



Implementing policy strategies to stimulate teleworking

*Long-term impacts of COVID-19 related attitude
changes towards teleworking*

Dennis Begheijn

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Colophon

Author	Dennis Begheijn
Graduation Committee	Prof.dr. G.P. van Wee Dr. J.A. Annema Dr. ir. S.C. Calvert Dr. ir. H. Taale
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Information	Henk Taale
Telephone	+31 88 798 2498

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Preface

This thesis is written as the graduation project for the master program Transport, Infrastructure & Logistics at the Delft University of Technology. The thesis is performed at ITS Edulab, which is a cooperation between the Delft University of Technology and the Dutch motorway operator Rijkswaterstaat. The project was supervised by Prof. dr. G.P. van Wee (T&P), dr. J.A. Annema (T&P), dr. ir. S.C. Calvert (CEG) and dr. ir. H. Taale (CEG/Rijkswaterstaat).

The topic of this research originates from the COVID-19 pandemic, which began to affect the Netherlands in February 2020. This also affected my own life, because my original graduation plans were cancelled. I am very pleased that Simeon Calvert and Henk Taale responded to my application to perform a research for ITS Edulab. The topic I applied for could not be researched because of the pandemic, but they gave me the opportunity to formulate my own research questions. I want to thank Bert van Wee for the proposed theories to study the topic. While the topic is somewhat different than the usual projects of ITS Edulab, I think the research resulted in interest and relevant findings for Rijkswaterstaat and the Ministry of Infrastructure & Water Management.

Performing the research in these strange times resulted in several challenges. While the topic of this thesis is teleworking, I encountered the disadvantages of teleworking also from my own experiences. While performing research individually, you easily get disconnected from other students or colleagues, which results in motivational challenges. I want to thank my girlfriend for motivating me to keep working on my thesis. Furthermore, I want to thank Jan Anne Annema and Henk Taale for giving useful tips and feedback during the research process. While we did not get to meet each other in person during the research, the supervision was of great value for me.

Finally, I want to thank all the persons who allowed me to interview them for my research. This includes the experts whom participated during the focus group meeting. Their participation was essential for my research.

I want to dedicate this thesis to my father, who sadly passed away before he could see his son graduate as an engineer. His endless believe in my abilities gave me the strength to finish my studies.

*Dennis Begheijn
Leiden, April 30th 2021*

Summary

Travel volumes on the Dutch main road network have been steadily increasing since 2013, after a stagnation resulted from the recession caused by the economic crises during 2008-2012 (Ministry of Infrastructure and Water Management, 2019). The increase of traffic volumes resulted in more congestion and therefore more travel delays (travel time lost) and increased travel times. Congestion and delays result in societal costs (Ministry of Infrastructure and Water Management, 2019). This increase was interrupted, when in the beginning of 2020, the COVID-19 pandemic spread over the world. This led to a rapid increase in the use of teleworking, which resulted in large shifts in travel behaviour of Dutch travellers. Because of the decreasing impact of teleworking on congestion and consequently societal costs of delays, it would be a positive development if teleworking is continued.

However, it is unclear whether this changed travel behaviour, resulting from the increase of teleworking, will continue when the COVID-19 outbreak has been resolved, or whether people will fall back in their previous behavioural patterns. Although research did show that triggers, such as pandemics, can affect attitudes which can influence travel behaviour, the current research is not sufficient to explain the impacts of the pandemic on long-term travel behaviour. It is unclear how the pandemic compares to other abrupt changes in terms of the ability to substantially change travel behaviour, whether this can be influenced by policies, and which policy measures can be applied. Current theoretical models do not fully explain the enduring impact of abrupt changes on travel behaviour and are not validated by qualitative data. New research had to be carried out which combines existing insights on the effect of abrupt changes on travel behaviour change, to determine attitude changes of employees due to the COVID-19 pandemic, to identify enduring impacts of the COVID-19 pandemic on teleworking and to propose policy measures which sustains teleworking in the future.

The main research question of this research is:

What policy strategy design can be introduced, so that teleworking conditions are continued in the future to reduce congestion?

Three sub-questions were introduced to answer this research question:

1. *What are the attitude changes on teleworking caused by the COVID-19 pandemic?*
2. *What will be the enduring effects of the COVID-19 outbreak on teleworking and related travel behaviour, based on theories for attitude changes?*
3. *What policy measures can be taken to facilitate enduring change of travel behaviour when COVID-19 related measures are discontinued?*

During the research, a theoretical research lens is used to analyze the subject (see Chapter 3). This research lens is composed by incorporating three theoretical models: the attitude change model (Van Wee, Vos, & Maat, 2019), the model on the built environment and travel behaviour (Van de Coevering et al., 2015) and the habit discontinuity theory (Verplanken, Walker, Davis, & Jurasek, 2008). An integrated model for attitude changes for teleworking is proposed. This model is applied as the lens

which is used during the research, the model is validated by data collected using the several research methods.

The research methods to obtain data to answer the research questions are desk research (Chapter 4), individual interviews (Chapter 5) and a focus group meeting with experts in the field (Chapter 6). The results from these methods are combined by using crystallization (Chapter 7). The summarized answers to the research questions are listed below.

1. In general, the appreciation towards teleworking among employees towards teleworking during the pandemic has increased. Results of desk research showed that according to aggregate data attitudes regarding teleworking have positively increased during the lockdown caused by the pandemic. This could also be seen in the data collected by the individual interviews. This was acknowledged by the focus group meeting as well. There is concluded that attitudes were positively changed regarding teleworking. The most dominant advantages of teleworking which were stated, were the lack of travel time, higher productivity, combining work with private activities and higher flexibility. Disadvantages which were stated include the lack of social contact with colleagues, difficult communication, worse work-life balance and concentration difficulties.
2. It is likely that the COVID-19 pandemic has enduringly changed behaviour on teleworking. Due to the large shifts in behaviour, the increase and prolonged use of teleworking, habits of employees have changed. These shifts are present in the collected aggregate data, but also validated by the qualitative data collected by the individual interviews and the focus group meeting. Most employees state that they want to remain teleworking, most of them part-time. Challenges which can limit the execution of these intentions are social norms from colleagues and lack of support of employers. Cooperation between colleagues working from home and from the office can be difficult, which pressures employees to come to the office. Employers are advised to make policies to spread office demand, otherwise crowding on certain days will occur.
3. Challenges which have to be addressed by policies are present in three categories: social problems, norms and inadequate current policies. Proposed measures to tackle social problems are stimulating employers to make rules on teleworking and forcing employers to facilitate teleworking. To combat norm related challenges, the government should set an example by arranging these problems in their own organizations, by forcing officials and students to telework when necessary and to spread demand of office/lecture hours. Alternative measures are enrolling or trading systems, which regulate the rights on office space, or the increase of peak travel costs. Current policies have to be adapted to stimulate teleworking. Measures which address these challenges are introducing teleworking compensation or reforming travel compensation to a general compensation. Peak travel costs can be increased, when teleworking compensation is provided, but rewarding is more desired than pricing and was already successfully used to decrease peak travel demand.

The final result of this research is the proposed Policy Strategy Design, which formulates the policy measures in a coherent strategy (Chapter 8). The measures are visualized in a timeline in Figure 0.1. This design provides policy makers with a design which intends to change teleworking enduringly. The policy strategy helps to address ongoing concerns regarding congestion and

emissions in the future. Using the proposed design, attitudes on teleworking could be improved and teleworking could be sustained in the future, which would lead to reduced travel volumes and congestion on the road infrastructure and consequently lower emissions. This is important for Rijkswaterstaat, because it affects traffic flows which needs to be accommodated. The policy strategy could lead to a higher reliability of the road network, because the reduced peak traffic flows reduces variances of travel time. The Ministry of Infrastructure & Water Management is recommended to do further research on the impact of the proposed policies, because it could influence the need of future investments in road infrastructure.

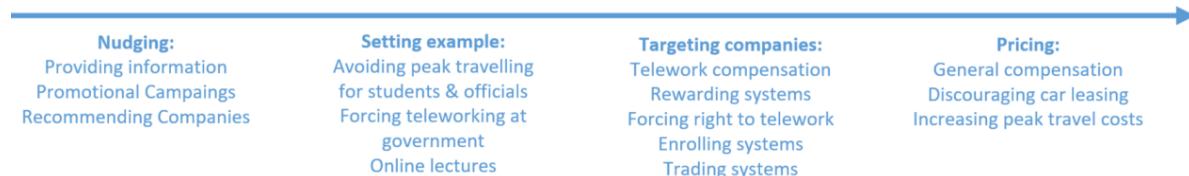


Figure 0.1. Timeline of policy strategy

The theoretical contribution of this report is the integrated attitude change model, which was used to analyze the case of teleworking during and after the COVID-19 pandemic. The model was successfully validated using data from desk research, individual interviews and a focus group consisting of experts. This integrated attitude model (see Figure 0.2) can be used to analyze new cases of abrupt changes in the future. The model is an improvement of the previous models stated in the research lens, because it combines insights from different theories and is validated by data in a real-life case data. The model can be used to analyse the impacts of new abrupt changes in the future. Recommendations for further research are to examine the validity of the model by also analysing revealed data. This research should be persevered after the pandemic has ended, to determine the enduring effects on teleworking. This would increase the value of the proposed model.

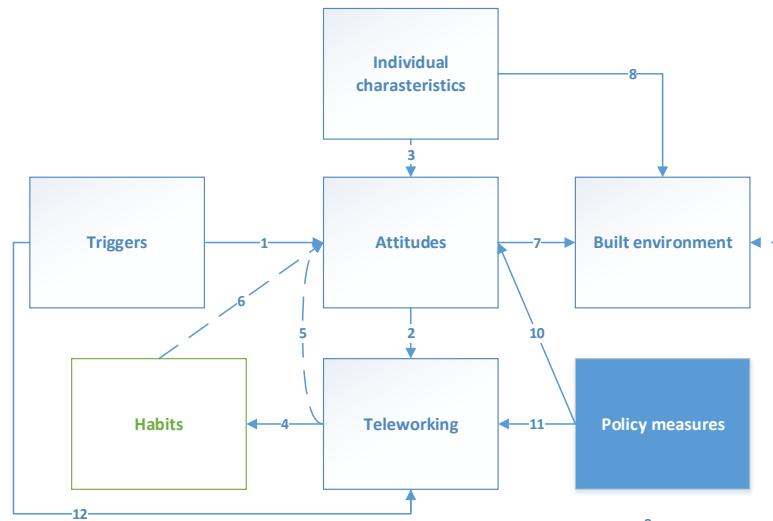


Figure 0.2. Improved integrated attitude change model for teleworking

Further research on the policies regarding teleworking have to be conducted on the effectiveness and the feasibility of the policy measures. The data collection methods provided an extensive list of proposed policy measures. The impact of these measures on the mentioned policies were identified, but quantified effects were not provided in this research. These could be estimated by future research, for instance by a model study. The next phase of research could be to quantify the enduring effects on travel indicators. This information could be used in the decision making processes for investments in road infrastructure in the future.

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1 Introduction

In this introduction the subject of this thesis and its context is presented, the research gaps are identified and research questions to overcome these gaps are asked.

1.1 Context Analysis

Travel volume on the Dutch main road network has been steadily increasing since 2013, after a stagnation resulted from the recession caused by the economic crises during 2008-2012 (Ministry of Infrastructure and Water Management, 2019). The increase of traffic volumes resulted in more congestion and therefore more travel delays (travel time lost) and increased time times, as can be seen in Figure 1 (Kennisinstituut voor Mobiliteitsbeleid, 2020a). This development was limited by the increase of lanes on the main road network and increase of flexible working methods (Kennisinstituut voor Mobiliteitsbeleid, 2016; Ministry of Infrastructure and Water Management, 2019). Congestion and delays result in societal costs, which also have been increasing to 4.3 billion euros in 2018, as shown in Figure 2 (Ministry of Infrastructure and Water Management, 2019). These are not just direct costs, but also indirect costs, like the decrease of productivity.

