

# Freight distribution at night: Truck drivers work today

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## Abstract

Truck drivers deliveries at night have risen significantly in recent decades. Based on examples from Danish companies is shown how congestion has become so high in the daytime that many distributors want to move their distribution to night-time. The saved expenses from not having to drive slowly during rush hour will be greater than the higher wage paid drivers to work at night.

Just-in-time policy in the business sector is pushing the development further. The shops want to have fresh bread, vegetables and similar goods delivered in the morning the day after the order was placed. This development has pushed drivers to placement among the very top of workers active at night. Before, they had the longest working hours on the labour market.

Besides the drivers general problems for all night workers with higher risk of diseases, drivers' special working conditions increase their problems. For instance, they work, alone which leads to potential problems with danger and fear. Work at night gives a higher wage of around 32 %, which shows the drivers appreciation in the form of compensation for the inconvenient working time.

Keywords: truck drivers, freight distribution, night work

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## 1. Introduction

Truck drivers have some of the hardest working conditions in the labour market and work the longest number of hours. While the official number of weekly work hours in Denmark's labour market is 37, truck drivers work more than 45 hours a week.<sup>1</sup> A large part of this work is at night, where drivers again are among the groups at the top; 22 % of drivers often work at night (11 pm – 6 am); only 7.5 % of other workers work at night. Only bus or taxi drivers, together with professions like police officers and doctors, work a higher share of night hours. There has been discussion that longer work hours have an influence on

health. In the well-functioning labour market in Denmark, the risk of heart diseases or early death could not be seen.<sup>2</sup> However, it is well documented that night work can be harmful to health.<sup>3</sup> These conditions also disturb family life and social activities.<sup>4</sup> Further, the possibility of exercise is reduced. Surveys show physical problems such as short sleep, fatigue and stomach problems. Working at night and shift work may create a higher risk of cancer. Moreover, there are problems with mood changes, social problems and – especially dangerous for drivers – more mistakes and accidents.

Night work has rarely been examined from a sociological, historical or psychological perspective. In response, this

### Night work, by sector

Hospitals	29.7
Transport of people	29.5
Police, prisons, rescue service	28.4
Food and nutrition	25.8
Textile and paper	21.8
Restaurants and bars	19.5
Transport, freight	18.6
Day care centers and home care	14.0
Hotels	11.6
Chemistry and medicals	11.0

2016, Denmark, Working Environment Enquiry, National Research Centre for the Working Environment.

article will address night work as a whole and in context to identify why workers increasingly opt to work at inconvenient times. In particular, the presentation will focus on delivery using vans and trucks at night.

Examination of distribution drivers' work schedules shows a mixed picture of the work situation. 4 % of drivers always drive at night, while 70 % only work in the daytime. The remaining 26 % of the drivers have shift work or always work in the evening (2 %).

A closer look at drivers in a typical business will illustrate the situation. Here, the industrial bakery Schulstad and its sister company, Unibake, are studied. Schulstad was established in 1880 and became the leading supplier to supermarkets in Denmark, with a market share of around 55 % (2002).<sup>5</sup> The company has three production factories in Denmark. Unibake is active in frozen bread, with six bakeries in Denmark. Bread from the factories is distributed with products manufactured by other factories in the Swedish-owned concern and a range of goods for resale, including the largest competitor, Kohberg. The company's products are distributed throughout Denmark, and the company handles primary distribution itself.<sup>6</sup> In 2014, daily delivery of more than 150 products was made to 2,600 shops. The company's 80 vehicles drive 19,500 km daily and handle 60,000 boxes, ranging from 45,000 to 100,000 boxes. Each driver visits 26-29 customers. All bread must be delivered before the opening at 8-9 am during the working hours from 0:30 am.

### The driver's pros and cons for night work

One of the main arguments for a driver to work at night is the wage. While the ordinary wage for an hour's work during the day is 18 €, the wage for driving at night is 23 €. This 32 % higher wage is a fine wage in a low-paying area. For night work on Saturdays and Sundays, the wage is doubled to 35 €. <sup>7</sup> Often, this is not a choice for drivers whose jobs for haulers or other companies include distribution at night. In some instances, the work at night is shared by several drivers on a time shift schedule.

