is considered. A list of notions given by each driver would allow for categorising and prioritising information to be delivered to foreign truckers in future.

10) *On a scale from 1 to 5 (1=not at all; 5=completely), how prepared are you for Norwegian winter conditions? Being prepared means: skills (training, experience) and equipment (tyres, chains, clothes)*

Asking questions about perceived state of preparation has a certain amount of bias incorporated. It is mostly due to different self-confidence levels, age and experience. For instance, if one has managed all the situations so far and has not participated in an extremely challenging one which could possibly overwhelm him, he will grade himself higher than he should. However, no other means to measure the state of preparation were available. In order to minimise this bias, items considered as a part of being prepared were listed.

1 to 5 Likert's scale was used to rank preparation for winter conditions. Usual: strongly disagree, disagree, neither agree nor disagree, agree and strongly agree was changed to numbers without indication of their level of preparation. In this case there would be one state of being unprepared and four for being prepared. Such unbalanced scales are not recommended by Stopher (2012). They indicate that the state with just one option is bad/inappropriate and thus encouraging some respondents to enlarge their rating than it is in reality. Offering odd number of degrees of preparation implies that a certain balance state exists and allows drivers to relate to it.

11) *Would more information make your grade better?*

A follow up question, the purpose of which was to determine if in driver's opinion more information would make him more prepared. Negative answer opens a skip pattern.

12) *Which extra information would you like to get? When, where, how would you like to get this information?*

If the trucker indicated that more information would be useful, he was asked to specify which one it would be. A statement on preferred place, time and means of delivery of the information in question was sought as well.

Compound inquiry was used to save space and make the form shorter, while still providing valuable data. Precautions were taken so that this inquiry does not become so called 'double-barrelled' question. In this type of interrogation, the respondent is asked about one matter from two unrelated points of view. For example 'do you think that students should have more classes about history and culture?'²⁷. These two matters are unrelated, but respondent is forced to make a statement on the two of them combined. Consequently, if person interviewed thinks that just history classes would be enough (no culture classes necessary), response has to be no.

This question concluded theoretical questions about the information that truck drivers have and would like to have.

²⁷ Example after http://en.wikipedia.org/wiki/Double-barreled_question

13) *How often are you in on-road situation in Norway, that causes loss of money? Loss of money means: material damage, loss of cargo, Viking²⁸, insurance etc. but NOT late delivery cost and petrol.*

Starting from this inquiry, drivers were asked about their (potentially) dangerous situation record and possible solutions to them. Firstly, they were asked about dangerous situations in Norway which cause loss of money. The term 'in Norway' is important. This is due to the fact that was noticed during pilot study. Foreigners when asked about driving in Norway started thinking what is so special about driving in this particular country. They reached a conclusion that it has to do with winter and aforementioned difficulties. Hence answers were about what is specific to Norway and not traffic in general.

Exclusion of cost of petrol and late delivery cost might come as counterintuitive. It was done so in order to make a division between two types of situations. Those in which driver caused damage or needed assistance, that he needed to pay for and situations where for instance the truck got stuck in a ditch, but the driver managed to help himself without costly help.

In this closed question the answers were prepared in a way that the distinction between not having accidents/incidents because of skills and not driving in winter conditions was available. Ranges used promoted safe driving, since the minimum limit for the last (open-ended) category was 20 situations a year, which essentially is one every two weeks.

14) *Can you give short description of one situation?*

Whenever the respondent indicated that there was at least one situation, he was asked to describe a chosen one. No matter which set of circumstances he described it was a valuable input into research - if it was the most recent situation, the most often or the most dangerous. The first case is neutral. When most common issues can be tackled it is always a progress on the way to better driving environment. Finally, identifying most dangerous situations is of great importance as well. It allows for taking proper countermeasures against them, thus limiting losses related to most hazardous conditions.

15) *Could this situation be avoided if you had more information?*

A simple yes/no question, where a possible solution for situation described was sought.

16) *Which information would it be?*

If in a trucker's opinion, the situation in question could possibly be solved if more information was provided, he was asked which information was necessary to prevent such circumstances from occurrence in future. This question gave drivers a possibility to indicate that they knew everything, but the other road users could benefit from more information.

17) *How often are you in on-road situation in Norway that causes only time loss? This includes late delivery cost and petrol.*

As aforementioned, this question is interrelated with the thirteenth one. The reasons for its existence and inclusion of monetary costs in 'only time loss' inquiry are described in

²⁸ There are more towing companies in Norway than Viking, however, this one is the most recognisable and therefore any towing assistance hereafter will be referred to as Viking.

the previous section. If any time-consuming situation was reported, the same specifying questions as after inquiry 13) were asked. Ranges used were the same as previously.

About you

To be able to categorise responses, truckers were asked to state a little personal information. In the beginning two questions about a person: firstly nationality (which was in most cases rewritten from first question) and secondly gender.

The following inquiry was about the experience as a truck driver. Ranges used to state experience are not mutually exclusive (with three years one can use 1-3 and 3-5, 3 years of experience are in both categories). However, it seemed to the author that obtaining driving license is not such an important event in one's life to remember when exactly it happened. Hesitation whether it was almost three or just over three in alternative scale (1-2 and 3-5) would produce same bias as it is now. Ranges used could be named: unexperienced, with little experience, with some experience, with plenty of experience, experienced. It does not say anything about driving in winter. One might have been working as a trucker in, for example, Italy for 15 years and then go to Norway and wreak havoc. It was assumed that doing one task (driving a truck) for that long, one is at least theoretically prepared for the majority of cases.

Fourth question was about type of employment. The choice set is not exhaustive, since there is no option 'self-employed' (own company), but in a vast majority of cases options given (freelancer and contract) were sufficient. The answer to this sub-question will help determine whether drivers shall be approached directly or actions on an organisational level would produce better results in case majority of drivers were employed by companies. This reasoning corresponds with the next question about a company name.

Proceeding inquiries are about destinations. They are used to map where drivers go and relate it to a problem they experience. Last but one inquiry is about a number of jobs a year to particular regions of Norway. Each respondent was presented a map of Norway (same as in Figure 1:1) and asked to state how many jobs a year he has to do in every region. Ranges for number of jobs correspond to number of dangerous situations in questions thirteen and seventeen. Ranges were kept the same to allow easier comparison of data. For instance if a trucker has 11-20 drivers to Northern Norway and 5-10 situations that cause delay it might be assumed that he has some sort of trouble every second time.

During interviews in Mo i Rana additional question was asked at this point. As agreed during meeting with partners in NPRA in Oslo on 17th of March, truckers' opinion on resting places in Northern Norway is of interest. Therefore, drivers were questioned about number, availability and standard of such facilities in northernmost counties.

Finally, truckers were offered time to comment on a topic of information requirements for international truck drivers. They could also discuss anything that is not related to the main topic, but they find relevant or give feedback on questions or interviewer.

2.3.3. Norwegian driver form²⁹

Since questions 1, 3, 4 and 'About you' are same as in International driver form, they are not discussed further in this section. Same is true for questions 13-21, which correspond to numbers from 12 to 20 in International form (see previous section).

²⁹ For full text of questionnaire see Appendix C.

- 4) *Did the company or any other source give additional information about driving in snow and ice conditions?*

As aforesaid, foreigners usually described Norway-specific situations. However, for local truckers more precise questions had to be addressed, otherwise they referred to typical traffic situations. That is why phrase ‘in snow and ice conditions’ was included. The use of this expression instead of typical ‘winter conditions’ was caused by a response in the pilot study. A respondent firstly said, that he had no record of dangerous situations in winter conditions. He indicated later that in summer season in Northern counties his trailer slipped on ice to a ditch. Hence, a conclusion was reached that snow and ice conditions when occurring in summer are not necessarily associated with notion of ‘winter conditions’.

Word ‘additional’ was used to emphasise that not only regular trucker training is considered, but also everything else they got to know later.

- 5) *Which information did you find helpful?*
6) *Which extra information would you like to get? When, where, how?*

Understanding of which information local drivers value, will help create a set of guidelines for international truckers. Hence, there is no need to analyse these two questions separately.

- 7) *What is your opinion on foreign truck drivers driving in snow and ice conditions?*

There are various benefits from this question. Firstly, assurance if international truckers are perceived by local colleagues as problematic, as they are presented in the media. Secondly, it allowed for creating a specific sort of bond between the interviewer and the respondent, where the latter one can complain and state his mind freely. This task was eased, since either there were only Norwegians in the area or the interview was done in a special room on an one-on-one basis or respondents were approached in their trucks, where none of non-Norwegian co-workers could possibly overhear what they think. Thirdly, it eased the interviewer to engage in a discussion with a truck driver, asking about specific statements.

- 8) *Do you think additional information can improve their driving in snow and ice conditions?*

The purpose of this question was to determine whether Norwegian transport actors think if anything can be done about the present situation by providing additional information for foreign truckers. Snow and ice term was used as it is the most challenging part of driving in the country and therefore the most important to tackle.