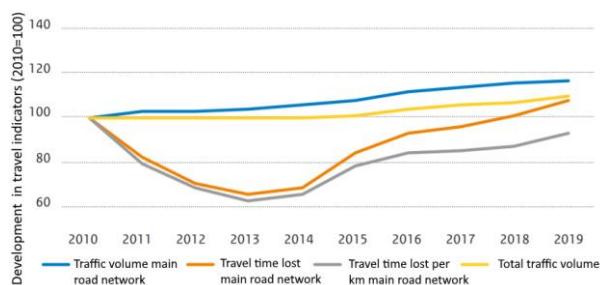


Figure 1. Developments in accessibility 2010-2019
(Kennisinstituut voor Mobiliteitsbeleid, 2020a)

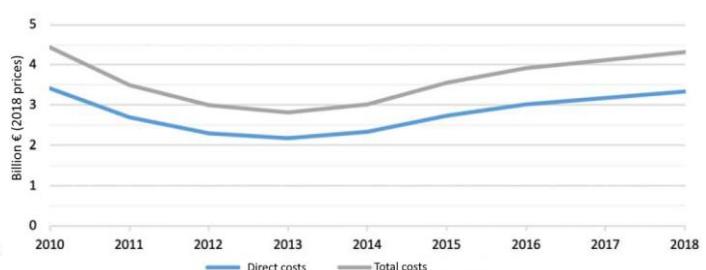


Figure 2. Societal costs of congestion and delays (Ministry of Infrastructure and Water Management, 2019).

This increase was interrupted, when in the beginning of 2020, the deadly COVID-19 virus infection originated in Wuhan (China), turned quickly into a pandemic. This resulted in lockdowns in various countries, including the Netherlands. During the lockdown, employees were advised to work from home whenever possible. This led to a rapid increase in the use of teleworking as can be seen in Figure 3 (Faber, Haas, & Hamersma, 2021; Kennisinstituut voor Mobiliteitsbeleid, 2020b).

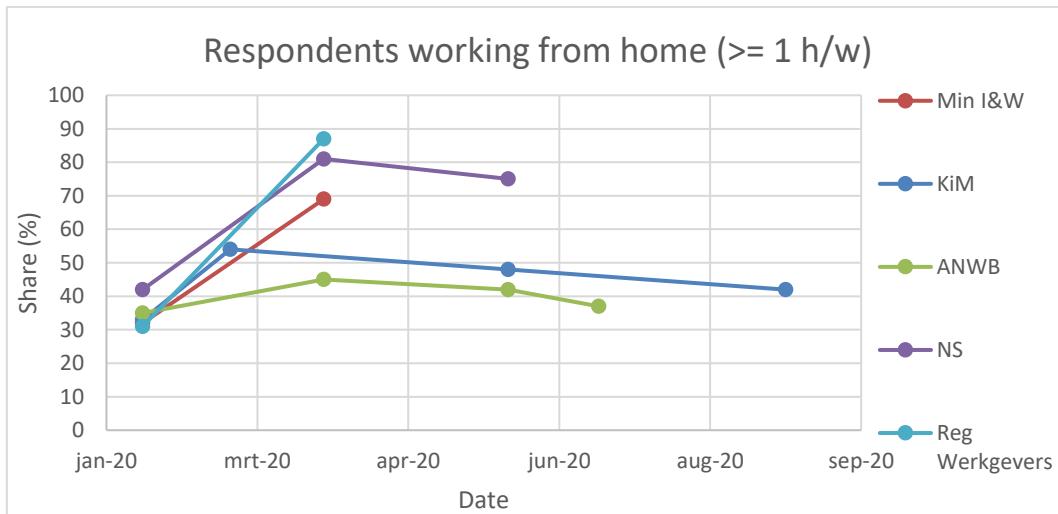


Figure 3. Share of employees teleworking based on different surveys

(Based on Faber et al., 2021; Kennisinstituut voor Mobiliteitsbeleid, 2020b)

This resulted in large shifts in travel behaviour of Dutch travellers. The average travel demand decreased up to 40% in the end of March, with the highest decline during peak hours (Turpijn, 2020). Even though travel demand increased again in the following months, trips were still more spread out during the day (Turpijn, 2020). Car travel movements were clearly reduced compared to earlier years, as can be seen in Figure 4 (Ministry of Infrastructure and Water Management, 2021).

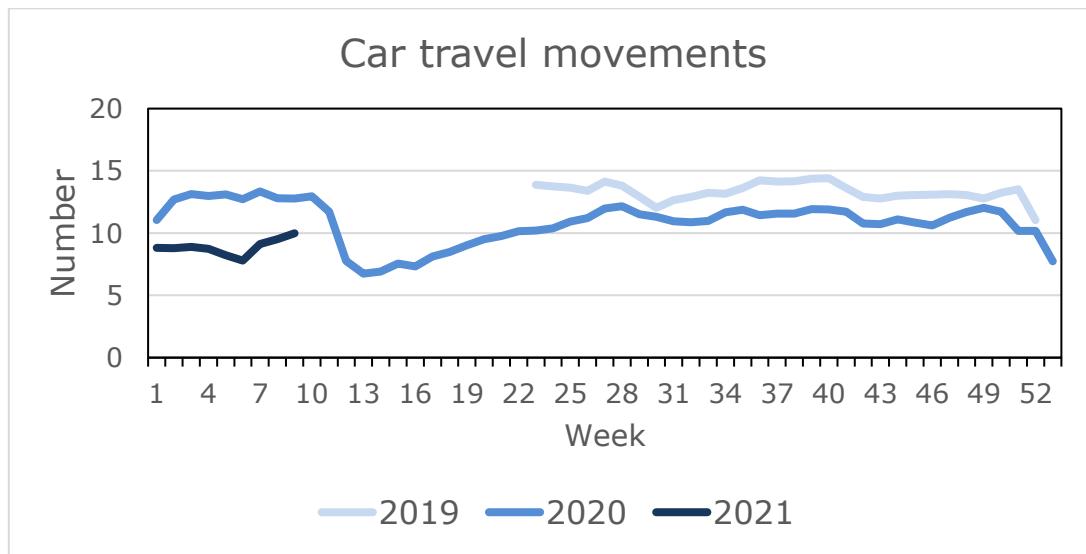


Figure 4. Car travel movements per week during 2019-2021 (Ministry of Infrastructure and Water Management, 2021)

The effect of teleworking was seen in the travel data, with a reduction of work and education related travel movements starting from March, a slight recovery until the second lockdown starting in December and a new reduction thereafter, as shown in Figure 5 (Ministry of Infrastructure and Water Management, 2021). This results in far less congestion on the Dutch freeway network. It turned out that a decline of 15% travel demand during peak hours is enough to avoid structural congestion (Turpijn, 2020). The decreased travel volumes also resulted in an estimated reduction of carbon dioxide emissions of road traffic by 1.7 Megatons (Boot, 2020).

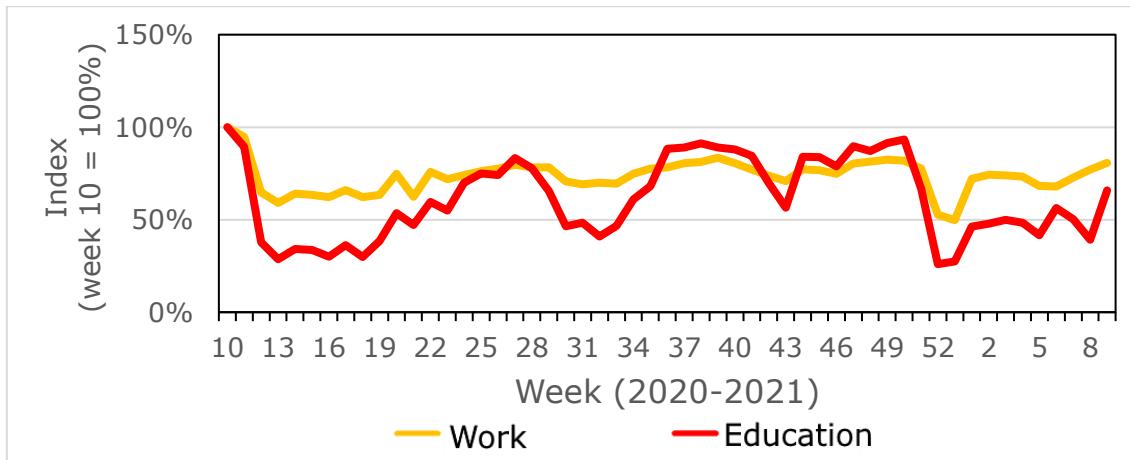


Figure 5. Work and Education related travel movements

(Ministry of Infrastructure and Water Management, 2021)

It is unclear whether this changed travel behaviour, resulting from the increase of teleworking, will continue when the COVID-19 outbreak has been resolved, or if people will fall back in their previous behavioural patterns. Based on the recovery during the summer of 2020, it can be argued that there is a possibility that travel demand will recover when the pandemic has ended. Because of the decreasing impact of teleworking on congestion and therefore on societal costs of delays, it would be a positive development if teleworking is continued and travel demand would be more spread out over the day. As results of previous policies were limited, new policies might be needed to achieve this (Kennisinstituut voor Mobiliteitsbeleid, 2016).

Current research is not sufficient to explain the impacts of the pandemic on long-term travel behaviour, as further explained in the research lens at Chapter 2. Previous epidemics, like the MERS and SARS outbreaks, did not cause substantial change in travel behaviour (Van Cranenburgh, Chorus, & Van Wee, 2012). Unclear is whether this would also apply for the COVID-19 pandemic. Research from Van Wee, Vos, & Maat (2019) did show that attitudes can influence travel behaviour, which are impacted by triggers. According to them, attitudes are usually defined as the degree to which a person favours something favourable or unfavourable. In this research, triggers were categorized in environmental, societal and personal triggers. The COVID-19 pandemic likely generated triggers of all three categories, which would imply it has an impact on travel behaviour, but this was not validated using data (Van Wee, 2020).

New research is needed to confirm that attitudes of employees regarding teleworking have changed, in what way they have changed, and what the causes of these changes were. Moreover, in this research the long-term impacts of these attitude changes on travel behaviour and the built environment will be discussed.

1.2 Problem specification

This paragraph presents the research gaps and the goals of this research. The limitations of earlier research, which were introduced in the previous paragraph, are the lack of validation of travel behaviour change models for the COVID-19 case regarding teleworking and the limitation that current travel behaviour models do not incorporate the effect of policy measures. This will be further discussed in the research lens (Chapter 3). Because of these limitations, previous research is unsuitable to determine the enduring impacts of the COVID-19 pandemic on future travel behaviour and the ability to change this behaviour with policies.

The research gaps are defined as follows:

Practical knowledge gap:

At this time it is uncertain whether the pandemic will have enduring impacts on travel behaviour. It is unclear how the pandemic compares to other abrupt changes in terms of the ability to substantially change travel behaviour, whether this can be influenced by policies, and which policy measures can be applied.

Theoretical knowledge gap:

Current theoretical models do not fully explain the enduring impact of abrupt changes on travel behaviour and are not validated by qualitative data. It is uncertain whether policies can be used to ensure that travel behaviour is changed permanently.

Research goal:

The goals of the research which resolve the research gaps are: to introduce an integrated model which explain changes in travel behaviour caused by abrupt changes, to determine attitude changes towards teleworking caused by COVID-19, to identify enduring impacts of the COVID-19 pandemic on teleworking and to propose policy measures which sustains teleworking in the future.

1.3 Research Questions

To address the research gaps presented in the previous paragraphs, the following research questions are conducted:

Main research question:

- What policy strategy design can be introduced, so that teleworking is continued in the future to reduce congestion?

Sub-questions:

- What are the attitude changes on teleworking caused by the COVID-19 pandemic?
- What could be the enduring effects of the COVID-19 outbreak on teleworking and related travel behaviour, based on theories for travel behaviour changes?
- What policy measures can be taken to facilitate enduring change of teleworking when COVID-19 related measures are discontinued?