Delivery work at night can make drivers feel nervous. The driver is alone both on the road and at the delivery location, and assault and similar incidents are possible. Conversely, because the traffic is more fluid at night, it creates a less-stressed working situation for them. Bicyclists are a problem for all drivers of large vehicles, and the number of bicyclists is reduced at night. It is easier to observe a bicyclist when the driver takes the right road. Parking areas around the shops have no cars or customers.

### Congestion in daytime as a trigger

One recent development has led to more transportation at night. Delivery of goods by vans has increased considerably. According to a study from the UK, this special area of just-in-time delivery has created an expanded role for transport by vans and small lorries.<sup>8</sup> This expanded transport of parcels is expected to grow. The increase not very large compared to other areas, but the consequence for traffic is expected to be of a size that influences transportation organizations. The van fleet has been growing at 3-6 % a year. Vans are forecast to be 20 % of all traffic miles by around 2035, an increase from 14 % in 2010. Together with the increase in other transport, the problem with congestion will be acute. The growing problem with congestion will probably force more transportation at night.

### Political and commercial wishes for night delivery

There is a strong effort to get more distribution transport outside the daytime including distribution at night. The Ministry of Transport established a special centre, "Centre for Grøn Transport", (Centre for Green Transport) in 2009 to work on a project to reduce CO<sub>2</sub> discharge. This is an especially vital issue in densely populated cities, so the concept was introduced to address transport in city centres.<sup>9</sup>

The political justification for the initiative to reduce CO<sub>2</sub> is based on several factors. The traffic is not as heavy after daytime hours, which creates an advantage because drive times are shorter, making for more economic driving.

Vehicles have shorter wait times during the night time which engines would be idling, which means less CO<sub>2</sub> emission. In turn, when trucks and vans are not on the roads in the daytime, other road users have reduced wait times. There will be fewer traffic accidents, and especially accidents with vulnerable road users like bicyclists will decrease. Use of vehicles outside the daytime would better exploit the vehicles and reduce investments compared to a situation where vehicles are only used during the day.

As can be seen, distribution outside daytime hours will give companies an economic advantage through faster and less-expensive distribution. It is estimated to save 4- 9 % on distribution costs, including overhead, with 7-17 % faster delivery. Companies would work toward this improvement even without support from the state. The project from Centre for Grøn Transport therefore focused on more experimental and riskier economic issues such as experiments with electric trucks and a costly experiment to develop quieter distribution equipment for loading and unloading. Lifts on trucks, for example, produce unwanted noise.<sup>10</sup>

Noise has long been a problem, and local authorities have regulated distribution time for particularly vulnerable areas in cities. In recent years, awareness of noise has increased as have complaints to authorities about this issue. A rule banning distribution before 6 or 7 a.m. has reduced the economy of distribution. For instance, around 400 shops in Schulstad's distribution area are affected by the environmental ban on delivery before 7 a.m. In addition to the problem with noise, Schulstad delis to around 300 shops that did not have facilities to receive goods before employees arrived in the morning. These two projects had their focus. Competition in the supermarket sector means an increase in just-in-time delivery. Lead time – the time from order to delivery – can be reduced one day. This is especially important for goods like bread, milk and meat. Shop assistants can put goods on the shelves before customers arrive. In the automotive repair business, with just-in-time delivery and night distribution, spare parts can be ready at the start of working hours the next day after a late-afternoon order the day before. A garbage truck can empty 12-14 large bins an hour compared to the half after 6 am.

### Early distribution

We know little about the situation back in time. Night distribution has been around since the first delivery services. As long ago as the 1930s, the International Labour Office (ILO) conducted investigations into night work. This was especially in consideration of pregnant woman and children

### Weekly working hour

Transport, freight	42,7
Installation and repair of machines	42
Construction work	41,4
Energy and raw materials	40,7
Water, sewage and waste	40,2
Wholesale trade	39,9
Completion of construction	39,9

2016, Denmark, Working Environment Enquiry, National Research Centre for the Working Environment.

workers, but drivers' work was included in the investigations.