- 9) *Which information?*

Whenever respondent indicated in previous question, that additional information can be of help to international truckers, he was asked to specify, which information it would be. Answers, cross-checked with statements in the questions 5 and 6, will create a basis for creation of a dataset for foreign lorry drivers.

- 10) *When should they get it?*

Having answered questions, if additional information can help, what information can help, there are two more things to determine - when and how. How is more of a personal matter and means of communication ought to be picked by interested party. However, ‘when’

is a more general question. Therefore, Norwegian drivers were asked as well, when in their opinion foreign truckers shall be fed with information about driving in the country.

11) *And how about additional training of driving in snow and ice conditions?*

As one can expect, the information and theoretical knowledge is not enough. Experience is at least as important. Hence, local drivers were also asked whether additional training can help international drivers improve their performance.

12) *Who should pay for this training?*

In original wording, this question sounded 'Who should organise this training?'. However, it was changed after pilot study, after hearing the statement that no matter who organises, what is important is who is paying. And that is true. It would be best to train drivers to Norwegian conditions in the country and such course can be organised by a Norwegian institution. Nevertheless, paying for incompetence of foreign drivers from Norwegian budget might not be acceptable by public. Results from Cost-Benefit Analysis (or any other tool), where cost of training would be weighed against savings (for accidents and incidents that would not happen) and other not recognised costs (towing, material damage etc.) is a completely different matter.

2.3.4. Sample

The sample of drivers interviewed in this research could be described as clustered - could, because there is one aspect that is not fulfilled. As an example, let the population survey be used, the purpose of which is to study citizens of one city in order to explain what cluster sample is. In this type of sampling several quarters would be chosen (preferably randomly) and everyone living in these districts would be interviewed. These quarters would be called clusters.

In terms of research conducted, clusters are terminals. Hence, the issue which differs the sample from being purely clustered is reaching everyone (or almost everyone) in the cluster. As can be easily imagined, surveying all the drivers at a certain terminal is not possible. In such a terminal drivers from different countries, with different goods arrive at different times. Hence, it is not possible to reach everyone, who at some point of time were, are or will be in the facility. Even approaching only those working for the company running the terminal takes plenty of time, since either they do not have time or they are not present doing long haul. The workers of national companies provide valuable responses. However it would be best to reach those employed in other countries and only sometimes operating in Norway.

Selection of terminals was done partially randomly. Starting from most recognised companies (Postnord, Bring) and moving to smaller, a contact was sought. A positive response pattern might be called random. The author contacted multiple firms and only some agreed to let the interviewers into their facilities.

The selection of cities was a different story. Oslo and Mo i Rana were not picked as randomly as they should to get the best results. The capital of Norway was chosen for the amount of goods transported there, the size of an industrial area devoted to logistics and the number of fatalities in accidents in which international truckers were involved annually. The second location was selected based upon the article by Lysvold (2012), where she states that

in only the three first months of 2012 about 200 foreign lorries created chaos on roads just in Nordland. Hence, that location in that county was included. The reasoning behind it was that even if a limited number³⁰ of interviews is conducted, a very valuable material will be obtained, since the majority of international truckers will have problems of some sort while driving in the area.

One of the biggest disadvantages of a clustered sample is homogeneity. This problem was encountered especially in Oslo, where the drivers on certain terminals at certain time of day shared many characteristics. However, interviewing at more than one terminal and at more than one time of day, reduced bias arising. Secondly, transport market itself counteracts bias of homogeneity and that is why the sample in this research cannot be called clustered. As drivers are mobile, they are not assigned to one particular place and could possibly be met in more than one location.

2.4. Pre-tests

Before initiating a pilot study, forms were shown to partners and acquaintances of the author in order to check if the inquiries are understandable and the layout is clear. Some issues were raised. Part of them were incorporated in the questionnaires and some (i.e. split between money and only time with inclusion of petrol and fees on-road situations – questions 13 and 17 in international forms) were disregarded. The reasoning behind this decision was presented in a proper part of section 2.3.2.

2.5. Pilot study

Pilot study for the research was conducted on 29th of January and 3rd of February at Postnord terminal in Trondheim. During these two days several Norwegian and a few of international drivers were interviewed. Their responses contributed to great changes in the questionnaires. Question wording, order and even presence and/or absence of questions were all improved based on what had been said. Not only were the forms influenced, but also the way of interviewing: how respondents were approached, when and which materials were to be shown etc.

However, as aforementioned, some minor issues were not discovered until full scale study. Therefore it would have been wise to do a second round of pilot study to check changes in forms on a different terminal in Trondheim.

2.6. Full scale study

In order to get into the terminal several companies were contacted. First attempt was made by electronic post, second by phone and third in person. Whenever possible an employee in position of a terminal manager (or close to the position) was sought online and if found - contacted. If a web search for someone in charge of the facility was not successful, customer service was used.

When cooperation was established, time and date set, the interviewers went to the facility and started interviewing, following all company regulations (i.e. wearing reflective vests). Depending on the on-site possibilities the interviews were conducted in three different

³⁰ City of Mo i Rana has approx. 18'000 inhabitants and further North from the city, there are few larger human habitats. Hence there is no need for extensive truck transport.

circumstances. The most preferred one was in the canteen, where the drivers rested on comfortable couches, had warm drinks and food. Such relaxed environment influenced responses, producing best answers and easing the task of engaging respondents in the conversation. Such circumstances shall be preferred over any other, not only for a high quality material, but also for the researchers' convenience. Second best location was inside the terminal in an unloading area. Much attention had to be paid to forklifts, but it was warm and the driver could perform his tasks if necessary, while responding to the survey. The least favourable was interviewing outdoors. The noise and the difference of levels between interviewer and respondent (driver was usually sitting in his truck) made it difficult to talk. Moreover, in this environment there is the lowest chance of truckers having time to spare, since in the majority of cases, they just came for cargo and would be going away soon.

An overview of surveying process is presented in Table 2:1. As can be noticed, much effort was made in order to get most diverse data. For reasons stated in 2.3.4 the interviews were conducted in different times of day. On the biggest terminals both interviewers were present. The facilities operated by different companies and in different cities were included. All of these measures assure minimised bias and maximised value of responses obtained.

Table 2:1 – Overview of surveying process

Date	City	Terminal	Time of day	No. of interviewers
29.01.2015	Trondheim (PS) ³¹	Postnord	Afternoon	2
03.02.2015	Trondheim (PS)	Postnord	Afternoon	1
16.03.2015	Oslo	RailCombi	Morning/Afternoon	2
17.03.2015	Oslo	RailCombi	Morning	1
17.03.2015	Oslo	Postnord	Afternoon	2
17.03.2015	Oslo	Bring	Night	1
24.03.2015	Mo i Rana	Postnord	Morning/Afternoon	1
25.03.2015	Mo i Rana	Postnord	Morning	1
25.03.2015	Mo i Rana	Meyership	Afternoon	1

³¹ PS – Pilot study

3. RESULTS

3.1. Introduction

In the present chapter results of 73 conducted interviews will be presented. Firstly, the sample will be described. Secondly – information that truckers have, followed by the information what they would like to/should get to know. Next, accident record will be given and cross-checked with the knowledge that could prevent it from occurring. Finally, short discussion on a state of public parking facilities in Northern counties will be provided.

3.2. Respondents

The respondents of the survey can be split in three groups: Norwegians (22), random international truckers (34) and foreign drivers after special training to driving in the country in their company (17)³². These respondents form homogenous subgroups, which share different characteristics and therefore cannot be analysed together. For a statistical presentation of the sample, in this section all truckers are put together. However, in the following sections there is a clear division between these groups. Whenever no answer was provided to a question and a statistic was drawn, non-response answers were excluded.

A total population of respondents consists of 73 truckers: 69 male and 4 female from thirteen countries. Figure 3:1 presents percentage share of drivers by nationality. Category ‘Other’ consists of six nations with just one representative³³.

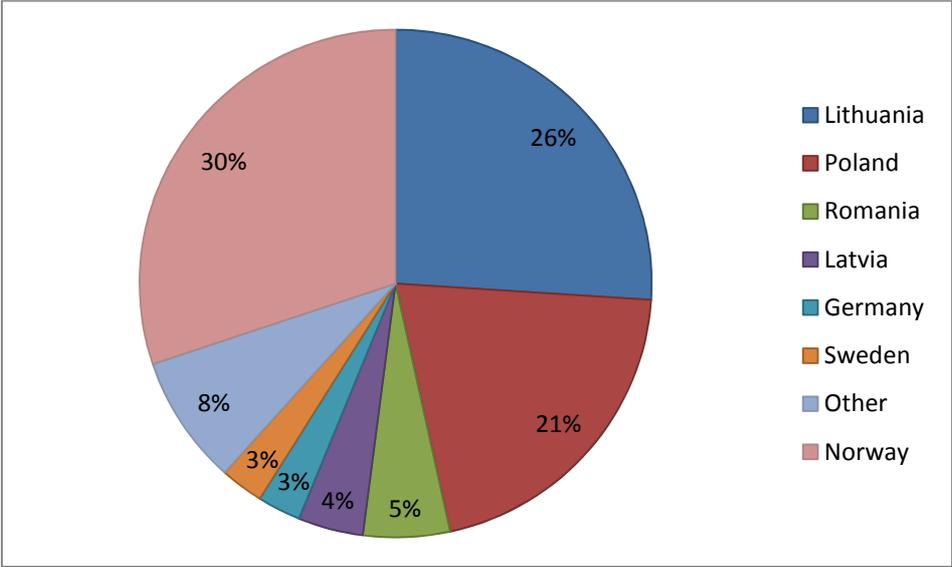


Figure 3:1 – Respondents by country of origin

When experience is considered, it was rather high. No ‘freshman’ with less than 1 year as HGV driver was approached. 71.8% of the respondents were in the business for more than 5 years and 43.7% for more than 10. 98.6% of those who stated their employment status (only one respondent did not) were hired by a company on a contractual basis.