1.4 Scoping

This research is scoped by the impacts on attitudes and travel behaviour of the COVID-19 pandemic. Large amounts of the effect of the pandemic on travel behaviour is related to the increase of teleworking. Therefore, this thesis is mainly focused on teleworking. Other impacts of the pandemic, such as economic impacts, are not addressed. As stated in the research lens (Chapter 3), future developments of teleworking are likely to be affected by attitudes on teleworking, which is why this is the main element during this research.

As this thesis is conducted for Rijkswaterstaat, the road authority for the Netherlands, the case is focused on impacts which can be linked to road traffic. For this reason, impacts on other industries like aviation are not incorporated in this research. As stated in the introduction, developments in teleworking will impact traffic volumes. Because investments in road infrastructure depend on travel volume predictions, the developments in teleworking can influence decisions on future investments.

The research is also geographically limited to the Netherlands, as the goal of the research is to provide a policy strategy on teleworking for the Netherlands. However, some researches of other countries are mentioned, to provide more richness in the analyses.

1.5 Outline of the report

Chapter 1 introduces the context of the problem, the research gaps and the research questions. The methodology of this research is introduced in Chapter 2. Chapters 3 provides the research lens which is used during this research. In Chapter 4 research on the impact of the COVID-19 pandemic on teleworking is shared. Also previous research on teleworking policies is given in this chapter. In Chapter 5 the results from individual interviews are discussed. In Chapter 6 the findings from the focus group are presented. In Chapter 7 the data collection methods are combined using crystallization. In Chapter 8 the proposed policy strategy design is presented. Chapter 9 provides a discussion on this research and chapter 10 concludes the paper. In Figure 6 the outline of the paper is presented.

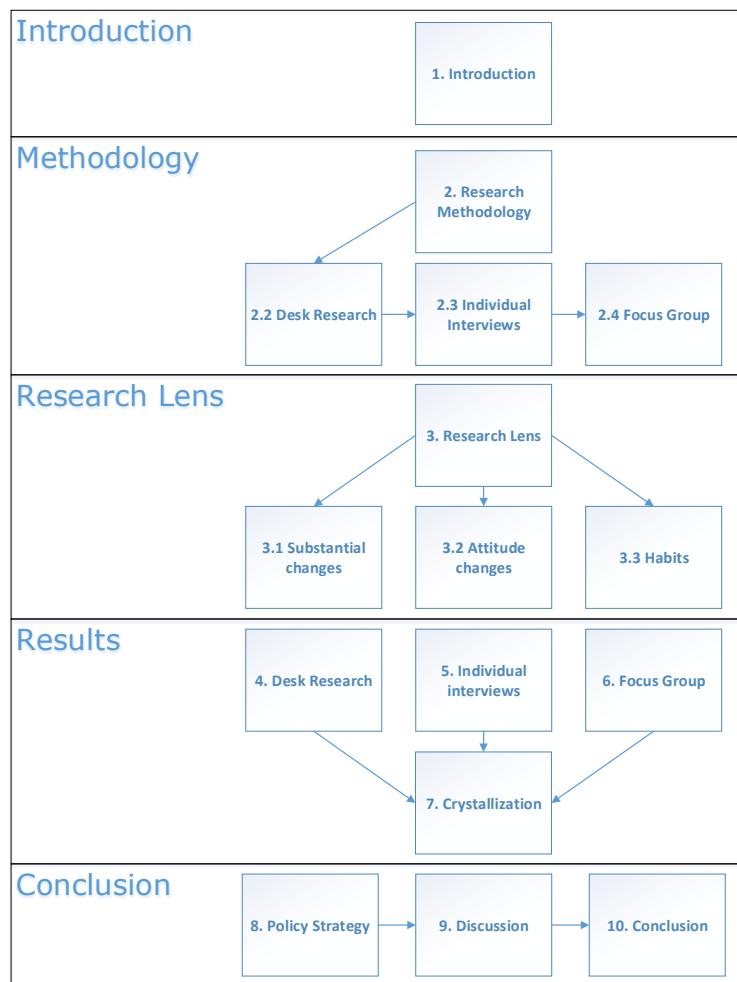


Figure 6. Paper outline

2 Research Methodology

Based on the introduction and the research questions as presented in Chapter 1, it is clear that this thesis is focussed on the impacts of the COVID-19 pandemic on teleworking. This thesis combines theoretical models with insights from qualitative data analysis. As the thesis consists of different kinds of research, different kinds of methods will be carried out to answer the research questions. This combination of methods is called the research methodology, which will be presented in this chapter.

2.1 Choice of research methods

To determine answers to the research questions introduced in Chapter 1, different approaches could be used. However, approaches that answers all the research questions are limited. Aggregated attitude changes could be determined by using stated choice modelling. While this would give interesting findings on developments in the population, the additional obtained information on individual preferences is limited. Enduring impacts and the impact of policy measures could be identified using a model study, but assumptions on how individuals would react should be made, while this is at this moment uncertain. To counter this, the model should be validated by data, for instance from previous abrupt changes. Such an approach would be appropriate for PhD research, but as this thesis is limited in time, other data collection methods were preferred. A choice would have been needed on which aspect of the problem was focused. Because answering all the sub-questions requires research methods which gives the researches the ability to analyse different aspects of the problem and to identify solutions for the stated problems, in this research a qualitative approach is chosen based on existing theoretical models which incorporates previous research, research on individual preferences and expert views.

2.2 Research Lens

To explore the effects of the COVID-19 pandemic on teleworking and travel behaviour, a research lens is required. In this research is chosen to focus on the study of travel behaviour choices made by individuals, rather than aggregated choices made by the population, because this gives the most insights in the underlying causes of travel behaviour choices. Therefore, during this research a qualitative approach is used to collect and analyse the change in individual preferences regarding teleworking of employees.

The research lens is based on theoretical models for attitude changes and changes in travel behaviour. These models are represented in frameworks, which will be discussed in the next chapter. Using insights of these different frameworks, an integrated framework for travel behaviour is proposed, which is used as the research lens in this report.

The integrated framework is used as the lens to analyse the research questions in this thesis; the framework helps to gain a better understanding in how attitudes on teleworking have changed during the pandemic and what the long-term effects on travel behaviour will be. The research lens will be validated in the discussion, based on the results of the qualitative data collected during this research.

2.3 Desk Research

Desk research is used to gain insights from previous research which can be used to answer the research questions. Desk research, also known as literature research, is a method to learn more about the chosen research topics (Chu & Ke, 2017). For this research, the desk research is divided between different subtopics. Firstly, impacts of previous substantial changes are reviewed, thereafter previous applications of theories for attitude changes are reviewed. Furthermore, to gain more insights about the contextual situation, quantitative data from surveys on teleworking during the pandemic are assessed and finally previous policies to stimulate teleworking are reviewed.

Different sources of information were used during this research method. The main sources were results from the search engines SCOPUS and Google Scholar. The mainly used keywords were "attitudes travel behaviour" and "teleworking policy". Furthermore, backward snowballing was used. Relevant peer-reviewed studies were limited. Because this study is focused on the Netherlands and to broaden the sources of information, also reports of the Ministry for Infrastructure & Water Management and their Netherlands Institute for Transport Policy Analysis (KiM) are used for the collection of survey data and information about previous policies.

2.4 Individual interviews

Conducting individual interviews is a strategy for qualitative data collection (Lambert & Loiselle, 2008). These individual interviews are used to collect data about attitudes and beliefs of participants on an given subject (Fielding, 1994). Individual interviews can be structured or semi-structured. The advantage of semi-structured interviews is the flexibility, the interviewer can ask follow-up questions when interesting leads arise (Bernard, 2017). Challenges of individual interviews include the interaction between the interviewer and the participant, the participant can feel the need to impress the interviewer (Fielding, 1994). Other challenges are that words do not accurately describe the feelings of participants and while the interviewer wishes to adopt to a neutral role, the unintentional preference for a particular perspective can bias the results (Lambert & Loiselle, 2008).

In this research, semi-structured interviews are used to gain insights about the attitudes of employees about teleworking. Employees which have used teleworking were selected as participants, because they are regarded as the experts on this subject. Employees themselves know best how their opinions towards teleworking have shifted during the pandemic.

The interviews were semi-structured designed, because this research did not require binary answers, but was instead looking for as much qualitative information about the aspects causing attitude changes as possible. For this reason it is necessary to ask follow-up questions when the respondent did not provide elaborate answers. The interviewer wanted to avoid steering the respondent into a particular answer, but instead provided the respondents the opportunity to elaborate on the answer themselves.

The flexibility is used to gain as much insights as possible about underlying reasons and beliefs for their attitudes. Furthermore, ideas about improvements and policies to stimulate teleworking are collected using these interviews. A limitation of this method is that there is no option to check whether the stated attitudes represent their actual attitudes and beliefs.

Employees from different sectors were interviewed, to gain a broad view of the population. No fixed number of participants was set, but instead the data collection was continued until few new arguments were given during the interviews, which was defined as the moment of theoretical saturation (Locke, 2001). This was reached after interviewing ten participants, for approximately one hour each. In Table 1 an overview of the interviewees is given. The names of the participants are anonymised for privacy reasons, instead they are given a code which is used during the analysis.

Table 1. Overview of interviewees

CODE	POSITION	SECTOR
A	Consumer Insight Research Executive	Market research
B	Category Manager Noord-Europa	Computer hardware
C	Project Leader	Vehicle charging
D	Treatment coordinator	Social pedagogy
E	PhD Biochemical Research	Academic research
F	Municipal official	Local government
G	High Voltage Engineer	Energy infrastructure
H	Project manager	Road vehicle authority
I	Sales manager NDP	Audio-visual technology
J	Consultant	Business consultancy

The interviews consisted of four subtopics, based on the (sub-) research questions. Firstly, the experiences of the respondent with teleworking, before and during the pandemic, which also discussed the change in attitude regarding teleworking. Thereafter, the expectations for teleworking after the pandemic are discussed. Thirdly, improvements that can be made to improve the experience of teleworking are identified. Finally, interviewees are asked to come up with policies which could stimulate teleworking.

The documentation of the interviews is based on notes during the interviews, inspired from the method proposed by Halcomb & Davidson (2006). The notes are documented in the order of the initial questions, while the answers may not be necessarily given in that order. The audio of the interviews was recorded. The notes made during the interview are reflected by listening to the audiotape and additions are made when necessary. This was considered to be an appropriate method to document the interviews for the analysis required in this research. The high level of detail of a full transcript was not considered to be appropriate, because of the time-consuming task and the inflexibility of this method.

2.5 Focus Group

The last data collection method which was used, was a focus group meeting with experts in the field of mobility (policy). Focus groups are primarily used to collect interaction data resulting from discussions between participants, which increases the depth of the research and reveal less obvious aspects about phenomena (Lambert & Loiselle, 2008). Based on the differences or similarities between the group members, focus group meeting can produce information about the range of perspectives and experiences on a certain subject.

Focus group meetings are often combined with individual interviews, in particular to complete and confirm data from the individual interviews, to contrast perspectives and to increase the credibility of the findings (Lambert & Loiselle, 2008). Combining results from different data collection methods is called triangulation or crystallization, with crystallization the more appropriate term for this research, because it does not only use the focus group for the confirmation of data, but also uses it to get a more multi-dimensional view of the subject (Tobin & Begley, 2004).

The focus group for this research was organized to validate and reflect on the results from the interviews and to complement the insights with additional information. The meeting consisted of four rounds, discussing different aspects of the subject: experiences, expectations, desired situation and policies. Each round was introduced by sharing insights from the individual interviews. The meeting was moderated by a lecturer from the TU Delft, who led the discussion. The moderator started by asking the participants to share their insights, thereafter they could comment on each other.

In the first round the experiences during the pandemic were discussed. In this round the lessons learned during the pandemic were shared. Insights from collected data by different organizations were shared, as well as from their own experiences. In the second round the future expectations were discussed, both for teleworking and the effects on travel behaviour and the built environment. In the third round, opinions about the desired situation for teleworking were shared and requirements for policies to reach this situated were discussed. Finally, policy measures which can be implemented to stimulate teleworking were discussed. The agenda of the focus group meeting and the notes of the meeting are documented in Appendix E.