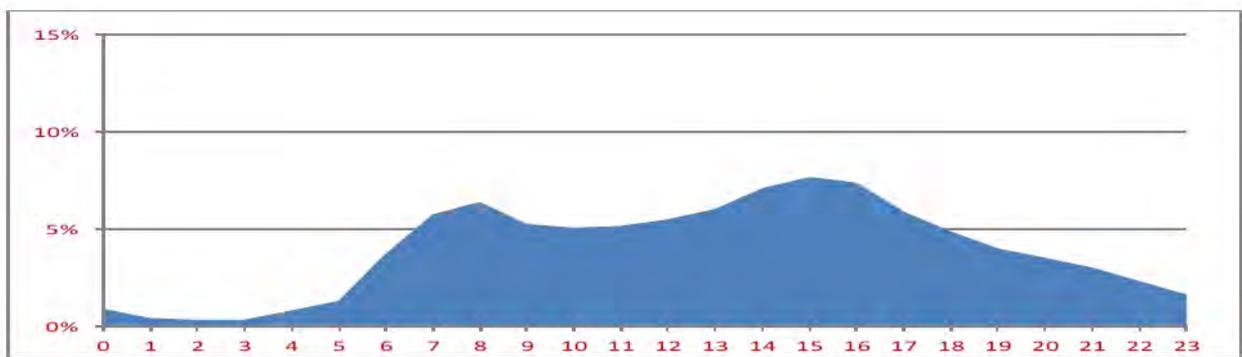
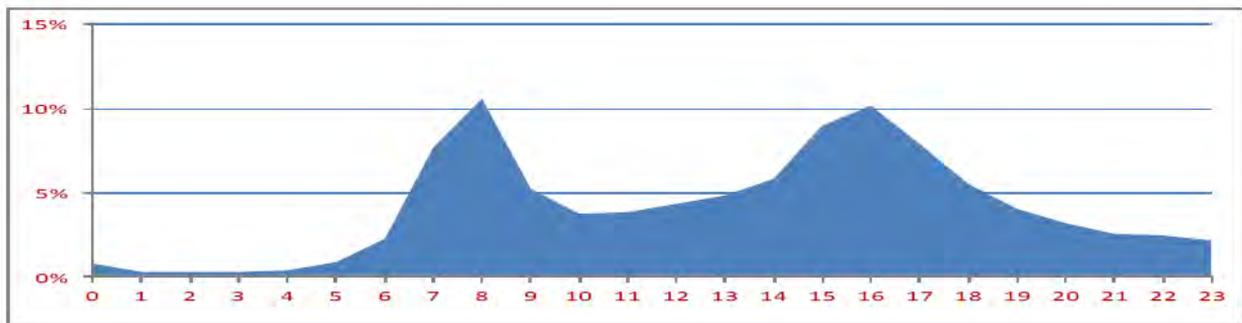
For the Schulstad, the situation has changed. In 1950, all the lorries started at 6:30 a.m. No research has been conducted to investigate whether this was a general trend or not.

At this company, the new time was not the only change. At their day jobs, drivers had more tasks than just driving. They were ambassadors for the company, selling products to shop owners and probably even putting goods on the shelves to secure the best location. This job had a social side that was appraised by the then drivers. This disappeared entirely when the work shifted to night.

### The nature of a driver's work

Drivers working at night have characteristics similar to drivers working in the daytime, with some additional factors. The following description is based on analyses made by researchers behind Sociotechnical Systems (STS) theory. The theory was developed with the primary objective of improving the overall quality of working life, but this article will only use its analytic potential.<sup>11</sup> The system involves synergistic interactions among system components and between the system and its external environment. The theory was first formulated in the 1930s and 1940s to cope with increasingly complex systems. According to the tradition the person is the centre of the system within the two inter-related sub-systems: technology and work organization. The technology sub-system includes not only physical working tools but also the work organization; the social sub-system includes individuals and teams with their needs for coordination, control and boundary management.

### Round-the-clock traffic Bicycles - Cars



Copenhagen. Average traffic load, large roads. 2014.