³² Hereafter non-Norwegian groups will be referred to as: random and trained. That does not imply that members of the first one lack training.

³³ Countries included in ‘Others’ are: Greece, Iceland, Iraq, Italy, Morocco and Turkey.

When one looks at destinations, the truckers interviewed were driving to each and every region of Norway. Figure 3:2 shows percentage split between answers in a number of a year to different parts of the country.

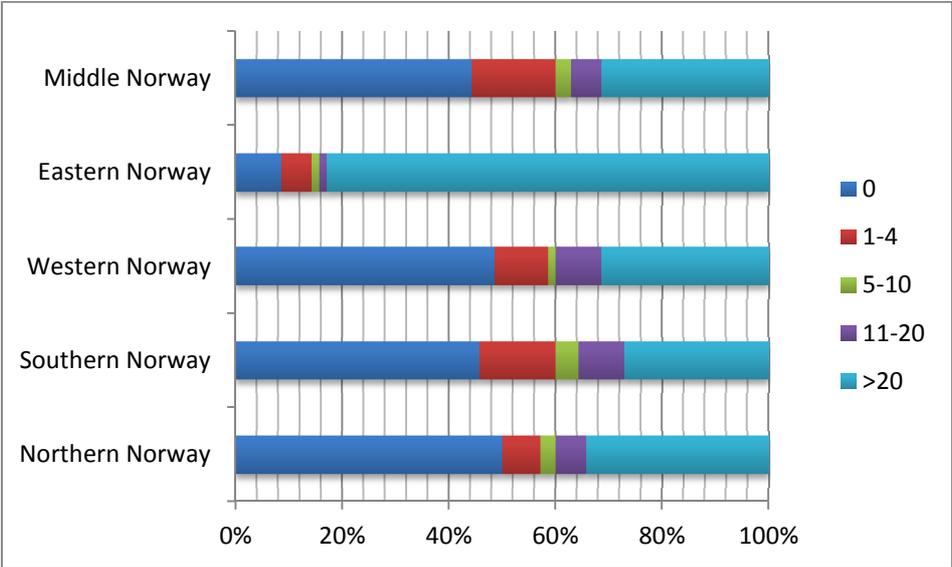


Figure 3:2 – Number of jobs to regions by destination

3.3. State of knowledge

This section is a summary of answers to questions from 3 to 8 from international form (see section 2.3.2) and form 2 to 5 from questionnaire for Norwegians (see section 2.3.3).

Donna Diesel

When random drivers are considered, approximately every fourth trucker was aware of the handbook. Those who read it, stated, that everything was relevant for their work. Chains, tunnels and ‘things that are not in Europe’ were mentioned specifically as the most important sections.

On the other hand, only one of trained truckers did not read the guidebook. Once again ‘everything’ was the most common answer, when asked about which sections are helpful. Matters mentioned by name were: winter driving and equipment (i.e. tyres and chains).

The lowest percentage of people who have read Donna Diesel was within Norwegian group. Less than one in five went through the handbook. However, many more were aware of its existence, due to the fact, that fish industry related plants have guidebooks available to drivers. Only one person answered specifying question about helpful sections and the answer was as previously – everything.

Other information

In random drivers group 61,8% of respondents got some sort of information about driving in Norway. The most common matters for them were: traffic rules (32.3%), equipment and winter driving (both 17.6%). When road conditions are included, 65.1% of all the answers given were within the scope of these four notions. The most common sources of information were: company, colleagues and courses.

In the trained drivers' subgroup, as expected, each and every respondent got information about driving in the country. The spectrum of issues was slightly broader, because of a safe and economic driving course in the company (the most frequently occurring response – 70.6% of respondents gave it). When the notions used by random truckers' set supplemented by the course are considered, slightly less than 85% of all answers are related to these five matters. As one can expect, in this group the company was the most often reported source of information (100%). Except for the employer, the respondents got information from the Internet and colleagues.

Norwegians on average are only slightly less eager to get additional information. 59.1% of them admitted that they received some sort of extra knowledge about driving. Mostly it was about driving techniques specific to seasons (winter, spring/autumn) or location (mountains), followed by 'everything'.

3.4. Information requirements

This section is a summary of answers to questions from 9 to 12 from international form (see section 2.3.2) and form 6 to 13 from questionnaire for Norwegians (see section 2.3.3).

Preparation for winter conditions

Exactly half of the respondents in a random drivers' group graded themselves as fully prepared for Norwegian winter conditions. Remaining half is distributed equally between 3 and 4 in a 5-point scale.

Also in trained truckers' group half of the members stated that they are completely ready for tough conditions of Scandinavian Peninsula. 77.8% of the remaining respondents graded themselves as almost prepared and the rest - as average.

Obviously, Norwegians rated themselves much higher than any other group. 75% of them stated that they are fully prepared and majority of the remaining used 4 as their grade.

Improvement

Random drivers are eager to get new information. Every second of those who graded themselves as not-fully-prepared declared that more data would improve both their preparation and driving in the country. The answers were mostly related to road, weather and traffic conditions as well as to driving skills. In truckers' opinion, the most convenient form of providing information is radio followed by smartphones in the broadest sense, meaning texts, app, email... Depending on a sort of data being distributed, it should be made available to drivers live (road conditions, convoys etc.) or annually (in case of changes in traffic rules). Every fourth trucker claimed that only through experience can their performance be improved. However, both random and trained drivers think that every piece of information is helpful, with winter driving specifically being named most often.

Trained truckers do not see additional information as a means to improve their performance – two thirds support this statement. Those, who do not, would like to receive some materials on driving techniques. However, even those, who graded themselves as fully prepared, are highly dependent on information to keep their performance high. Irrespective of the preparation, all truckers from this subgroup are interested in updates on changes in laws

and regulations, preferably by email. Other suggested means of communication is Internet (with an emphasis on social media and video-sharing websites).

Norwegians, on the other hand, do not want additional information. Almost 68.2% of respondents claimed that they do not need anything. When response 'experience' is included, more than 80% of truckers can be associated with this statement. When asked about an opinion about international truckers, many harsh words were said: useless, dangerous, stay at home/do not come to Norway, no skills and/or experience together with a never-ending list of complaints about their (poor, if any) equipment and truck not being prepared for local conditions.

Local truckers see necessity to provide information to HGV drivers from abroad. 81.8% of Norwegian respondents believe that additional information can help foreigners improve their performance. According to local truckers, international colleagues should be informed first and foremost about the equipment in the broadest sense. This includes: tyres, chains, truck (especially the use of bogie) and how to load cargo. Second most important matter is driving technique, with an emphasis on winter driving. Information covering these topics shall be made available in home country of international truckers or at the latest on border.

Nonetheless, information is not everything as many drivers place experience over knowledge for a reason. When Norwegians were asked, whether training could improve foreigners' performance in the country, 90% agreed with the statement. They suggested that companies are responsible for competence of their employees and therefore should be the one to pay for driving courses.

3.5. Accident record

This section is a summary of answers to questions from 13 to 20 from international form (see section 2.3.2) and form 14 to 21 from questionnaire for Norwegians (see section 2.3.3).

Loss of money

As specified in question, 'loss of money' situation includes neither late delivery cost nor petrol. It can be clearly seen, that random foreign drivers pose the highest risk, both when it comes to percentage share of drivers involved in such situation as well as a number of situations per driver (Figure 3:3).

All subgroups used the same words in similar proportions to describe situations they were involved in. These words are: other driver (sometimes specifying as foreign and sometimes even as foreign trucker), slippery and bad weather.

36.8% of the respondents involved in situation in question declared that more information would help avoid the situation. Some have not stated exactly what sort of knowledge would be necessary. From those who did, the increase in the number of road signs is the only answer that was repeated. Other responses relate to traffic rules, road conditions and weather.