Participants

The participants of the focus group meeting are experts from different organizations, both public and private organizations. This helps to gain a multi-dimensional view on the topics, the different perspectives enriches the discussion and can lead to new insights. The participants of the focus group are coded for privacy reasons. These codes, which are used during the analysis of the focus group meeting, and the corresponding organization, are given in Table 2.

Table 2. Participants of Focus group

CODE	DESCRIPTION OF ORGANIZATION	TYPE
I&W	Ministry of Infrastructure & Water Management	Public
NS	National Railways	Semi-public
ANWB	Royal Dutch Touring Club	Private
MUCONSULT	Mobility consultancy company	Private
KIM	Netherlands Institute for Transport Policy Analysis	Public

3 Research Lens

The research lens gives an overview of applicable theoretical frameworks and theories which are applied during this research. This enables the researcher to scientifically explore the effects of the COVID-19 pandemic on enduring travel behaviour changes. For this research, different theories are used, the theory about substantial changes from Van Cranenburgh et al. (2012), the theories for attitude changes from Van Wee, Vos, & Maat (2019) and Van de Coevering, Maat, & Van Wee (2015), and the habit discontinuity theory of Verplanken, Aarts, Van Knippenberg, & van Knippenberg (1994). In this chapter these theories are described, the reason for using these theories is explained and the limitations of these theories to answer the research questions are discussed. An integrated framework for teleworking is proposed as the research lens in this paper.

3.1 Substantial changes

The first theory which is used is the typology of substantial changes. This theory was introduced by Van Cranenburgh et al. (2012) and discusses the impacts of previous changes on mobility patterns. Discussed is that mobility patterns do not just follow trends, but are also shaped by unconventional changes, referred to as 'substantial changes'.

A substantial change is defined as "an unconventional change that directly or indirectly causes an "enduring" change in at least one principal indicator of mobility of at least 5% on a supranational scale" (Van Cranenburgh et al., 2012). In this context "enduring" means that the impact lasts over at least a decade, compared to a baseline scenario. The indicators of mobility differ per case, but are mentioned to be indicators to measure mobility patterns on a (supra)national scale, such as yearly amount of passengers, modal split and total distance travelled.

These substantial changes are structured using a typology. Two dimensions are used in the typology. The first dimension is the rate of speed in which the change takes place. Two rates are distinguished: an abrupt change, which means the rate of speed is high, and a gradual change, which means a low rate of speed. The second dimension is the sphere in which the change happens. Three spheres were categorized: the technosphere, the anthroposphere and the biosphere.

Changes in the **technosphere** are changes which are related to technologies, examples which are stated are the emergence of ICT systems and electric bikes. Changes in the **anthroposphere** are the result of human actions, such as terrorist attacks and economic crises. The **biosphere** is independent of human actions, changes that take place are the result of natural processes, such as pandemics, tsunami's and climate change (Van Cranenburgh et al., 2012).

Using these two dimensions, six typologies of substantial changes occur, being Incidents, Developments, Events, Trends, Disasters and Evolutions.

Table 3. Typology of substantial changes (Van Cranenburgh et al., 2012)

	Technosphere	Anthroposphere	Biosphere
Abrupt change	Incident	Event	Disaster
Gradual change	Development	Trend	Evolution

Based on the definition of the biosphere in the paper of Van Cranenburgh et al. (2012), and the application of the typology on earlier epidemics such as MERS-CoV and SARS-CoV-1, the SARS-CoV-2 (from now on COVID-19) pandemic can be typologised as a disaster, an abrupt change in the biosphere. The viruses originated from natural causes and spread rapidly (Mahase, 2020).

The research on long-term effects of disasters on travel behaviour is limited. Research on substantial changes determined that the SARS-CoV-1 epidemic only caused temporal impacts on travel behaviour (Van Cranenburgh et al., 2012). The effect of the SARS-CoV-1 outbreak on tourism demand in Japan were most dominant during the first 5 months and lasted for about one year (Min, Lim, & Kung, 2011). The changes in mobility patterns which were investigated in the research were mainly focused on the change in tourism demand, teleworking was not included in the research (Kuo, Chen, Tseng, Ju, & Huang, 2008; Lean & Smyth, 2009; McAleer, Huang, Kuo, Chen, & Chang, 2010). Other epidemics had even smaller enduring effects.

Even when all the spheres of abrupt changes are included, the only abrupt changes which are considered as substantial changes are 9/11 and the oil crises. 9/11 caused a chain of events resulting in a decrease of air travel demand. Following the attacks, revenue passenger miles declined over 30%, which is more than any other shock in the airline industry (Ito & Lee, 2005). Besides the initial demand shock caused by panic, because of the more strict security measures and the perception of the risk of flying, the enduring decline of demand was 7.4% lower than the previous trend (Ito & Lee, 2005).

The oil crises during the 1970's led to increased fuel prices; the government interacted in the market by introducing fuel rationing policies (Van Cranenburgh et al., 2012). The similarity of these substantial changes is that the government introduced policies which amplified the occurring behaviour change.

Hypothesized can be whether the impacts of the COVID-19 pandemic will be equivalent of earlier epidemics. While the MERS-CoV and SARS-CoV-1 epidemics resulted in the combined loss of 1683 lives, the scale of these epidemics is limited compared to millions of deaths caused by COVID-19 (Mahase, 2020). MERS-CoV and SARS-CoV-1 were categorized as an epidemic, while COVID-19 has been a pandemic since March 2020, which means MERS and SARS mainly spread regionally, while COVID-19 spread globally (Zhu et al., 2020). This means the consequences of the COVID-19 pandemic are much larger than previous epidemics.

As stated in the first chapter, the COVID-19 pandemic resulted in an increase of teleworking (Kennisinstituut voor Mobiliteitsbeleid, 2020b). While the pandemic as such can be seen as an abrupt event, teleworking is not a new phenomenon. Teleworking has become more popular in the past decades, because of the rise in digital communication methods (Van der Loop, Willigers, & Haaijer, 2019). Following the theory, teleworking is a gradual change in the technosphere, which means it is typologised as a development. ICT development was stated as a substantial change which changed travel behaviour enduringly (Van Cranenburgh et al., 2012). The abrupt change caused by the pandemic influences the development of teleworking. The paper on substantial changes does not address the implications of such combinations of changes (Van Cranenburgh et al., 2012). The pandemic could cause a flywheel effect which accelerates the development of teleworking. This would imply that the pandemic should not only be seen as an independent abrupt change, but as a factor which influences the development of teleworking.

While the typologies of substantial changes is an interesting approach for analyzing disruptions, which could impact travel behaviour enduringly, this research does not provide enough tools to predict the effect of current disruptions, such as the COVID-19 pandemic. The discussed disasters in the paper were mainly disruptions which only lasted for a short amount of time (Van Wee, 2020). Whether the impact of the pandemic will last for over a decade, which is the criterion for being a substantial change, is uncertain at this time.

3.2 Attitude changes

Another theory which is used to explain changes in travel behaviour, is the attitude change model. Different definitions of attitudes exist, but it can be defined as the degree in which someone favours the certain behaviour (Thorhauge, Haustein, & Cherchi, 2016). In the previous decades, many research is done on the impacts of the attitudes on travel behaviour, and vice versa.

The theory that behaviour is influenced by attitudes towards behaviour, was first defined by Ajzen's (1991) theory of planned behaviour. Scientific research on the effect of attitudinal characteristics on travel behaviour in San Francisco showed this is also applicable to travel behaviour, but this research did not formulate how these attitudes were formed or changed (Kitamura, Mokhtarian, & Laidet, 1997). Some insights on attitude change can be provided by the cognitive dissonance theory which states that people strive to hold attitudes and behaviour in harmony, and inconsistency between attitudes and behaviour should be eliminated (Festinger, 1962). This would imply travel behaviour could change when attitude change, but it was uncertain of this process was shaped.

Van Wee, Vos, & Maat (2019) defined a model for attitude changes, which describes three types of processes: cognitive processes, behavioural processes and affective processes (see Figure 7). These processes were assumed to be changed by triggers in three categories: the personal level, the social level and environmental context. These triggers impact the three processes and as a

result from the changes of these processes, attitudes can change. The processes can also affect each other. The relationship between attitudes and behaviour can be directed in both ways.

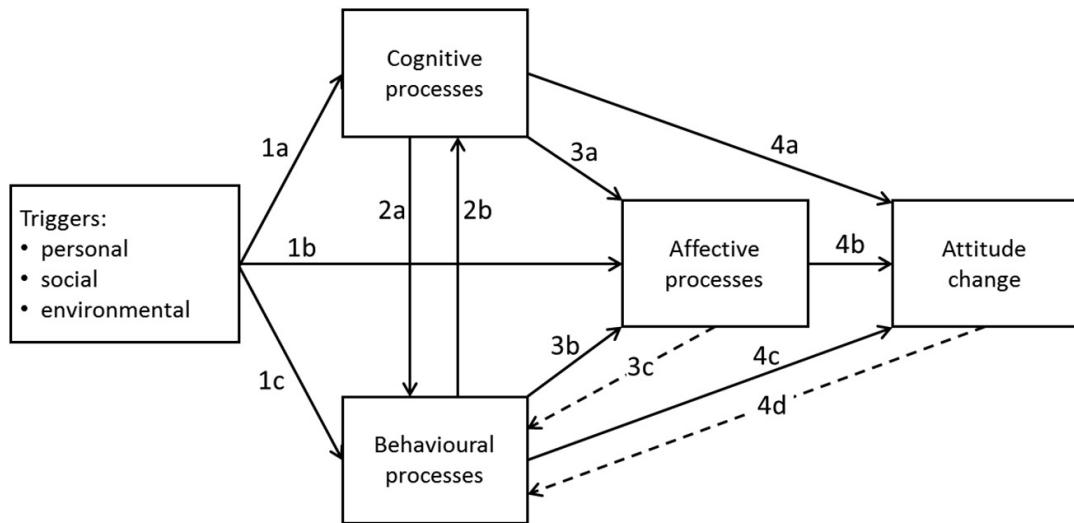


Figure 7. Conceptual model for attitude changes

(Van Wee et al., 2019)

The relations between attitudes, travel behaviour and the built environment is further conceptualized in the model of Van de Coevering, Maat, & Van Wee (2015), as indicated in Figure 8. This model represents the two-way relations between attitudes, residential choice and travel behaviour (Van de Coevering et al., 2015). Travel behaviour can change because of changing attitudes towards travel behaviour, but this can also change the built environment, which would also impact travel behaviour.

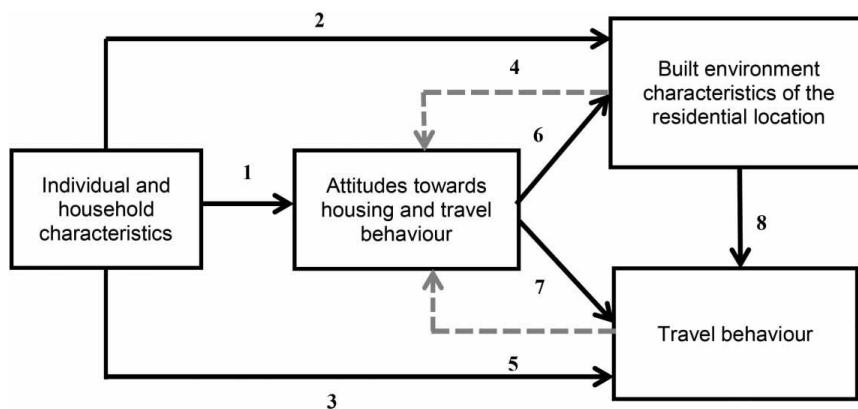


Figure 8. Conceptual model of relationships between attitudes, travel behaviour and the built environment

(Van de Coevering et al., 2015)

Van Wee (2020) already discussed that the COVID-19 pandemic can be seen as a trigger which influences all three processes. This means that the pandemic has changed attitudes and consequently travel behaviour and the built environment. However, this assumption is not validated with data. Furthermore, it is unclear if attitudes can also be reversely changed, when the pandemic has ended. The model also does not incorporate the effect of policy on travel behaviour, so it is unclear how travel behaviour can be influenced by policy.