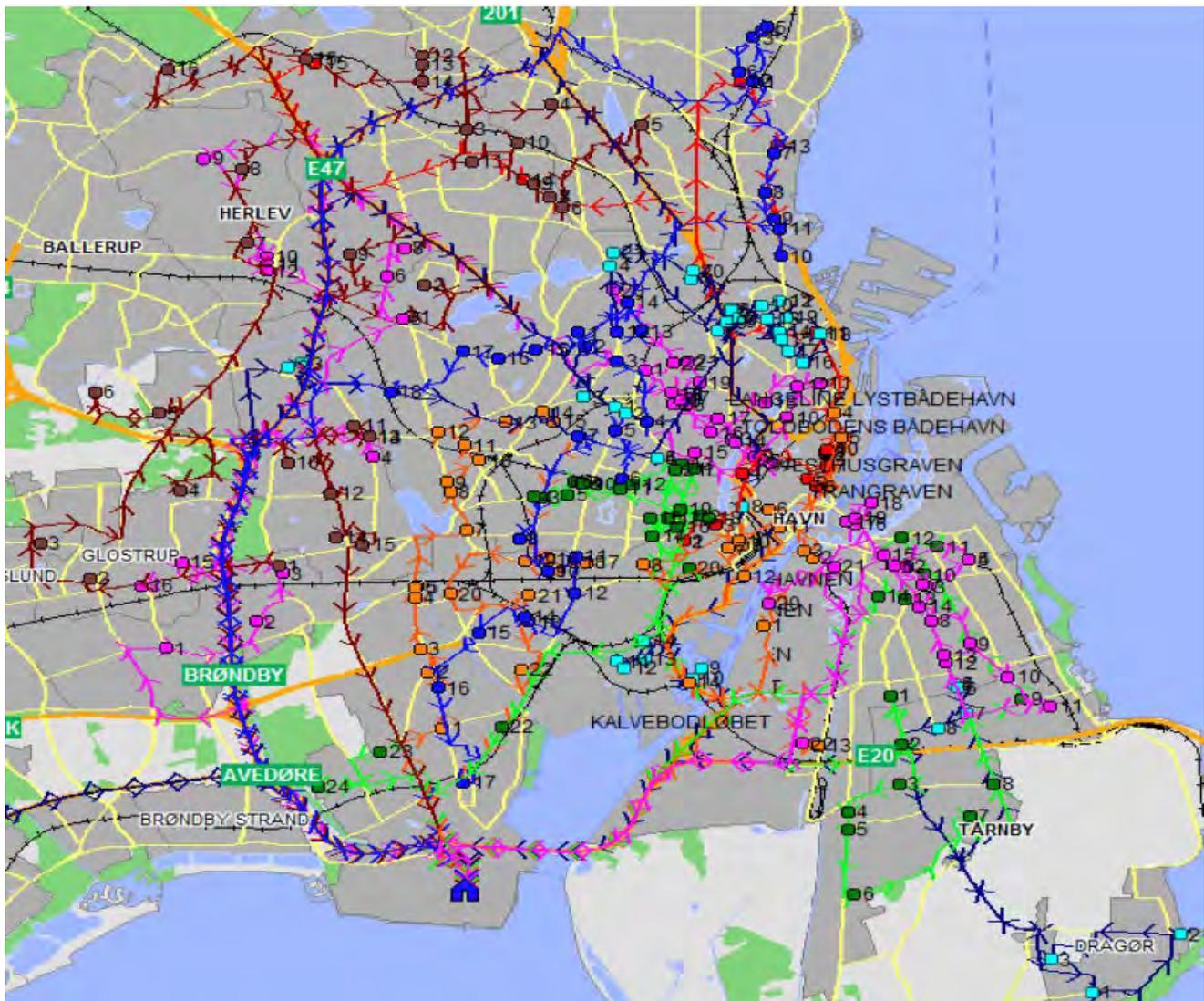
The point of view in this article is looking at work as a kind of technological determinism behind the driver's work. The work has the same repetitive movements all day like a worker at a moving assembly line. The physical design of a lorry gives the borders of the work. The driver sits in his seat and manoeuvres the vehicle most of the day. He needs to react to occurrences outside his box. Some incidences are beyond his control; the weather will give snow, rain, sun, or storm. In many aspects, the traffic is something outside, although the driver can position his vehicle in reaction to traffic. He can, for instance, drive safe distance from other vehicles that are potentially dangerous for him and his job.

Determinism is not only for the physical situation but for the overall frame of the work. The job must be finished. If a driver does not reach the ending point of travel, the work has not been performed. If his schedule for has been delayed by some of the many occurrences discussed, he needs to finish the work nonetheless. Traffic accidents, congestion and road maintenance are out of his control, and technical issues with his car or planning the route may give him responsibility for the delay.