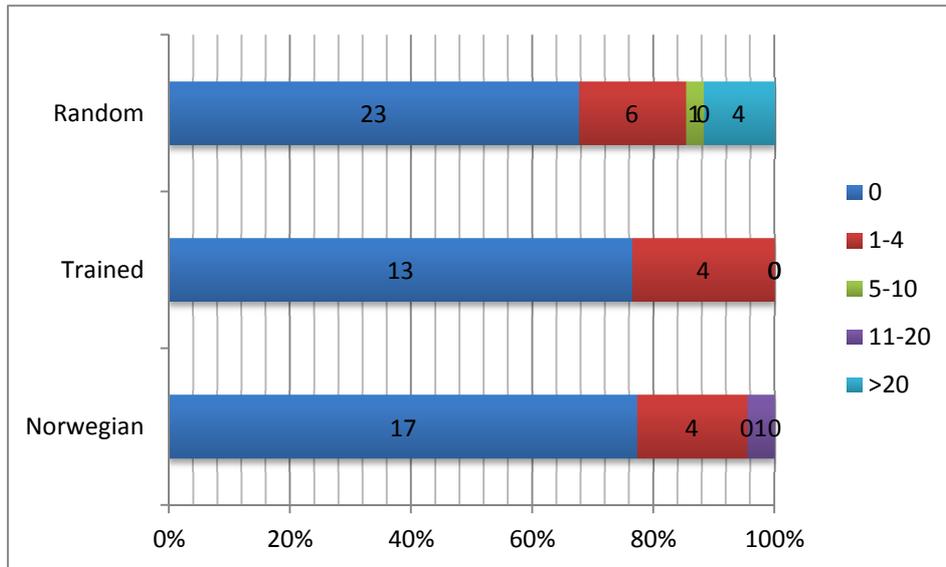


Figure 3:3 – Number of ‘loss of money’ situations by subgroups

Loss of time

In this inquiry loss of time and cost of petrol are included. The same pattern as in ‘loss of money’ can be spotted here. The sample of random drivers indicated, that they have the highest number of ‘loss of time’ situations. They also have with far bigger percentage share of more than 20 situations a year than any other subgroup (Figure 3:4).

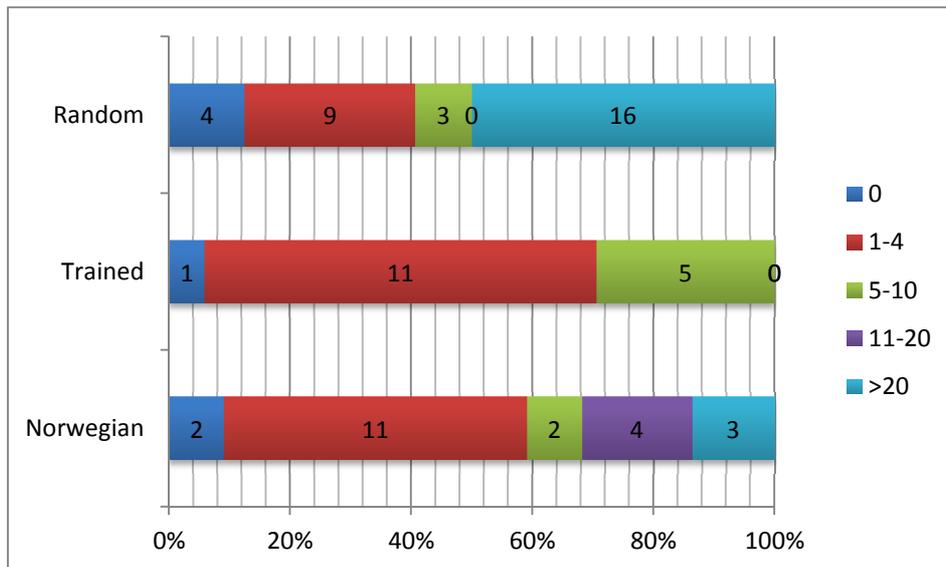


Figure 3:4 – Number of ‘loss of time’ situations by subgroups

The proportions of causes of incidents are similar amongst random, trained and Norwegian truckers. 75% of all words used are the following (in order of descending popularity): bad weather, closed road, traffic, other drivers (sometimes specifying that it was foreign trucker blocking a road) and slippery road.

From the three scrutinised groups, Norwegians are the ones that believe most that more information could help avoid ‘loss of time’ situations or at least handle them better. 31.8% of them think that knowledge would aid the problem. In comparison, this number for either trained or random foreign truckers is twice as low. From the few, not introduced

truckers who think that information can help, the most appreciated one would be data on traffic conditions. For those introduced route guidance in broadest sense (including closed roads and convoys) would be valuable. Local actors usually saw a problem in others lacking knowledge about equipment and use of truck in difficult conditions (70% of answers).

3.6. Parking lots in Northern Norway

In general, the perception of resting areas in Northern Norway is very negative – no positive opinion was heard during interviews. Usually words varying between bad and disgusting were used to describe parking facilities provided by Statens vegvesen. Truckers claimed that they prefer to sleep close to petrol stations, because there are very few public lots. They are hard to reach, poorly marked, lack services, toilets are closed during winter or they are not there at all. On top of it parking lots are sometimes located in bays along major routes, where sound of passing cars does not allow for resting properly.

Similar complaints were mentioned about a possibility to rest in Alnabru area in Oslo. HGV drivers try to get some sleep by petrol stations, but they are not allowed to. Obviously in the extensive infrastructure of a capital it is much more difficult to provide parking lots for this purpose. This situation was reported by one trucker. However, for the time being, the inquiry about parking lots was not a part of the questionnaire, so information on such facilities was not sought – it was given as a comment.

Another opinion is also worth noticing, even though it is only partially related to the matter. One trucker claimed that on his way to Northern Norway he sometimes prefers to go via Sweden. It is so, because of better road infrastructure. It might or might not be anyhow related to parking lots, however, it is fair to say that such facilities are part of road infrastructure.

4. DISCUSSION

4.1. Introduction

In a present chapter a discussion on results presented in section 3 will be provided. Firstly, a sample bias will be explained in order to emphasise caution with which the results should be approached. Next matter to be scrutinised is the information. Argumentation for providing more data on some topics and less on others will be given. The following section will discuss social matters raised by truckers. Later, the attention will be paid to Norwegian HGV drivers' training. Finally, the post-surveying consideration on questions will be provided. Section 4.3 is based on answers to the questionnaire. The rest of the matters scrutinised is based on comments that truckers gave at the end of interview or during the conversation afterwards.

4.2. Bias

Representativeness entails exhibiting a likeness or being typical (Stopher, 2012). First of all, a sample is too small to represent a whole population of foreign truck drivers in the country. The same holds true for a trained and Norwegian groups. Secondly, the sample of international truckers on its own is big enough (bigger than 30) to allow to draw reasonable statistical conclusions based on the interview. However, the national groups have low number of respondents. In each and every case this number is lower than 19³⁴. This situation does not offer a possibility to come to conclusions that truckers from one particular country need some information more than drivers from another. Hence, both results and their discussion shall be treated as an indication and not as an concrete proof of state of knowledge/preparation of truckers from one country or another.

4.3. Information requirements

'A driver's decision is mainly based on information received through his/her senses (first and foremost the eyesight) and the knowledge and skills the driver possesses. It is therefore a matter of information gathering and information processing.' (Statens vegvesen, 2014a). Let this motto be a key to analysis.

State of knowledge

Majority of truckers interviewed got some sort of information about how it is to drive in Norway, prior to arrival in the country. Everyone from those who did not (34.3% of random truckers population) had at least 5 years of experience as a HGV driver and graded themselves on average as 4 out of 5 in preparation for driving in Norway question. This sounds like good news. However, the information collected was often fragmentary. For instance, speed limits were mentioned and not traffic rules in general. From the few who have seen Donna Diesel, almost everyone sought more information. From many who have not, only half made an effort to get to know anything. Adding to the picture the opinion of the majority of interviewed Norwegians that foreigners lack information, one can easily recall situation so common in school. Pupils do not realise that there is a problem or they should get

³⁴ There were 19 Lithuanians interviewed, however, 16 of them are in trained subgroup and remaining three in a random sample. Therefore, they cannot be analysed together anyway, limiting maximum number of foreign respondents in national group to 16.

to know something, until a teacher gives proper background information. For instance, how students can be made aware of the existence of double integrals until they are introduced to single ones. When putting this example in perspective of this project, what we receive is: how can international truckers differ between soft and hard rubber winter tyres, when they are so often reported to use summer ones instead? How are foreign HGV drivers supposed to know how to use bogie properly to increase friction on slippery uphill slopes, when its use is forbidden by EU regulations?

As pointed out by the respondents sometimes the blame is put on a driver, while actually it is company's fault – for instance the choice of a truck. Every now and then during the interview a Norwegian pointed at HGV passing by and said, that it is useless in the country, because of the axles layout. Even though it is a driver who is responsible for the preparation of the truck, the company is the one to give it to him. A vehicle chosen incorrectly makes a job much tougher. It is advisable to use tractors with 3 axles and a trailer with axles a bit more to the back (if only one set of wheels is provided, irrespective from number of axles and wheels on each of them). Thus it will be easier to keep vertical component of gravitational force before last axis on the uphill sections. A wrong choice of a truck can be to some extent counteracted by a considerate placement of cargo inside the trailer, however the steeper inclines/declines get, the lower significance of such action. Therefore, companies operating in Norway shall be approached with this information in order to increase standard of lorry fleet on roads in the country.