3.2.1 Applying attitude change model to disasters

The attitude change model has been applied before, to a case regarding the impact of terrorist threats on travel behaviour in Jerusalem. This perception of risk was incorporated in the attitude change model by Elias, Albert, & Shiftan (2013), which visualizes the effects of terrorist attacks on travel behaviour of surface transportation modes by a framework (see Figure 9). In this framework is shown that not only the risk itself directly influences travel behaviour, but also indirectly via the attitudes and risk perception of people. In their Jerusalem case this leads to a lower mode-choice for bus use, while objectively car use was still more dangerous than riding the bus (Elias et al., 2013).

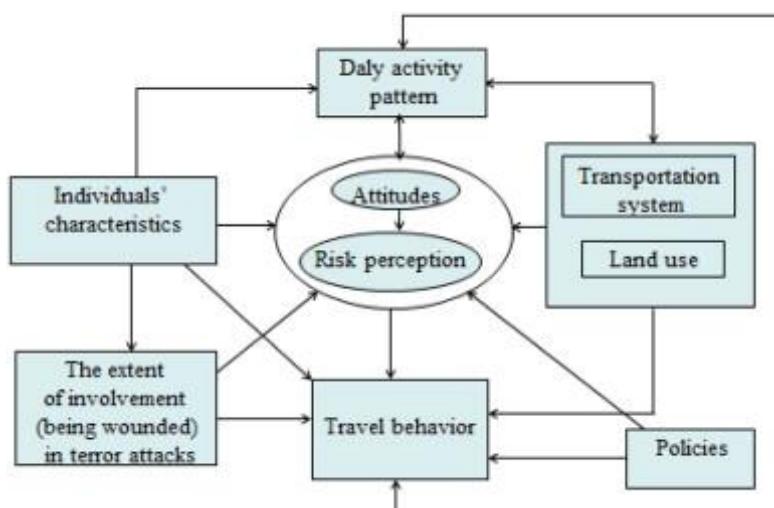


Figure 9. Framework impact terrorist attacks on travel behaviour (Elias et al., 2013)

This may also be applied to the COVID-19 case, mode choice of public transport was changed to car use, because it is implied that the risk of infection in public transport is higher than during car trips, but other risk may be higher. For instance, in tourism the main factor explaining the decrease in travel demand was risk perception, comparable to terrorist threats (Neuburger & Egger, 2020). This risk perception can be altered using policies, a study on measures fighting the risk perception of train travelers discovered that wearing face masks and extra cleansing resulted in lower risk perception and a higher willingness to pay for a train trip (Van de Wiel, 2021). It remains unclear whether this relationship is still valid, when risks of the pandemic are decreased.

3.3 Habits

Verplanken, Aarts, Van Knippenberg, & van Knippenberg (1994) discussed that not only attitudes affect travel behaviour, but also habits. This implies that changing habits could affect travel behaviour.

Following the habit discontinuity hypothesis, habits can be changed by context changes, which leads to more deliberately chosen behaviour (Verplanken et al., 2008). Context changes which are discussed are temporal freeway closures and relocations. This was mainly used to study changes of car mode choice habits at environmentally concerned people, but this theory might be applicable to more cases.

Instead of only mode choice, this may also be applicable to the decision to make a trip at all. Because of the forced teleworking during the pandemic, nowadays people might be more aware of the negative consequences of meeting in person, such as environmental costs and travel time, and would rather choose to meet digitally. Hypothesized can be that, before the pandemic, negative effects of flexible working were overestimated, just as public transport use in the freeway closure case. Data should be gathered to justify this claim.

Context change gives a chance to reflect on previous habits and motivates to reevaluate travel behaviour (Bamberg, 2006). The COVID-19 pandemic could be such a context change, which changes habits and consequently travel behaviour. Because of this reevaluation of current behaviour, opportunity windows is created to change behaviour enduringly.

3.4 Framework for teleworking

Using insights from the three theories provided in this chapter, a framework was designed to integrate all these theories and focus on the relevant aspects for the development of teleworking.

Figure 10 shows the integrated attitude model on teleworking. The integrated model is based on the insights of the theories mentioned in this chapter. The arrows displayed in the figure are explained in Table 4. The integrated model is validated in this report, by the qualitative data collected by the research methods.

Table 4. Explanation of arrows of the integrated attitude model

Arrow	Explanation	Derived from
1	Triggers impact changes in attitude, as in the attitude change model. The underlying processes are neglected in this model for simplicity reasons.	Attitude change model (Van Wee et al., 2019)
2	Changes in attitudes causes shifts in teleworking, as stated in paragraph 3.2.	BE-TB model (Van de Coevering et al., 2015)
3	Individual characteristics determine the ability to change attitude, such as the type of job and the type of household .	BE-TB model
4	Enduring change of travel behaviour change the habits of travellers. This discontinuity of habits can indirectly be caused by (contextual) triggers. Changed habits contribute to the enduring change of teleworking, because these are difficult to change.	Habit discontinuity theory (Verplanken et al., 2008)
5	Travel behaviour itself can also change attitudes towards that behaviour.	Attitude change model
6	Habits can also affect attitudes, when behaviour has been performed for a long time and became a habit, people develop attitudes towards this behaviour. Habits can also limit attitude changes, because without contextual triggers, habits are difficult to change.	Habit discontinuity theory
7	Attitudes can impact the built environment, for instance attitudes on teleworking influences the need for office spaces and residential locations in different areas. This supported by the theory from Marchetti's constant, which states that average time spent on commuting remains constant (Cui, Wu, Sobolevskiy, Xu, & Ratti, 2015)	BE-TB model
8	Individual characteristics of households and businesses determine the ability to change residential and office locations and consequently influence the built environment.	BE-TB model
9	The built environment influences behaviour, for example because of changed travel times and available office space.	BE-TB model
10/11	Policy measures can impact travel behaviour, both directly or indirectly because of changes in attitudes .	Terrorist attack model (Elias et al., 2013)

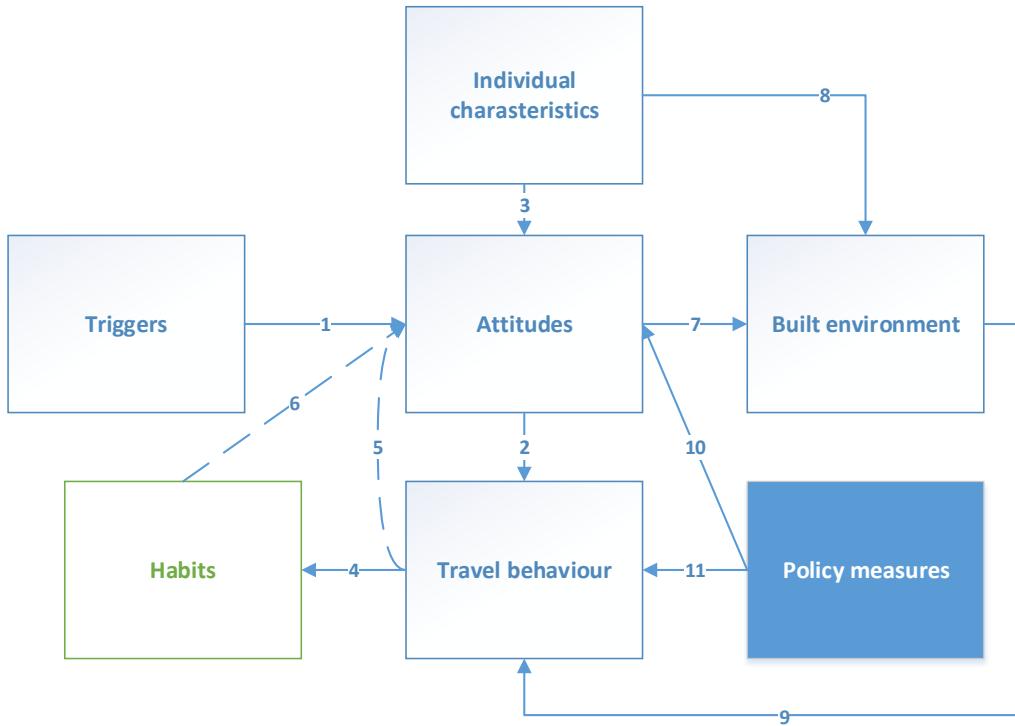


Figure 10. Integrated attitude model on travel behaviour.

3.5 Conclusion

The theories provided in the previous paragraphs all explain part of the problem discussed in this paper. Furthermore, these models do not explain whether policies could be used to ensure that changed attitudes enduringly change teleworking. In Figure 10, an integrated framework is proposed which incorporates the impacts of different factors on teleworking. However, this model is not yet validated by data. Validations are necessary to determine whether attitudes towards teleworking have changed and additional data is needed to determine the enduring changes on teleworking caused by the COVID-19 pandemic. To resolve this, data of attitudes, habits and teleworking changes during the pandemic have to be collected.

In the Desk Research in Chapter 4, quantitative data is collected to determine how the COVID-19 pandemic compares to previous abrupt changes and whether attitudes, habits and travel behaviour have changed during the COVID-19 pandemic. In Chapter 5, qualitative data is gathered using individual interviews, which asked employees about their changed behaviour and attitudes. This data is reviewed and validated by using a focus group meeting, discussed in Chapter 6, which also identifies effects on the built environment and identifies policy measures which could ensure travel behaviour is not reversely changed when the impacts of the trigger caused by the pandemic has ended.

4 Desk Research

In this chapter, the results of the desk research are presented. The starting point of this research was the research lens provided in the previous chapter. Using this lens, survey data of changes in attitudes and travel behaviour are discussed and previous policies on teleworking are reviewed.

4.1 Survey data on teleworking during COVID-19

Some aggregate data about attitude changes are available, different surveys were carried out asking questions about teleworking (Kennisinstituut voor Mobiliteitsbeleid, 2020b). These surveys were carried out by the Netherlands Institute for Transport Policy Analysis, the National Railways NS, the Royal Dutch Touring Club ANWB and insurance company Nationale Nederlanden. The results regarding the share of employees which use teleworking were shown in Figure 3. The surveys also asked in different ways whether the attitude of the respondent towards teleworking has changed.

All of these surveys showed a positive attitude change during the first phase of the pandemic, as can be seen in Figure 11. Detailed results of these surveys can be found in Appendix B. The ANWB survey already showed some decrease in attitude in the summer of 2020. More recent data showed that while more people had a positive attitude towards teleworking, the number of hours people are willing to telework in the future is decreasing (Faber et al., 2021).

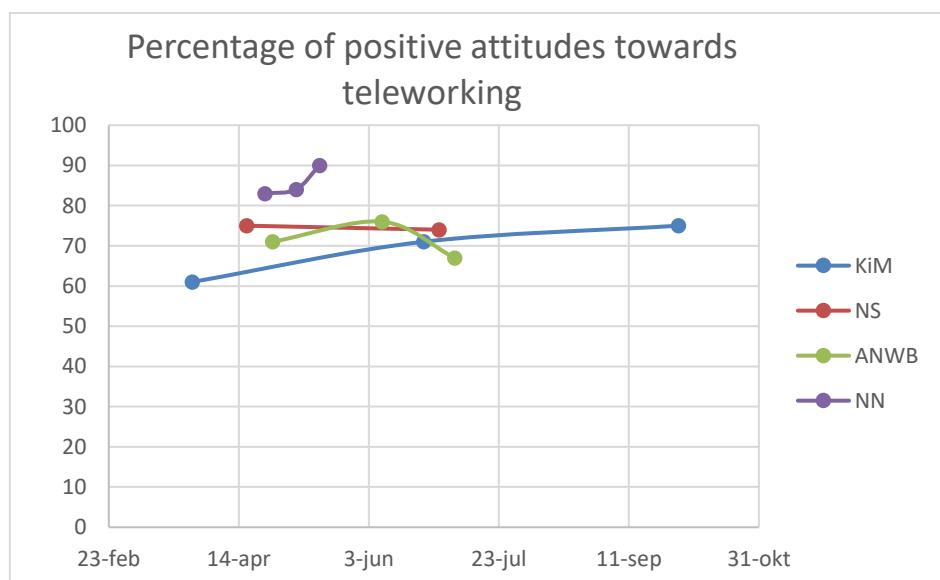


Figure 11. Share of respondents stating they had a positive attitude towards teleworking (Faber, 2021; Kennisinstituut voor Mobiliteitsbeleid, 2020b)

The NS survey also found that employees are willing to telework more days in the future. This was also found in the KiM survey, in which the share that is willing to telework even increased over time (Faber et al., 2021). These positive attitude changes were not only present in the Netherlands, but were also found in an Australian survey (Beck, Hensher, & Wei, 2020).