Another specific characteristic of the work is that the driver is a solitary worker.<sup>12</sup> He sits alone in the cab and must solve all the problems himself. In recent decades, he can communicate with others through telephone and radio, but many situations need to be handled by the driver himself. For instance, the safety climate among mobile remote workers may be weak because of the lack of contact with other drivers and the employer.

The driver is still in charge in and around his vehicle. He must handle the many situations in traffic, at rests and on loading and unloading. Many decisions must be made in a split second. This situation is probably one of the positive qualities of the work that compensate for the more negative side of the work. He feels responsibility in his work; he is acting all day. He has a significant role to fill with admiration from others who have knowledge of the driver's work. A spirit from the old truckers' days is still living with the dream of a free life. The role today is reinforced by a long row of legal requirements regarding the laws of maximum allowed working time and special training to keep the job as a driver. The situation is enforced by the work situation where he is

## Tours for distribution. Schulstad 2014 Copenhagen area



Kolstrup et al. 2014

far away from his employer. The job is done away from a supervisor with no one to observe. It gives the driver a feeling of freedom and autonomy.<sup>13</sup>

The need to be alert all day has a negative side. A driver gets stress if the schedule is slipping, and the job cannot be made correct, or he cannot get home to his family in time. He gets anxious after a dangerous situation in traffic, and he has a tremendous responsibility for his load and the safety of others on the road. The accident rate is high; a study from the UK has shown occupational injuries in 2010 at a rate of 31.8 per 100,000 workers, while the average for all industries was 3.6.<sup>14</sup>

In a way, the work itself is invisible. The work is physical by nature but is not physical in its result. The lorry must be maneuvered, and the freight needs to be loaded and

unloaded. When the work is finished, no new physical subjects are created; nothing has been changed to a visible better quality. Its main characteristic is the quality of handling time – without accidents and similar actions with negative consequences.

Unlike line bus drivers with their regular timetables, a lorry driver works under overall unstable conditions. Sometimes the need for transport is high, and shortly after the need is low. This characteristic of the job gives the driver a significant requirement for flexibility, which is negotiated between the driver and the employer. Most companies are small. This is probably because a small firm with a close, personal relationship between the planner and the driver is necessary to negotiate a solution suitable for the job and for the life of the driver.

## Conclusion

Deliveries at night have risen significantly in recent decades. Two aspects will extend distribution at night further. The congestion has become so high that many distributors want to move their distribution to night-time. The saved expenses from not having to drive slowly during rush hour will be greater than the higher wage paid drivers to work at night. Public authorities have a policy to help business with this transition through different programs.

The other aspect is the just-in-time policy in the business sector. The shops want to have fresh bread, vegetables and similar goods, while shops like automobile workshops want to have their spare parts delivered in the morning the day after the order was placed. This development has pushed drivers to placement among the very top of workers active at night. Before, they had the longest working hours on the labour market.

Night work gives workers several problems. Their social life is impacted when time with family and friends is reduced. There is a higher risk of diseases caused by lack of healthy sleep habits. These are general problems for all night workers. Besides, drivers' special working conditions increase their problems. For instance, they work, alone which leads to potential problems with danger and fear. Work at night gives a higher wage of around 32 %, which shows the drivers appreciation in the form of compensation for the inconvenient working time.