Information requirements

'Reason (1990) claimed that the frequency of mistakes is clearly highest when the conduct is knowledge based and lowest when proficiency based. For the driver, this means that the potential for mistakes and thus accidents is greatest when the driving is mainly knowledge based, i.e. for drivers with limited driver training' (Statens vegvesen, 2014a). It is true however, that all the drivers interviewed had some experience already. What they need is information that will allow them to adjust their expertise to the new, more challenging conditions. For example, as Statens vegvesen (2004) points out, the willingness to drive safely can be created by providing drivers with information on consequences of safe driving behaviour and risky driving behaviour.

International truck drivers are looking for information all the time. Several Donna Diesels were handed out, mostly to drivers from Poland. A respondent specified that he would like to have all the basic information about driving in Norway in one printed guidebook. It sounds exactly like Statens vegvesen's handbook. Hence, Norwegian Public Road Administration should go to great lengths to raise awareness of Donna Diesel. Responses 'everything' when asked about what is helpful in the guidebook prove that its content is nearly perfect. Now it is time to spread it amongst drivers.

One option would be to follow fish industry related plants' footsteps. As aforesaid, in these sites printed Donna Diesels are available to truckers, when they wait for cargo to be loaded. When one has not much to do, they will start going through all the materials available to kill some time. Any means that lead to increasing popularity of the handbook is recommendable. Therefore, it might be wise to take Norwegian truckers' advice and make

information available at the border during custom clearance. These might be posters, Donna Diesel guidebooks handed out, text/email with link to the handbook.

When the use of the Internet is considered, those respondents who suggested the use of social media and video sharing sites made a good point. Vegvesen is present on the most popular representatives of both. Why not create one more fanpage/channel to collect Donna Diesel information together with video materials covering some of important topics? For instance, clip on how to put chains on would probably be much more helpful than set of pictures in the handbook. A new site is necessary – otherwise tutorial materials will disappear in the number of other data.

In the majority of cases information being sought is general: weather and traffic conditions. Providing drivers with these will not solve the problem, but it will mitigate its consequences. To put it in the right perspective: knowing early enough that there is a snow storm increases the chance of taking another route (if possible). Otherwise, if a driver is aware of the lacks in equipment, the trucker might wait until the storm is over and not get surprised en route. Such information will help plan job accordingly. For instance by taking a break a bit earlier and using it to wait until unfavourable conditions are over or at least are less challenging.

In this case, some information is available online. On two of Public Road Administration's fanpages on social media 'Statens vegvesen, Vegtrafikksentralen midt' and 'Statens vegvesen Vegtrafikksentralen Region nord' information about closed/opened roads is available. Additionally, in the latter there is a direct link to NPRAs website, where one can see picture from 396 cameras located all over the country along roads, bridges and tunnels, checking on both weather and road conditions. It is very good that such fanpages exist, where a lot of valuable information is available in one place. For the first one it is not a case, since it is updated regularly, but the latter has only few posts. Some of them are not relevant. Moreover, it is a shame, that this great concept was not yet introduced in remaining three regions (West, East and South). Maybe it was, but pages are difficult to reach, in which case they might as well not exist.

Courses prove to be a successful source of information for both trained and random drivers. They ought to be considered as a means to provide truckers with knowledge. Based on popular opinion amongst Norwegians, that information should be delivered to foreign truckers in their country of origin and that companies should pay for delivery of knowledge; such courses could be organised in different European countries for companies in certain regions. An additional advantage of such trainings/seminars would be a participation of truckers, who have been working in Norway for a long time, regardless of the fact that they are Norwegian or not. Thus, voices were raised that colleagues are the best source of information could be incorporated in the process. The most important matter to be covered is winter driving with tyre requirements and chains in particular. However, as the respondents from the trained group stated when asked about helpful information – everything is helpful.

Accident record

The first thing that is worth noticing is the similarities between Norwegian and trained drivers with respect to incident/accident record, especially when 'loss of money' situations are considered. This, together with a difference between them and the members of random

truckers group, proves that international drivers need more information and more training in order to drive efficiently in the country. The company that introduces its drivers to Norwegian conditions firstly looks at the experience as a trucker – a minimum of 5 years. Then, new employees are assigned to a colleague experienced in local conditions to drive with them during summertime, before they start working in winter season. Not to mention firm's driving school, which is responsible for checking truckers' skills and inform/update them about requirements related to driving in Norway. And it does not only these, but also holds safe and economic driving course, which was mentioned by 10 out of 17 respondents from this group. This is what it takes to drive like a local. As one respondent from random subgroup said 'Driving here is very difficult. Norwegian drivers should get a medal'.

Other company prefers to use local actors. In the firm's opinion, the greatest asset of Norwegian truckers is a modern and customised equipment as well as good knowledge of road conditions in the country. The cost might be higher than the market price, but this is a low cost for high deliverability not to mention safer road climate.

The most common cause of 'loss of money' situations was the other driver. It was not possible to determine, whether more information would prevent him from creating dangerous situation, but it is fair to assume that it is true. From those who claimed that more data would help them, traffic rules and road signs (both: missing signs along the road and unfamiliarity with them) are the topics to put emphasis on – either in an informational campaign or as a part of an improvement of an infrastructure process.

From the 'loss of time' situations one can learn that what needs to be provided is the weather forecast and all things related. Even though many claim that weather is a natural phenomenon and nothing can be done about it, it can be counteracted to some extent with proper equipment and route guidance. This can be delivered easily. Other information mentioned as helpful to avoid/tackle/minimise loss of time is related to: closed roads, traffic, convoys. All of these are a simple guidance data. If there is a traffic jam on route A, trucker would like to know about it and take route B. In case of waiting for a convoy, estimated time of start is essential. This information can be easily shared on radio or internet. One can take a break instead of waiting.

'Watch signs. They are there for a reason.'

Trucker who made this response had a point. So far discussion was about knowledge and skills the driver possesses and not about what information he receives while driving. Vienna Convention on Road Signs and Signals standardises signing system for vast majority of European and plenty of other countries. Shapes, sizes and colours are similar, however, even with a common basis, differences might cause a stir. A sign warning about animals can be used as an example. In Poland there are two signs like this: livestock (A-18a) and wild animals (A-18-b). In Norway on the other hand, there are five: moose (146.1), reindeer (146.2), deer (146.3), cow (146.4) and sheep (146.5). It remains unclear to author why there is necessity for so precise division, but when first approached while driving, these signs drew more attention than necessary.

One of the matters raised by the respondents is a lack of signs, both vertical and horizontal. In order to deal with issues in the first group a couple of actions could be taken. Truckers reported that they did not receive information whether their vehicle would be able to

use certain road with respect to its size. For instance, it would be wise to increase number of signs warning that truck of certain length/height/width/weight cannot pass on certain road or at a point of no return before tunnels with limited height (signs 308-322). Road to Florø in Sogn og Fjordane was used as an example. It would be also good to increase the number of signs indicating where it is necessary (advisable) to put on snow chains (sign 780). It was indicated, that these signs are too high up the hill to be able to use chains efficiently. Entrance and exit from U-shaped tunnel near city of Røldal on road from Oslo to Haugesund was described as extremely slippery and urging for action. Obviously, in many locations these signs are already installed and it may be that visibility is obstructed.

With respect to horizontal signs the drivers mentioned that multiple stretches lack centreline. It is probably due to its narrowness. When a car is approaching from opposing direction, they feel pushed out of road. On the other hand, after providing a marking in question, traffic lanes would probably not meet requirements of minimum width. One solution to being pushed out of the road could be to expand class B driving course with matters on interaction between passenger car and HV. Two respondents indicated, that they do not feel safe driving along or passing by Norwegian cars. What some stretches lack as well is protective band on the sides, which is needed in particular on mountainsides. It might be so, that when international truckers do not feel safe in such environment. Consequently, they tend to keep speed lower and therefore do not have enough momentum to drive uphill, which eventually ends in blocking the road and causing delay.

4.4. Misinformation

Surprisingly, sometimes it would be beneficial if international truckers knew less. The prime example is calling for assistance. This situation was described by one of Norwegian truckers and later confirmed by another. Whenever a local driver is in position that requires him to call to towing company (i.e. truck fell into a ditch) he does so and depending on his location, he receives assistance in a relatively short time. On the other hand, foreign HGV drivers are supposedly instructed, that whenever they have a problem that might end up calling in for help, they should block whole road and do not call anybody. In such a case, after some time police (or road administration) officers will arrive to a crash site. Seeing traffic jam that has formed and being in obligation to provide conditions, in which traffic is flowing, they will call for Viking and pay for its service in order to keep the traffic flowing. In this case, however it takes much more time.