4.1.1 **Advantages**

Recent national travel research on 13,000 respondents resulted in interesting findings about shifts regarding teleworking. Most predominant benefits of teleworking were the lack of travel time (stated by 77%), flexible working hours (38%) and more free time (28%) (MuConsult, 2021).

4.1.2 **Disadvantages**

Also, insights about the downsides of teleworking were gathered using surveys. These downsides were experiences more negatively as the pandemic continued (Faber et al., 2021). Disadvantages mentioned by respondents were: feeling less connected with colleagues, the lack of an appropriate work place, lack of facilities, difficult work-life balance, the lack of support from the employer and unsuitable place to telework (Faber et al., 2021; MuConsult, 2021).

4.1.3 **Productivity**

Changes in perceived productiveness differs between respondents. In April 2020, respondents stating higher and lower perceived productivity was the same at 34%, this increased to 38% higher productivity and 20% lower productivity in 2020.

4.1.4 **Expectations**

The ability of respondents to predict the future developments in teleworking seem to be lacking. In October 2020, respondents were already less teleworking than they intended in the survey of April 2020 (MuConsult, 2021). An explaining factor can be that 50-70% of the respondents stated that the reasons to telework was that it was recommended by the government or obligated by the employer.

4.1.5 **Improvements**

The national travelers research also asked participants what extra measures have to been taken according to the participants to improve teleworking. More than 50% of the participants stated that financial compensation and facilitating necessities is needed, other measures which are proposed are stated active stimulus of teleworking (42%), making arrangements about telework days (35%) and more guidance (10%) (MuConsult, 2021).

4.1.6 Limitations of data

While this data gives interesting data about attitudes changes, aggregate data can lead to misleading conclusions about individual preferences and variances in the data (Holderness, 2016). This limits the usability of this data to validate the models stated in the research lens for the COVID-19 case.

Some insights about variances in the population are given in the paper of Ton, Arendsen, Bruyn, & Severens (2021), which categorizes different kinds of teleworkers, being 'enthusiastic full-timers', 'positive part-timers', neutral new part-timers' and 'content self-employed'. While this research provides much more detailed information about characteristics of these typologized groups, the information about individual preferences is still limited. To learn more about these individual preferences, in this research individual interviews were carried out with employees, about changes in their opinion towards teleworking and asked to elaborate on their reasoning behind these changes.

4.2 Previous research on teleworking

While teleworking became much more common during the pandemic related lockdown, especially working from home, this is not a new phenomenon. After digital communication systems became more common in personal households, the amount of hours worked from home increased by 38% in 2016 compared to 2000 (Van der Loop et al., 2019). Besides working from home, other kinds of teleworking that can be distinguished are working at a flexoffice, shifting working hours to avoid peak hours and working during travelling. Employees with flexible working times, are less likely to depart before or during the morning peak and more likely to depart after the morning peak (He, 2013). The benefit from flexible working is the reduction (reduced growth) of congestion and the reduction of CO₂-equivalent emissions (Ministry of Infrastructure and Water Management, 2019). Governments have seen the need to increase teleworking, because it is seen as a method to reduce congestion, not only in the Netherlands, but also in other countries like the United States (Lari, 2012; van der Loop, 2016).

Something which can limit the use of teleworking is the cooperation of employers to use flexible working. When employees are expected to arrive at work on fixed times, shifting travel demand will be difficult. It is unclear how employers can be encouraged to cooperate with flexible working. Another complicating factor is that the desire to meet social norms is higher than the desire to reduce travel time (Thorhauge, Haustein, & Cherchi, 2016). So, when the social norm remains working in fixed time slots on a particular location, it will be hard to change travel behaviour permanently. This is in line with the observation of Small (1982) who observed a lower Value of Time for late arrivals at flexible workers. A newer study using logit-data of the Netherlands confirmed this and stated that policies that increase peak travel costs will lead to peak spreading (de Jong et al., 2003). In a survey in the Netherlands, employees also stated that a reason why they do not telework is the fact that their employer does not facilitate them to do so (van der Loop, 2016). Often practical things like accessibility to digital systems or more flexible work hours are the

bottleneck. However, a large survey among employers resulted in the finding that employers are becoming more open to the idea of teleconferencing and teleworking, because it is a way to reach sustainable mobility goals (Mazajchik, 2020).

4.2.1 Policies

In the Netherlands few studies were done on teleworking policies before the pandemic. However, some studies were done to other forms of flexible working, like avoiding peak hours. Research using a survey among participants of different rewarding schemes for avoiding peak hours, concluded that 10-25% stated that the scheme impacted their travel behaviour (I&O Research, 2015). This is a promising finding which may be broader applied to other forms of flexible working, such as teleworking.

Implicated from the previous chapter was that interventions (policies) may be more effective when implemented after a context change (Verplanken et al., 2008). If habits towards for instance flexible working and mode choice are changed during the context change of the COVID-19 lockdown, it gives an opportunity to permanently change behaviour. This is in line with research from Marsden & Docherty (2013) which states that behaviour change can be managed during disruptions and is not as painful and problematic as travelers usually expect. They discuss the fact that during disruptions people adapt their behavioural pattern in other ways than only the traditional options policy makers take into account. This implies that new policies have to be designed to use the current opportunity to change behaviour in terms of teleworking enduringly.

4.3 Conclusion

Whether the COVID-19 pandemic can be seen as a substantial change, which enduringly change travel behaviour can only be concluded afterwards. But because the impacts of the COVID-19 have similarities with those of previous abrupt changes, it is likely that the pandemic will at least have some enduring impacts. The pandemic has already changed attitudes towards teleworking, as is showed in aggregate data. However, because of the limited use of these data to explain individual preferences, qualitative data has to be collected. In this research, this is done by conducting individual interviews, which will be discussed in the next chapter. Policies can be implemented to stimulate teleworking, because the habits of employees are discontinued which provides an opportunity to implement new policies. Possible policy measures to implement will be gathered using the individual interviews and elaborated on during the focus group in Chapter 6.

5 Individual interviews

In the previous chapter aggregate data on attitude changes were shared, but aggregate data does not explain individual preferences. In this chapter individual interviews were used to gain insights of people's individual experiences and changes in attitudes. Furthermore, measures to improve and stimulate teleworking are collected. The notes of the interviews are given in Appendix C.

The structure of the interviews was explained in Chapter 2. The respondents are coded with letters for privacy reasons. These letter are used to identify the respondents which made the claims given in this analysis.

5.1 Experiences

The majority of the participants did not have much previous experiences with teleworking (see Table 5). The participants who did have experience with teleworking, this was something respondent mainly did for a particular reason. Mainly this was done because of the combination with private activities (A, B, J) or to avoid rush hours (C).

This all changed when COVID-19 entered the Netherlands and the government advised all employees to work at home when possible. Most of the respondents all shifted to teleworking quickly after this announcement (A, B, C, E, G, H, I, J).

Some respondents stated that before the pandemic, they had negative bias towards teleworking since they did not have experience with it (B, E, F). At some employers it was not possible to work from home, because the employer did not allow it or it was not facilitated (D, E, F, I).

Table 5. Experience with teleworking

Teleworking	# before COVID-19	Respondents	# during COVID-19
Not at all	6	D, E, F, G, H, I	0
Only avoiding rush hour	1	C	0
Sometimes (<3 per month)	2	A, B	0
Regularly (=> 1 per week)	1	J	10 (A-J)

5.2 Advantages and Disadvantages

Advantages and disadvantages of teleworking were discussed during the interviews. The advantages are listed in Table 6 with the corresponding respondent codes.

5.2.1 Advantages

The lack of travel time was the most predominant advantage stated by the respondents. Respondents liked the fact that they did not have to get up early and have more free time in the afternoon. Most respondents also stated an increase in productivity, especially for individual tasks for which no colleagues were needed. Respondents were less likely to get distracted, because of a more quiet work place. The flexibility of the work day is also a main issue. Employees like the fact that they can manage their own time. More time can be spent on private activities compared to when employees are in office. Examples are grocery shopping, accepting packages or taking a walk during lunch break. On the other hand, some respondents state their work day is more predictable, they have less unscheduled meetings when teleworking. Some respondents also state they can multitask during meetings, meetings take less time and they have the feeling they are less controlled by their employer and their colleagues.

Table 6. Most often mentioned advantages

Advantage	Respondents	#
Lack of travel time	A, C, D, E, G, I, J	7
More productive (individual tasks)	A, B, C, D, I, J	6
Flexibility	A, B, F, G, J	5
Combining work with private activities	B, F, G, H, J	5
Less distracted	C, E, H, J	4
Less scheduled activities	D, E	2
Multi-tasking during meetings	A, H	2
Lack of (social) control	F, G	2

5.2.2 Disadvantages

Besides advantages of teleworking, respondents also experience disadvantages of teleworking. The advantages are listed in Table 7 with the corresponding respondent codes.

The main disadvantage which was felt by almost all respondents was the lack of social activity with colleagues. People are likely to feel disconnected from their colleagues and their work place. While some employers try to keep contact with their employees by digital meetings, coffee breaks or quizzes, the respondents still missed the social interactions which occurs when working in office. However, not all respondents stated this and the extent to which the lack of social activity was felt differs between the employees. This seems to depend on the living situation of the employee, when living alone the desire for social interaction with colleagues is higher compared to someone living with more house members.

Another disadvantage which was stated by many respondents, was the distinction between work and private life. Travelling meant there was a clear distinction between private life and work life, one respondents stated he misses travel time, because it was a way to start and to end the work day (B). Other disadvantages stated by respondents were that it was harder to concentrate because of the lack of social control, the increase of digital meetings (J) and the visibility to their superiors (H, J). The full list can be consulted in Appendix D.

Table 7. Most predominant disadvantages of teleworking

Disadvantage	Respondents	#
Social contact with colleagues	A, C, D, F, G, H, I, J	8
More difficult communication with colleagues	B, C, G	3
Work-life balance	C, I, G	3
Difficulties concentrating	B, E, G	3
Remain on work schedule	A, E	2
Visibility for employer	H, I	2

5.3 Attitude changes

In the interviews was asked how their opinion of teleworking shifted during the pandemic. This was used to determine in what direction the attitude of the respondents has changed. Often respondents refer to the advantages and disadvantages which were given in the previous paragraphs.

Concluded was that 8/10 respondents stated they became more positive about teleworking, one respondent did not state a difference and one respondents stated becoming more negative. The respondents who stated they became more positive, often refer to the advantages they stated earlier in the interview. The absence of travel time, being more productive and flexibility are key factors for the change in attitude.

Table 8. Attitude changes of respondents towards teleworking

Attitude change towards teleworking	Respondents	#
More positive	A, B, C, D, E, F, H, I	8
Unchanges	G	1
More negative	J	1

The respondent who did not change attitude had a negative attitude towards teleworking (G). This was mostly due to the lack of social interactions with colleagues, a disadvantage which was mentioned by 8/10 respondents. This respondent also had difficulties concentrating, which is a factor which differs between respondents. While four of the respondents stated it was easier to

concentrate at home compared to in office, three respondents stated they had difficulties to concentrate when teleworking.

The respondent who stated a negative change in attitude explained the disadvantages of teleworking were more emphasized compared to the situation before the pandemic (J). This was mostly because it was forced to telework full-time, where before the pandemic is was a decision which was made by himself.

5.4 Expectations

Respondents were asked if they want to keep teleworking in the future and to what extent. Most of the respondents state they want to telework partly, being 2-3 days per week. This is mainly because of the largest disadvantage of teleworking, the lack of social interaction. None of the respondents stated they want to telework full-time. The number of days employees are willing to telework also depends on the work they do, for many jobs operated in office a share of tasks can be done by teleworking, but there is also a share for which you need interaction with colleagues, customers or patients which is hard or even impossible to reach from home.