## References

- Braithwaite, Alan (2017): *The Implications of Internet Shopping Growth on the Van Fleet and Traffic Activity*. London: RAC Foundation.
- Bünning, Mareike; Pollmann-Schult, Matthias (2016): Parenthood, child care, and nonstandard work schedules in Europe. *In: European Societies* 18 (4), p.295–314.
- Carayon, Pascale; Hancock, Peter; Leveson, Nancy; Noy, Ian; Sznalwar, Laerte; van Hootegem, Geert (2015): Advancing a sociotechnical systems approach to workplace safety—developing the conceptual framework. *In: Ergonomics* 58 (4), p.548–564.
- Frost, Poul; Kolstad, Henrik A.; Bonde, Jens Peter (2009): Shift work and the risk of ischemic heart disease—a systematic review of the epidemiologic evidence. *In: Scandinavian journal of work, environment & health*, p.163–179.
- Grosswald, Blanche (2004): The effects of shift work on family satisfaction. *In: Families in Society: The Journal of Contemporary Social Services* 85 (3), p.413–423.
- Hannerz, Harald; Larsen, Ann Dyreborg; Garde, Anne Helene (2018): Long weekly working hours and ischaemic heart disease: a follow-up study among 145 861 randomly selected workers in Denmark. *In: BMJ open* 8 (6).
- Hannerz, Harald; Soll-Johanning, Helle (2018): Working hours and all-cause mortality in relation to the EU Working Time Directive: a Danish cohort study. *In: European journal of public health* 28 (5), p.810–814.
- Huang, Yueng-hsiang; Zohar, Dov; Robertson, Michelle M.; Garabet, Angela; Lee, Jin; Murphy, Lauren A. (2013): Development and validation of safety climate scales for lone workers using truck drivers as exemplar. *In: Transportation research part F: traffic psychology and behaviour* 17, p.5–19.
- Jansen, Nicole W. H.; Kant, Ijmert; Nijhuis, Frans J. N.; Swaen, Gerard M. H.; Kristensen, Tage P. (2004): Impact of worktime arrangements on work-home interference among Dutch employees. *In: Scandinavian journal of work, environment & health*, s.139–148.
- Jeppesen, Hans Jeppe (2003): Arbejdstidens fleksibilitet og de fleksible ansatte. *In: Tidsskrift for arbejdsliv* 3, p.59–80.
- Knutsson, Anders (2003): Health disorders of shift workers. *In: Occupational medicine* 53 (2), p.103–108.
- Kolstrup, Kristian; Henriques, Michael; Hansen, Henrik; Zoëga, Finn (2014): Distribution i ydertimerne. *Rapport*. version 2. Holte, Taastrup.
- Mumford, Enid (2006): The story of socio-technical design: reflections on its successes, failures and potential. *In: Information Systems Journal* 16 (4), p.317–342.
- Særvoll, Charlotte Ahlgren; Aust, Birgit; Møller, Simone Visbjerg; Christensen, Andreas Benjamin; Garde, Anne Helene (2015): Arbejds miljøprofil for chauffører og vognmænd i Danmark. København: Det Nationale Forskningscenter for Arbejds miljø (NFA).
- Væksthus Syd Danmark/24T Transport (2012): 24T Transport. *Varedistribution til byerne uden for myldretiden. Tilskud til energieffektive transportløsninger 2011*.
- Zoëga, Finn (2011): Projekt "Citydistribution" i ydertimerne - København, Aarhus, Odense, Aalborg. *In: Medlemsinformation, udg. af Emballage og Transport, Teknologisk Institut* (4), p.3–5.
- Åkerstedt, Torbjörn (2003): Shift work and disturbed sleep/wakefulness. *In: Occupational medicine* 53 (2), p.89–94.

<sup>1</sup> This information and similar information in the article is from 2016 from a large survey from Videncenter for Arbejds miljø, Det Nationale Forskningscenter for Arbejds miljø (National Research Centre for the Working Environment), Arbejds miljø og helbred i Danmark 2012-

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2020" (working environment and health in Denmark 2012-2020).

<sup>2</sup> Hannerz, Larsen and Garde 2018 and Hannerz and Soll-Johanning 2018.

<sup>3</sup> Frost et al. 2009, Knutsson 2003 and Åkerstedt 2003.

<sup>4</sup> Grosswald 2004, Bünning and Pollmann-Schult 2016 and Jansen et al. 2004.

<sup>5</sup> Wikipedia; article "Schulstad".

<sup>6</sup> Kolstrup et al. 2014.

<sup>7</sup> Lønoversigt for transport- og logistikoverenskomst marts 2017 DI (ATL) og 3F.

<sup>8</sup> Braithwaite 2017.

<sup>9</sup> Zoëga 2011.

<sup>10</sup> Kolstrup et al. 2014.

<sup>11</sup> Momford 2006 and Carayon et al. 2015. See also the discussion about research regarding technology and structures in Orlikowski 2000.

<sup>12</sup> Huang et al. 2013.

<sup>13</sup> Særvoll et al. 2015.

<sup>14</sup> Huang et al. 2013.