The most important warrant from this story is to limit possibilities to exploit loopholes in regulations and put responsibility for incidents/accidents on those who caused them and companies hiring them. Some nations might have a tendency to such behaviours – to use a trick to avoid liability. Hence, to counteract such abuse, actions on institutional level (i.e. dialog with companies and introduction of new policies) would be more successful than just informing drivers about emergency numbers, which on its own is a very good measure. However, without proper enforcement of payment from the driver (or his company) the situation in question is to occur at the same rate as it does right now, causing a lot of unnecessary delay on Norwegian road network.

4.5. Social aspect of international transport in Norway

Transport is a business as any other. Companies want to make profit and one of the ways to do so is by cutting costs. Obviously, foreign drivers will be cheaper than local ones. Their hourly rate is lower, so whenever no linguistic skills are necessary (i.e. personal communication with client), they are preferred over a more expensive Norwegian employees. As Tillman (2012) points out ‘significant price difference between Scandinavian and Eastern European hauliers will benefit Eastern European hauliers considerably in the competition for the simple >>from A to B<< shipments. For more complicated shipments, entailing a higher level of service, communication and supply chain integration, the local hauliers are expected to stand their ground’. Comparison of salaries by different nations are presented in Table 4:1. As can be seen salaries (including social costs) in particular countries vary a lot.

Table 4:1 – Salaries including social costs per hour worked in NOK for land transport³⁵.

Country	2011	2007-2011	Relative to Norway 2011	Relative to Norway 2013
Norway	284	116%	1	1
Sweden	262	108%	0,92	0,89
Poland	56	96%	0,2	0,18
Lithuania	50	108%	0,18	0,17
Latvia	49	127%	0,17	0,18
Romania	35	103%	0,12	0,12

However, Eastern Europeans seem not to be cheap enough anymore. A terrifying story was told by two drivers at different terminals. Currently, the new cheap workforce is people from Philippines and neighbouring countries. Person from this area, who is interested in a job is made an offer: 8’000NOK³⁶ a month with a place to sleep in a truck. Two-way plane ticket included. It is far less than any other nation is being paid. Additionally, the region where employees are sought, not only does not have wintertime similar to the one Norway have, but it does not have wintertime at all.

Such situation together with expected deregulation of cabotage (section 1.6.3) can lead to a huge increase in accident risk at Norwegian roads - a situation that cannot be accepted and should not occur at all. It will lead to social dumping and exploitation on a huge scale. Even now some respondents from both sides of the argument, who work in the country (Norwegian and non-Norwegian) are mentioning that the situation on the market is not fair. Moreover, in the majority of cases the client is the one to arrange transport. Hence, if a European chain of supermarkets wants to sell Norwegian salmon in their facilities, they usually will not hire a local driver to transport fish, but will hire cheaper foreigner instead. This precious cargo needs special skills to deliver it. It will go off quickly, therefore there is a necessity to drive as fast as possible. High speed and a lack of information about how to drive in winter do not add up to safe driving conditions – neither for other drivers, nor for the trucker.

During the interviews voices were raised that Norwegian and international drivers do not play by the same rules, which favour the latter ones. The first group receives extensive

³⁵ HOVI, I. B., BRÅTHEN, S., HJELLE, H. M. & CASPERSEN, E. 2014. Frame work conditions in the Norwegian logistics market. Oslo: TØI.

³⁶ Unfortunately, author was not able to determine if this number is before or after taxation.

and expensive training and still does not earn well, because of unhealthy competition. Additionally, local drivers perceive internationals as a threat. One respondent told a story about how he decided to quit long haul after tens of years in favour of distribution not to risk his life on road with foreign truckers - not to mention theft accusation. On the other hand, non-Norwegian drivers working in the country mention that they feel exploited, that locals treat them as inferior and that their salary should be higher.

4.6. Driver's license training

The biggest difference in organisation of training between what Polish and Norwegian truckers received is that for the first ones the course is time-oriented and for the latter – progress-oriented. In Eastern Europe the course for category C lasts for 50 hours: 20 for theory and 30 for practical driving. In order to get C+E, driver has to undergo another 50-hour-long training with same requirements, but this time with a trailer. In Scandinavia it takes a minimum of 38 hours to complete the C course consisting of four levels organised in seven steps (for C+E: min. 21 hours, 3 levels, 4 steps). At the end of each module a student and a teacher decide whether or not the pupil completed all mandatory objectives prescribed to a particular step. If not, additional hours are necessary.

The biggest difference in content of training between what Polish and Norwegian truckers received is winter driving. In Polish Transportation Minister's disposition there is no clause forcing driving schools to include driving in the snow and ice conditions in the practical part of the course. There is, however, a small thing about the influence of road conditions, which include: paving, angle of turn, weather conditions (dry/slippery, snow, ice), visibility and traffic on how to make a turn. Thus, there is practically no training on winter driving. It can be hoped that driving schools do better than just a required minimum. Theoretical classes about how to handle conditions in question are mandatory.

In great contrast to that there are 'past Norwegian plans for heavy vehicles, where ONLY a nine hour slippery surface driving course was mandatory'³⁷ (Statens vegvesen, 2014a). In particular, this difference can be seen with respect to chains. In Poland this matter is covered by not more than a lecture with a slide show (as is suggested in methodological guidelines in the disposition). In Norway, on the other hand, learner should be able to personally put chains on and be able to describe benefits and hazards associated with their imposition.

Situation in question does not limit to trucker's course only. In order to get C or C+E driving license one must have had B license already. As one can expect in Poland driving in winter conditions is not part of a curriculum for a passenger car and in Norway it is.

³⁷ Capitalisation not in original quote.

4.7. Discussion on questions

As surveying proceeded, some issues related to the questions arose. Some inquiries should have been removed, others moved and some rephrased. In this section these matters are scrutinised.

4.7.1. *International form*

2) *Have you worked in Norway as a truck driver before?*

After expansion of 'About you' section and inclusion of 'First time in Norway' option in it, the question should be removed from the form. And it was, unfortunately only from self-administered. Since it was not from face-to-face form, it was simply skipped during interviews.

7) *Did the company give this information?*

This question produced good responses. However, changes would result in a considerably lower effort in analysis and would make the inquiry easier for respondents by providing more exhaustive set of answers. It should be worded 'Where did you get this information?' Responses should be as follows 'Only from company', 'Only from other source (please specify)' and 'From a company and other sources (please specify other sources)'. Thus, questions 7 and 8 would be combined.

12) *Which extra information would you like to get? When, where, how would you like to get this information?*

The reasoning behind the use of a compound question was described previously and the concerns not to make it a 'double-barrelled' inquiry were stated. However, in reality a low response rate for specifying a part was obtained for two reasons. Firstly, the interviewers forgot to ask the second part (having memorised all the questions). Secondly, the respondents being in a hurry forgot to answer it and it was skipped. A conclusion was made, that even though it is not a 'double-barrelled' question (which are advised against by Stopher (2012)) the use of compound inquiries in quick face-to-face interviews shall be limited. On the other hand, self-administered form produced very good results here, since respondents, having read the whole question, answered to every single part of it.

13) *How often are you in on-road situation in Norway, that causes loss of money? Loss of money means: material damage, loss of cargo, Viking, insurance etc. but NOT late delivery cost and petrol.*

The inclusion of additional category between never and 1-4 times a year might result in more exhaustive set of answers. It has been noticed that some respondents had difficulty to find a time regime appropriate to their situation, since the frequency of such situations is lower than once a year, but they do happen.

Two matters ought to be improved in both this question and a corresponding one about the loss of time. Firstly, phrase 'go to question...' initiating skip pattern should be placed next to both 'never' options and not only next to 'I never drive in snow/ice conditions' as it is now. Secondly, there is unnecessary comma in first sentence. Linguistic errors make questionnaire

and hence whole study seem less professional to respondents. Same comment applies to corresponding question about ‘loss of time’.

About you

There are two issues that can be improved in this section. Firstly, the question about company name ought to be removed. It might be considered threatening and does not produce a valuable input to analysis without breaching confidentiality. A better way would be to ask about the size of a company expressed as a number of employees or country of origin of firm. Both options would help determine, which companies (i.e. small and from the Baltics) shall be paid extra attention if actions at an organisational level are to be taken.

Secondly, the part about destination should be rewritten. A direct inquiry about a destination ought to be removed from the questionnaire. The next question covers this matter in a more overall manner. Another aspect is a number of jobs a year in a destination matrix. After a more careful consideration, these ranges in this question were not proper. Even in the case of the highest range (twenty jobs a year) it is a one in every two weeks on average. A typical long haul trucker drives much more than this, so the indication ‘more than 20’ is not as informative as it could be. Therefore, ranges in this question should be in multiplicative relation with those in questions about number of ‘loss of money’ and ‘loss of time’ situations. It will allow to benefit from possibility of easy response analysis and being more realistic on the same time.