Table 9. Teleworking after the pandemic

Teleworking after the pandemic	Respondents	#
Sometimes (=< 1 days a week)	C, G	2
Partially (2 – 3 days a week)	A, B, F, H, I, J	6
Mostly (+/- 4 days a week)	D	1
Variable	E	1

There is a large extent of uncertainty when asking respondents how many days they are willing to telework in the future. This is because they do not know how their work situation will change in the future. Employees depend on employers which has to be open to the idea of teleworking. It is uncertain whether teleworking will remain the norm, or working at the office will be the norm again when the pandemic has ended. This does not only apply to the norms set by the employer, but also on social norms by colleagues (A, H). When the norm is that all members of a team come in office for a meeting, people feel forced to come as well. The cooperation between employees working at the office and working from home can become a challenge (C), especially when working in creative sessions (G).

5.4.1 Impacts on job and residential location choice

Furthermore, respondents were asked whether the possibility to telework could influence their decision on where to work or live. The answers are categorized in Table 10. Five respondents stated they would want to move to a place further away from their work place. This can be because of increasing house prices in the cities and central areas of the Netherlands (I). In a more remote part of the country it seems to be easier to find a residence with an extra room, which can function as an office, in a more quiet neighborhood.

Four other respondents stated that they would accept a job further away from home, when they could remain teleworking for at least a couple days per week. One respondent experienced travel time more negatively since the pandemic and thus wanted to reduce travel distances in the future.

Table 10. Job and residential location choice

Job / Residential location choice	Respondents	#
Would move to location further from work	B, E, H, I, J	5
Would accept job further from home	A, C, F	3
Wants to limit travel time in the future	D	1
No impact	G	1

5.5 Improvements

Respondents experience the disadvantages of teleworking every day and when asked about improvement to make teleworking more attractive for them, a lot of ideas come up. The most mentioned improvements are listed in Table 11.

Table 11. Most mentioned improvements of teleworking

Verbetering	Respondents	#
Social norms	A, D, E, H, J	5
Digital systems	D, E, F, G, J	5
Facilities (chair, screen etc)	A, B, D	3
More social interaction	A, F, J	3
Rules on how to telework	C, H	2
Coaching	C, F	2

The first category of improvements mentioned are practical work-related improvements, like better digital systems. Many employers had to rearrange their digital systems when teleworking became the norm, and employees had to adapt to these systems. There is still room for improvement of these systems, this depends on the employer, but it is clear that improving digital systems will benefit the attitudes towards teleworking. Other things employers can do to improve teleworking are coaching and defining rules how employees should telework. It is sometimes unclear for

employees what is expected from them. Employees also miss facilities, like a good office chair, a proper desk and a second screen. Some employees feel this should be facilitated by the employer, because it was also available when working in office.

Furthermore, the social norms are often mentioned. This can lead to the fact that employees willing to telework, travel to the office only for a certain meeting. It should be socially accepted to work from home. A change in social norms is necessary, so it is accepted that employees join a meeting digitally, even when other colleagues attend the meeting in person.

This also leads to challenges, especially for creative jobs. Stated is that brainstorming with colleagues is difficult digitally and also the cooperation between colleagues is more difficult (J).

Another aspect is the social aspect. As stated earlier, the lack of social interaction is the largest disadvantage of teleworking. Employees feel the need for social activities, also when working from home. The employer can do more to facilitate social events digitally or arrange other types of activities for employees who work from home. This cannot completely replace the social interaction in office, but can limit the lack of contact.

5.6 Policies

In the interviews respondents were asked how they could be stimulated to work at home. This was for some respondents a somewhat uncomfortable question to answer, because they did not want to be forced to telework. Only one of the respondents stated that the government should not make policies on teleworking (D).

The interviewer wanted to avoid steering respondents in a particular direction. By allowing the respondents some time to think and asking follow-up questions, a list of possible policy measures was gathered, as shown in Table 12.

Table 12. Proposed measures by participants

Measure	Respondents	#
Telework compensation	B, E, F, G, H, I, J	7
Rewarding teleworking	B, H, J	3
Reform travel compensation to general compensation	A, E, J	3
Force employer to provide facilities	C, D, F	3
Discouraging travelling to office	A, B	2
Apply rules for home work place	I, J	2
Force right to telework	C, D	2
Increase of travel costs	A	1
Fiscal measures for travelling during peak hours	B	1

Compensation measures

From the given answers it is clear that respondents state a compensation for costs made when teleworking is the most popular measure. Some employers still pay travel compensation, while others have stopped these compensation schemes. Stopping travel compensation feels unfair for employees, because they also make additional costs when working from home, like heating and electricity. Respondents feel that they have to be compensated for costs they make, whether these are travel costs or costs while teleworking.

While these measures seem important to make teleworking more attractive, when respondents are asked whether their decision to telework are dependent on travel costs, most of the respondent mention they are not highly sensitive to costs. It could be that respondents just want to be compensated for their costs, which is something different than a measure to make teleworking more attractive. So it is unclear what the effectiveness of these measures will be.

Another proposed measure given by respondents is reforming the current travel compensation to a more general compensation. This means employees get a fixed amount of compensation, regardless of whether they telework or work at the office. Applying this measure will also add the effect that employees feel the travel costs more in their own wallet, compared to the current compensation.

Rewarding measures

Another measure which is often mentioned is to reward teleworking for employees. How this can be implemented, does not become entirely clear, but the idea is that employees are not just compensated for the costs of teleworking, but an extra motivation is given to reward teleworking. This can be a financial incentive or another type of incentive.

Travel costs

The third type of measure is increasing travel costs when travelling to the office. A problem that arises with these measures is that at this moment, most travel expenses are compensated by the employer. This should be changed for these measures to be effective.

There are several ways to implement this. Reforming travel compensation to a general compensation also reaches this goal. Other ways are reducing car leasing, which would higher the burden for employees to travel by car (B). Other ways are the increasing of travel costs during peak hours, by implementing road pricing.

Employer

Another type of measure is aimed at employers. Employers should facilitate employees with decent equipment to perform their job. Employees think employers are responsible to facilitate decent chairs, desks and screens. Rules for working should be implemented, as they already exists for work places in the office. The right to telework was also mentioned. In this way employers are forced to allow employees to telework when this can be applied for their type of job. While this can

be an interesting measure, it is hard to define what jobs can and what jobs can't be performed from home.

Other measures

The government could also take a leading role with teleworking (H). When the government implements teleworking as much as possible, others can see the benefit of teleworking and so this can be a trigger for other companies and organizations to implement teleworking.

5.7 Conclusion

Using the individual interviews, a large amount of qualitative data was generated about the subject. The mentioned advantages and disadvantages showed an interesting pattern, being many factors of teleworking were stated as both advantages and disadvantages, like concentration and travel time. Using this, it is concluded while respondent have overall a positive attitude towards teleworking, a variety of both teleworking as working in office is needed to balance the advantages and disadvantages of teleworking.

Employees expect to keep teleworking in the future, but this is highly dependent on social norms set by colleagues and by the employer. This is an uncertainty which has to be resolved to ensure that employees remain willing to telework in the future.

Some employees also miss facilities which are present at the office, like chairs, desks and screens. The interviews generated an extensive list of possible measures to implement. However, it is unclear what the effectiveness and the feasibility of these measures are. Expert opinions are necessary to get more knowledge on the requirements of effective policy on teleworking. In the next chapter a focus group meeting of experts in the field is used to validate the data collected in this chapter, to complement this data and to enrich the views on possible policy strategies to stimulate teleworking.

6 Focus Group

In the previous chapter, qualitative data was collected using individual interviews. This chapter presents the findings of a focus group meeting was organised to reflect on these data and complement this with findings from the experts. The focus groups increases the depth of the research, because of interaction data which results from the discussion between experts. The main goal of the focus group was to develop a policy strategy which combines all insights from both quantitative and qualitative research.

6.1 Introduction

The focus group consisted of four round, the lessons learned during the pandemic, expectations of the future, the desired situation on teleworking and possible policies which could be implemented. Each round was started with a summary of the findings of the individual interviews, thereafter the discussion was started about the subject. Before the focus group started, the participants introduced themselves and their relation to the topic (Table 13).

Table 13. Introduction of participants

Participant	Relation to the topic
I&W	Manager of Monitoring and Evaluation team at the Ministry of Infrastructure and Water Management, also working on research regarding teleworking at employers.
NS	Has performed a study in cooperation with TU Delft on teleworking using surveys of NS travelers.
ANWB	Is working on the topic in cooperation with the Mobility Alliance.
MuConsult	Works as an Policy evaluator
KiM	Is performing surveys regarding teleworking and attitudes towards teleworking

6.2 Lessons learned

The experts acknowledged the fact that attitudes on teleworking are generally positively changed. Employees have more flexibility of their time and it is easier to concentrate at home. Furthermore, people get used to teleworking, which embraces the idea that habits are changed. The expert from NS signaled that more people were already travelling again, but are only avoiding peak hours. We have to look out for the effect that all employees go to the office on the same day, because in this way many of the advantages of teleworking like the reduction of congestion are reduced.

Table 14. Input of participants in round 1

Participant	Main statement	General attitude
I&W	People are more aware of their time. They have control on how they divide their time.	Positive
NS	Concentrating is easier when teleworking. When working at the office it is harder to concentrate because of the noise.	Positive
ANWB	Travel time is lost time, so it is positive this is reduced.	Positive
MuConsult	In the data is seen that while home-work travel is reduced, walking and cycling is increasing.	Positive
KiM	The positive aspects of teleworking were always presents, but people did not know them. At his moment people get aware of these advantages. The disadvantages of teleworking are reduced because everyone is teleworking, you don't miss things happening at the office.	Positive

6.3 Expectations

The group recognized the desire to telework part of the time. The group made clear that the important factor for the future is the policy of business and organizations. Employers have also seen the advantages of teleworking during the pandemic. The reduction of office space can save costs. Employers have to make plans to spread the employers, so not all employees come to the office on the same days. This means they have to find ways to tackle the social norms to go to the office. A strategy should be made by employers in cooperation with labor unions and the government.

There are signals that people are moving because of teleworking, they want an extra room to use as an office or a more quiet neighborhood. This means that the pressure on houses in the rural area is increased. Another impact on the built environment is office space which can be used for other purposes. NS suggested that in highly wanted areas such as train stations and city centers, there are plenty of opportunities. But I&W stated that for typical office areas in the outskirts of cities, finding new purposes for these areas are more uncertain. But as KiM stated, office space can only be freed up when employees working at the office are spread over the week.

Table 15. Input of participants in round 2 (TB=travel behaviour, BE=built environment)

Participant	Expectations TB	Impacts on BE
I&W	People are willing to remain teleworking, but norms at employers have to change. They are more aware than before they have to introduce policy on this. Attitudes of employers are as important as those of employees.	Finding new functions for vacant office space can be challenging.
NS	Employers have to make policies to spread employers working at the office over the weekdays. Social pressure will lead to crowding of the office on certain days otherwise.	At this moment, a quarter of the relocations are because of teleworking. For offices at train stations will not be a problem to find a new function.
ANWB	Employees are now experiencing the advantages. Not all work can be done using teleworking, creative sessions are better performed at the office. Strategy has to be developed with employers, the government and labour unions.	Less office space will be needed in the future. Brokers already experience increased interests in housing in rural areas.
MuConsult	Survey in Limburg showed people are willing to telework 2-3 days after the pandemic.	
KiM	Expect that fixed days will be used to go to the office and to telework, this reduces advantages.	When some days offices are fully used, the space is inefficiently used.

6.4 Desired situation

The focus group also discussed the desired situation on teleworking, what the balance between teleworking and working at the office should be. The group recognizes that more teleworking is preferred, because of the reduction of travel moments, which reduces the environmental impact.