4.7.2. Norwegian form

6) *Which extra information would you like to get? When, where, how?*

This inquiry should be rephrased into a general question. Later, a respondent should be given a possibility to specify which information, if a primary answer was positive. Moreover, it ought to be moved from its current location and placed after the question about the level of preparation for Norwegian conditions. An inquiry similar to the one in an International questionnaire (asking if more knowledge can improve the grade) should added afterwards. Thus, easier analysis would be obtained via better correlation of forms.

However, preceding question about useful information for Norwegian truckers ought to remain in its place due to its relation to question about additional courses taken and information received.

5. CONCLUSIONS

The purpose of this project was to investigate the hypothesis whether poor performance of international truck drivers on Norwegian roads is an effect of a lack of information. In case this statement was found to be true, the most important information was to be determined together with a means of its distribution. Throughout the project many points of view were considered resulting in holistic approach to the problem given. Thus, not only was information possession researched but also (amongst many) its social implication.

First of all, one has to bear in mind that presented conclusions are based on only 73 interviews conducted in a multimodal fashion. That includes: 34 random international respondents, 17 international respondents after special training to driving in the country in their company and 22 Norwegian respondents. This sample is too small to represent a total population of either foreign or local truckers. Hence, findings are more of a suggestion than concrete evidence.

Based on material obtained a conclusion was reached that what drivers want the most is general information. That would be: traffic conditions, route guidance and weather forecast. First one is a bit more difficult to provide, but the following two are easily accessible. In order to get live traffic condition information a mobile app would be preferred. This would require establishing a system which would process information from traffic cameras all over the country and disclose it to the public. When the latter is considered, nowadays almost every truck has a GPS. However, the system that is indicated by truckers must provide much more information than just which road to take. What is demanded are answers to questions like 'Will I be able to pass this road/tunnel etc. with a truck of this size?' or 'Is there convoy driving expected?'

The majority of complaints issued against international HGV drivers are related to winter driving, especially when equipment is taken into consideration. If such an unprepared trucker can avoid driving on slippery road or in a snow storm it would be a benefit for the society. Hence, the information on weather conditions is relatively important. However, this importance cannot be recognised until awareness is raised of what it means to be prepared for driving in a snow and ice conditions, in particular with respect to equipment.

According to the interviews foreign truckers need information on chains and tyre requirements as well as how to use them properly. They also need more information on how to load cargo to minimise any negative effects. The information can be summed up under the title: how to drive in winter conditions. Without this knowledge a weather forecast is mere information about temperature and precipitation. With it, it is much more. It is a basis for a decision whether to stop driving (if equipment is unsatisfactory) or continue. In the latter case more decisions will be made - for instance, whether or not to put chains on. Such a simple action also needs information to be performed correctly. Not only must one know how to put chains on (which in fact is more of a practice), but also on which wheels and how to choose place to stop and attach them.

The actions, the aim of which is to equalise Norwegian and international truckers working in the country should be considered as even now there are voices being raised about the exploitation and unfairness. Unless the steps are taken to counteract this situation, it will

get worse and worse. The ones to lose most will be all Norwegian drivers, who will be exposed to greater danger than before.

To conclude, what drivers want is general knowledge, such as the issues discussed in those previous paragraphs: traffic and weather conditions, route guidance and updates on laws and regulations which were not discussed here. However, what they really need is winter driving school covering both theory and practice. In this case, opinion of those who are trained and experienced in driving in Norwegian conditions should outweigh the opinions of newcomers. If local transport actors' voice is to be listened to, such trainings could be organised in truckers' home countries or in Norway, as long as they are paid for by foreign transport companies.

6. FUTURE RESEARCH

This research programme has a great potential for solving (or at least easing) the problems encountered and/or caused by international drivers in Norway. However, as stated in section 1.2, this project had multiple limitations. Not enough manpower, a relatively short period of time, unwillingness to cooperate by companies amongst the largest ones. Therefore, future course of action should be first and foremost focused on overcoming these shortcomings and removing faults.

Firstly it is advisable to introduce discussed improvements of questionnaires. It would also be a good idea to have a tool to detect whether a driver being surveyed works in long-haul or locally. Secondly, an expand sample of respondents from different nations is a must. In order to achieve this provision of additional interviewers and extension of time of surveying is necessary. These measures will allow to draw more definite conclusions and not only of indicative nature as in the case of the present research.

Encouraging firms to contribute (i.e. by distributing forms to employees) might be challenging. Nonetheless, approaching firms as Norwegian Public Road Administration and not a student, who claims, that he has necessary credentials should result in a much higher response rate together with good cooperation from the responders. Additionally, the benefit should be taken from scale effect. The author limited himself to Polish companies only. However, it is fair to say that the more firms are approached, the greater the chance that a partnership will be established. Hence, transport actors from various countries will be included in the project. If cooperation with foreign companies can be established, the reach of questionnaire will be extended. This will allow to proceed with mixed-mode interviews on an unprecedented scale in Europe.

The inclusion of companies has some additional advantage. As pointed out in this report, a part of responsibility for mediocre performance of foreign truckers lies on their company. By incorporating them in the process of surveying, the awareness could be raised in management about difficult Norwegian conditions and means necessary to handle it. This in turn may contribute to provision of better equipment and maybe even internal trainings.

To further improve research output, more locations of interviews ought to be chosen - this time not only on terminals. First and foremost, the production sites should be included. As the terminal is often used as a distribution centre, a fair share of truckers there works only locally. They knowing everything that is necessary to know to perform their tasks in a limited (usually urban) area. However, in the production plant (i.e. steel mill, sawmill and salmon breed farm) mostly long haul drivers are expected and they are the ones who should be approached in the first place.

Except from location in the country, the spots on borders and even abroad might be included. As far as the first ones are considered, truckers could be asked by customs officers to spare a couple of minutes to answer some questions. In such circumstances only cross-border trade actors will be included. This, however, would require cooperation with other public bodies, which might or might not be easy to initiate. When the latter ones are under scrutiny, one location to suggest would be for instance ferry pier in Denmark. This choice will provide a selection of international HGV drivers in one place. What is important is that

truckers will have time to talk. Except for waiting for a ferry and/or waiting during the cruise, there are not many other tasks for them to fulfil.

On the other hand, a comparison of requirements and training content for heavy vehicle driving license in European countries ought to be prepared. This measure is not extension of the project, but will positively contribute to counteracting current situation. Having done so, one will clearly see what matters are not covered and, consequently, which information ought to be delivered to truckers.

Such comparison will also contribute to the discussion between Norwegian Transport Minister Ketil Solvik-Olsen and his counterparts in Alpine region about a special driving course. Knowing what the truckers in these countries are taught and what is not presented to HGV drivers from other nations a content of this training can be determined.

These are the means that ought to be introduced in order to fully exploit the potential of the project. Having done so, more accurate actions aiming at specific problems of truckers in general or even HGV drivers from one particular country can be undertaken thus contributing to the establishment of situation, in which Norwegian roads are safer.

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APPENDIX A
Text of the Thesis

MASTEROPPGAVE
(TBA4945 TRANSPORT, masteroppgave)

VÅREN 2015
for
Marek Makulec

Information Requirements for International Truck Drivers in Norway

BACKGROUND

Trucks on Norwegian roads are increasingly operated by foreign drivers. They might be unfamiliar with and unprepared for Norwegian roads and driving conditions, including challenging weather, darkness and many ferry connections. If they don't speak English, they might misunderstand messages from the authorities. The newspapers describe numerous examples of incidents involving foreign truck drivers, including trucks overturning in curves, blocking the road in the middle of uphill roads, or stuck on narrow and curvy roads.

It is assumed that the foreign drivers experience lack of information about Norwegian driving conditions etc. and this project is initiated to map information needs. This can be done using interviews of foreign drivers.

TASK

The project will include making and carrying out one or several surveys amongst foreign drivers.

General about content, work and presentation

The text for the master thesis is meant as a framework for the work of the candidate. Adjustments might be done as the work progresses. Tentative changes must be done in cooperation and agreement with the professor in charge at the Department.

In the evaluation thoroughness in the work will be emphasized, as will be documentation of independence in assessments and conclusions. Furthermore the presentation (report) should be well organized and edited; providing clear, precise and orderly descriptions without being unnecessary voluminous.

The report shall include:

- Standard report front page (from DAIM, <http://daim.idi.ntnu.no/>)
- Title page with abstract and keywords.(template on: <http://www.ntnu.no/bat/skjemabank>)
- Preface
- Summary and acknowledgement. The summary shall include the objectives of the work, explain how the work has been conducted, present the main results achieved and give the main conclusions of the work.
- The main text.
- Text of the Thesis (these pages) signed by professor in charge as Attachment 1.

The thesis can as an alternative be made as a scientific article for international publication, when this is agreed upon by the Professor in charge. Such a report will include the same points as given above, but where the main text includes both the scientific article and a process report.

Advice and guidelines for writing of the report is given in “Writing Reports” by Øivind Arntsen, and in the departments “Råd og retningslinjer for rapportskrivning ved prosjekt og masteroppgave” (In Norwegian) located at <http://www.ntnu.no/bat/studier/oppgaver>.

Submission procedure

Procedures relating to the submission of the thesis are described in DAIM (<http://daim.idi.ntnu.no/>). Printing of the thesis is ordered through DAIM directly to Skipnes Printing delivering the printed paper to the department office 2-4 days later. The department will pay for 3 copies, of which the institute retains two copies. Additional copies must be paid for by the candidate / external partner.

On submission of the thesis the candidate shall submit a CD with the paper in digital form in pdf and Word version, the underlying material (such as data collection) in digital form (e.g. Excel). Students must submit the submission form (from DAIM) where both the Ark-Bibl in SBI and Public Services (Building Safety) of SB II has signed the form. The submission form including the appropriate signatures must be signed by the department office before the form is delivered Faculty Office.

Documentation collected during the work, with support from the Department, shall be handed in to the Department together with the report.

According to the current laws and regulations at NTNU, the report is the property of NTNU. The report and associated results can only be used following approval from NTNU (and external cooperation partner if applicable). The Department has the right to make use of the results from the work as if conducted by a Department employee, as long as other arrangements are not agreed upon beforehand.

Tentative agreement on external supervision, work outside NTNU, economic support etc.

Separate description is to be developed, if and when applicable. See

<http://www.ntnu.no/bat/skjemabank> for agreement forms.

Health, environment and safety (HSE) <http://www.ntnu.edu/hse>

NTNU emphasizes the safety for the individual employee and student. The individual safety shall be in the forefront and no one shall take unnecessary chances in carrying out the work. In particular, if the student is to participate in field work, visits, field courses, excursions etc. during the Master Thesis work, he/she shall make himself/herself familiar with "Fieldwork HSE Guidelines". The document is found on the NTNU HMS-pages at

<http://www.ntnu.no/hms/retningslinjer/HMSR07E.pdf>

The students do not have a full insurance coverage as a student at NTNU. If you as a student want the same insurance coverage as the employees at the university, you must take out individual travel and personal injury insurance.

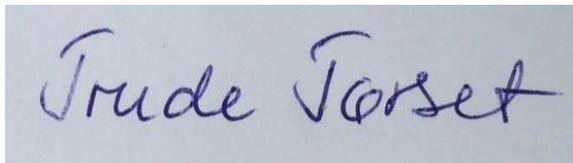
Startup and submission deadlines

The work of the task starts January 2015 and should be submitted June 2015, according to the information given in DAIM

Professor in charge: Trude Tørset

Department of Civil and Transport Engineering, NTNU

Date: 20.05.2015



Trude Tørset

APPENDIX B

Questionnaire for international drivers

Date:
Place:

Interviewer:
Interview number:

International

1) Which country are you from?

2) Have you worked in Norway as a truck driver before?

Yes

No

3) Did you see Norwegian Public Road Administration's (Statens vegvesen) Donna Diesel trucker's guide? It is in English, Finnish, German, Lithuanian, Norwegian, Polish and Russian.

Yes

No *(go to question 5)*

4) Which sections did you find helpful?

5) Did you get any information about Norway or Norwegian road conditions or Norwegian laws *(except from Donna Diesel trucker's guide)*?

Yes

No *(go to question 9)*

6) What was this information about?

7) Did the company give this information?

Yes *(go to question 9)*

No

8) Where did you get this information?

9) Which information about driving in Norway do you find helpful?

10) On a scale from 1 to 5 (1=not at all; 5=completely), how prepared are you for Norwegian winter conditions? Being prepared means: skills (training, experience) and equipment (tyres, chains, clothes).

- 1 (not at all)
- 2
- 3
- 4
- 5 (completely)

11) Would more information make your grade better?

- Yes
- No (*go to question 13*)

12) Which extra information would you like to get? When, where, how would you like to get this information?

13) How often are you in on-road situation in Norway, that causes loss of money? Loss of money means: material damage, loss of cargo, Viking, insurance etc. but NOT late delivery cost and petrol.

- I never drive in snow/ice conditions (*go to question 17*)
- Never
- 1-4 times a year
- 5-10 times a year
- 11-20 times a year
- More than 20 times a year

14) Can you give short description of one situation?

15) Could this situation be avoided if you had more information?

Yes

No *(go to question 17)*

16) Which information would it be?

17) How often are you in on-road situation in Norway, that causes only time loss? This includes late delivery cost and petrol.

I never drive in snow/ice conditions *(go to about you)*

Never

1-4 times a year

5-10 times a year

11-20 times a year

More than 20 times a year

18) Can you give short description of one situation?

19) Could this situation be avoided if you had more information?

Yes

No *(go to about you)*

20) Which information would it be?

About you:

Finally, we would like to know a little bit about you. This information will ONLY be used to categorized your survey responses.

Nationality: _____

Sex: male female

Years of experience as a truck driver:

<1 1-3 3-5 5-10 >10

Type of employment: freelance contract

Company: _____

Destination: _____

Number of jobs a year in:

Northern Norway	0	1-4	5-10	11-20	>20
Southern Norway	0	1-4	5-10	11-20	>20
Western Norway	0	1-4	5-10	11-20	>20
Eastern Norway	0	1-4	5-10	11-20	>20
Middle Norway	0	1-4	5-10	11-20	>20
First time in Norway	-				

Comments - is there anything you would like to tell us on the topic or questions?

Notes:

This is the end of this survey. Your answers will help make truck drivers safer and better prepared for Norwegian conditions.

Thank you!

APPENDIX C

Questionnaire for Norwegian drivers

Date:
Place:

Interviewer:
Interview number:

Norwegian

1) Which country are you from?

2) Did you see Statens vegvesen Donna Diesel trucker's guide?

Yes

No *(go to question 4)*

3) Which sections did you find useful?

4) Did the company or any other source give additional information about driving in snow and ice conditions?

Yes

No *(go to question 6)*

5) Which information did you find helpful?

6) Which extra information would you like to get? When, where, how?

7) What is your opinion on foreign truck drivers driving in snow and ice conditions?

8) Do you think additional information can improve their driving in snow and ice conditions?

Yes

No *(go to question 11)*

9) Which information?

10) When should they get it?

11) And how about additional training of driving in snow and ice conditions?

- Yes
- No *(go to question 13)*

12) Who should pay for this training?

13) On a scale from 1 to 5 (1=not at all; 5=completely), how prepared are for Norwegian winter conditions? Being prepared means: skills (training, experience) and equipment (tyres, chains, clothes).

- 1 (not at all)
- 2
- 3
- 4
- 5 (completely)

14) How often are you in snow/ice on-road situation in Norway, that causes loss of money? Loss of money means: material damage, loss of cargo, Viking, insurance etc. but NOT late delivery cost and petrol.

- I never drive in snow/ice conditions *(go to question 18)*
- Never
- 1-4 times a year
- 5-10 times a year
- 11-20 times a year
- More than 20 times a year

15) Can you give short description of one situation?

16) Could this situation be avoided if you had more information?

- Yes
- No *(go to question 18)*

17) Which information would it be?

18) How often are you in snow/ice on-road situation in Norway, that causes only time loss?
This includes late delivery cost and cost of petrol.

- I never drive in snow/ice conditions *(go to about you)*
- Never
- 1-4 times a year
- 5-10 times a year
- 11-20 times a year
- More than 20 times a year

19) Can you give short description of one situation?

20) Could this situation be avoided if you had more information?

- Yes
- No *(go to about you)*

21) Which information would it be?

About you:

Finally, we would like to know a little bit about you. This information will ONLY be used to categorized your survey responses.

Nationality: _____

Sex: male female

Years of experience as a truck driver:

<1 1-3 3-5 5-10 >10

Type of employment: freelance contract

Company: _____

Destination: _____

Number of jobs a year in:

Northern Norway	0	1-4	5-10	11-20	>20
Southern Norway	0	1-4	5-10	11-20	>20
Western Norway	0	1-4	5-10	11-20	>20
Eastern Norway	0	1-4	5-10	11-20	>20
Middle Norway	0	1-4	5-10	11-20	>20

Comments - is there anything you would like to tell us on the topic or questions?

Notes:

This is the end of this survey. Your answers will help make truck drivers safer and better prepared for Norwegian conditions.

Thank you!

APPENDIX D

Credentials

CREDENTIALS

Department of Engineering Science and Technology (IVT) of Norwegian University of Science and Technology (NTNU) in Trondheim conducts research entitled 'Information requirements for international drivers in Norway'. Work on project will be performed in March and April 2015. As part of the research, interviews with heavy goods vehicles drivers are undertaken.

We kindly request that you spare your time to answer questions asked by the interviewer. By answering them you will contribute to better understanding of information requirements for drivers in Norway, which eventually might result in improvement of the situation. All information disclosed is confidential and will ONLY be used for research purposes.

Hereby, IVT confirms that person holding this letter is assigned by the department to perform research activities.

With any questions please contact research team leader or myself.

Marek Makulec (research team leader)

marekm@stud.ntnu.no

Trude Tørset (research supervisor)

trude.torset@ntnu.no

With best regards

Trude Tørset

Associate professor