Another advantage of teleworking is the ability to do short private tasks during the work day (NS). However, advantages of working at an office still exists, there has to be variety. The group also states that it is important to look at personal factors, not everyone can work productively at home, for example parents with young children. Also the type of job is of importance. Stated is that about 1/3 has a negative experience on teleworking, but it is not clear if this can be resolved by working at the office for a couple of days per week.

Finally, some improvements are discussed, like breaks between digital meetings.

Table 16. Input of participants in round 4

Participant	Main Contribution	Challenges
I&W	There should be a balance between the costs and the benefits of teleworking. People are gaining weight because of the lack of travelling.	
NS	Teleworking is desired because of the reduction of emissions and travel movements.	Flexible office spaces do not work. Suitability of teleworking depends on type of job, it depends on contextual situation.
ANWB	In the past we have seen a fixed time spend on commuting, the need to travel remains. Educational institutions should look whether they can find a balance between teleworking and working on location. Breaks should be provided between teleconference meetings.	Many people cannot work from home.
MuConsult	To remain teleworking in the future is desired, because the advantage outweigh the disadvantages	There has to be variety of teleworking and working at the office.
KiM	Two thirds of employees have positive experiences on teleworking. This means one third has a negative experience.	It is uncertain whether the experience of negative employees can be improved by working at the office part-time.

6.5 Policies

Firstly was discussed whether the government has a role in stimulating teleworking in the future. All of the participants shared the opinion that the government should take a role on this subject, because of the positive effects like the reduction of infrastructure expenses and environmental impact. The participants differ on what the role of the government should be. ANWB states that the government should not force people, but facilitate. According to the I&W this is what the government is already doing, but also states that regulation for travel expenses can be changed, if this means that targets for sustainability can be reached. All participants agree that the government should not force behaviour to harshly, but has to do enough to prevent people falling back in their previous patterns.

Something the government can do is giving an example. The government should make policies to facilitate the employees of their organizations in teleworking. Government officials can be forced to spread employees during the week. Also, students can be forced to begin their days after peak hours.

Table 17. Analysis of input in round 4.

Participant	Role of government	Requirements	Proposed policies
I&W	Bringing knowledge together. Emphasize positive effects.	Do not enforce behaviour	Compensation regulation should be renewed. Enforce the spreading of office use.
NS	Helping companies, raising awareness. Facilitating.	Travel costs should be felt by the employee.	Repeal travel compensation. Higher peak travel costs. Travel costs dependent on time of day. Higher telework compensation, lower travel compensation. Rewarding programs.
ANWB	Not to large extent. Forcing behaviour does not work.	Policies should be made in cooperation with employers. Should not target people who can't telework.	Renew tax regulations. Financial stimulation for flexible offices. Later start of colleges for students. Tradable office rights.
MuConsult	Agrees with facilitating.	Do not impact people who can't telework.	Telework compensation
KiM	Facilitating. Forcing is not desired.		Government should propose measures targeted at officials and students. Fixed amount of compensation.

The tax regulation about travel expenses should be reformed, but details how this could be done were not adequately discussed. Stated was that in most European countries there is not something like travel compensation, maybe we should equalize the system on a EU-level (NS).

Price mechanisms can be used to reduce peak demand, the government could increase peak pricing, for both train travelling as travelling by car. The downside of this is you also target people which have to work on a location, to tackle this you would need to make exceptions.

Rewarding systems were also discussed, this could work better, because people are more triggered by rewards than by costs. Examples of this are already implemented at the ministry. It is important that the reward is tangible, so it is not simply an addition to the salary (NS).

The last type of system which was discussed were the example of tradable parking rights, which was used in a pilot of the ANWB. This could also be used to reserve office space.

The meeting was ended on the remark that workers who cannot work from home should not be forgotten.

6.6 Conclusion

The focus group meeting was carried out to validate and complement the findings of the individual interviews. The results of the interviews were acknowledged by the experts in the focus group. The contributions made during the focus group meeting overlap with the findings from the interviews. Additional insights on requirements for policy to stimulate teleworking were revealed, which enables to substantiate the recommended policy strategy.

7 Crystallization

In the previous chapters, both quantitative and qualitative data was collected using the different research methods. In this chapter the insights from all these methods are combined resulting in a comprehensive understanding of the problems and possible policy measures.

The combining of results from different data collection methods is called crystallization (see Figure 12). This crystallization integrates the findings of the desk research, the individual interviews and the focus group. Desk research was conducted to examine how the COVID-19 pandemic compared to previous pandemics, to collect data on teleworking during the pandemic and to gain insights from previous teleworking research. Individual interviews was carried out to collect data on individual preferences of employees regarding teleworking and to collect possible improvements and policy measures. The findings were validated and complemented during the focus group meeting.

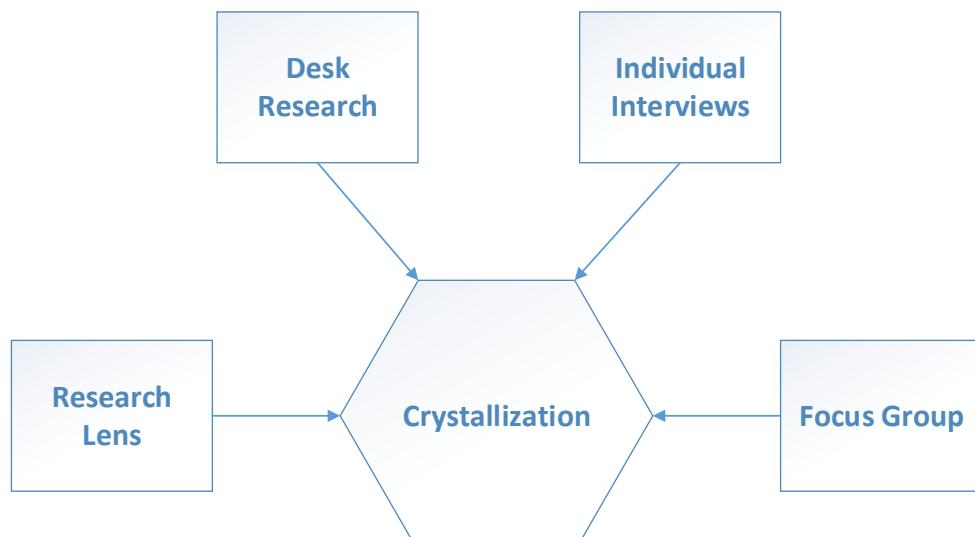


Figure 12. Crystallization of research methods

7.1 Findings of research methods

In this paragraph the findings from the literature and the three different research methods are combined. Table 18 gives an overview of the contribution of each research method to answer the sub-questions introduced in Chapter 1.

Table 18. Results of research methods

	Research lens (Chapter 3)	Desk-research (Chapter 4)	Individual Interviews (Chapter 5)	Focus Group (Chapter 6)
SQ1: Attitude changes on teleworking	Attitudes are the degree to which someone favours behaviour. Attitudes can be changed by triggers. The COVID-19 pandemic produces both personal, social and environmental triggers. Habit discontinuity provided an opportunity to change attitudes towards teleworking.	Aggregate data showed that attitudes regarding teleworking have positively increased during the lockdown caused by the pandemic. Lack of travel time was most important advantage, lack of social contact with colleagues was the most dominant disadvantage. Stated intention on teleworking does not comply with development.	Attitude regarding teleworking have changed, only 8/10 had a more positive attitude, 1/10 more negative. Only 1/10 did not change attitude. Factors contributing to the attitude change were mainly, the lack of travel time, higher productivity and higher flexibility. Negative impacts included lack of social contact, difficult communication, work-life balance and difficult to remain concentrated.	Attitudes towards teleworking have in general positively changed. People became more aware of the advantages of teleworking, like lack of travel time. Disadvantages limited because everyone is teleworking. However, 1/3 of the employees is not positive.
SQ2: Enduring effects on travel behaviour	Changes in attitudes impact travel behaviour. Travel behaviour can be affected by risk perception. Previous epidemics did not cause enduring change, but this can be different for the COVID-19 pandemic, making it a substantial change	Data show large shifts in travel behaviour and teleworking, which discontinued habits. Surveys show increased intended use of teleworking in the future. Based on the comparison to previous substantial changes, it is likely that the COVID-19 pandemic substantially change travel behaviour, because of the shifts in teleworking.	Respondents expect to remain teleworking after the pandemic, most of them part-time (2-3 day per week). This is highly dependent on the norms set by employers and colleagues. A challenge is the cooperation between colleagues working from home and from the office, especially for creative sessions. Improvements have to be made to keep teleworking attractive.	Part-time teleworking is expected. Social norms have to change to cause enduring effects. Employers should make policies to spread office demand over the week days, otherwise crowding on certain days will occur.
SQ3: Policy measures to stimulate teleworking	Policies are not incorporated in the attitude change models, but the habit discontinuity provides an opportunity to alter behaviour. Implementing policies is more effective, when implemented after a context change, such as the COVID-19 pandemic. This means policies can be made to substantiate the change in travel behaviour regarding teleworking.	Employers are a limiting factor for the use of teleworking, when employers do not facilitate employers to telework. Social norms can prevent people from teleworking. Travel demand can be spread by increasing peak travel costs, but rewarding schemes were also successful in stimulating travelers to avoid peak hours. Surveys show that teleworkers are demanding financial compensation and facilities for teleworking from employers.	Measures which are proposed are, compensation should for costs made while teleworking, rewarding of teleworking, reforming travel compensation systems, discouraging travelling to the office, applications of rules for telework place should be applied. Employees should facilitate necessities for teleworkers and employees should have the right to telework when it is possible. Other improvements are increasing the social interaction and provide coaching and rules on how to telework.	The government should take a facilitating role. The government should not enforce behaviour. Travel costs should be felt by the employee. Travel compensation should be reformed. Government organizations should take a leading role in its own organizations. Employers can introduce trading systems.

7.2 Attitudes changes on teleworking

Based on the crystallization of the three research methods, it is clear that attitudes on teleworking have positively changed during the COVID-19 pandemic. The pandemic generated triggers which altered behaviour, generated new information and led to changes in emotions regarding teleworking.

Advantages of teleworking which were experienced included the lack of travel time, higher productivity and higher flexibility. The most predominant disadvantage was the lack of social contact with colleagues, which has various consequences. Perceived productivity while teleworking is higher and increasing over time, however there is still a minority with a perceived decrease of productivity.

Overall, it is concluded that attitudes towards teleworking have been improved. Still, attention has to be drawn to the group which has a unfavourable attitude towards teleworking.

7.3 Enduring effects of COVID-19 on travel behaviour

In the research lens was stated that travel behaviour, in this report related to teleworking, is affected by attitudes. In the previous paragraph, it was concluded that attitudes on the teleworking have improved. In the beginning of the pandemic, employees were mainly teleworking because it was obligated by the government or the employer. During the pandemic teleworking became a habit, previous habits to work at the office were discontinued.

All data collected showed that employees are willing to keep teleworking after the pandemic, most of them part-time (2-3 days per week). Several challenges arise when this intended use of teleworking has to become reality in the future. Most predominant are the norms set by employers. Employers have to facilitate teleworking for employees, not only by allowing them to facilitate, but also by avoiding social norms set by themselves or by colleagues. When employees are allowed to work at the office again, arrangements have to be made between employees working from the office and those teleworking. At the same time there must be that prevented employers will all telework and work at the office at the same time. A clear division of 'telework days' and 'office days' should be prevented, because this limits the effects of teleworking in terms of congestion and reduced necessary office space. Policies by both employers themselves as policies introduced by the government could help prevent these effects.

Concluded is that the COVID-19 pandemic is likely to have enduring effects on travel behaviour, but policies are needed to help sustain the changed travel behaviour in terms of teleworking, because otherwise the positive effects can be limited.

7.4 Policy measures to stimulate teleworking

To prevent that employees will return going full-time to office, policy measures should be implemented. The pandemic gives an unique opportunity to implement policy measures, because the habits have already been changed, the policy only has to prevent people falling back in their previous habits.

Employers are a limiting factor for teleworking, when employers force employees to work at the office, the habit of teleworking will dissolve. New norms should be embedded by employers, arrangements have to be made between employers and employees, to determine how and when employees should telework. Employers organizations and labour unions can play a role in this discussion. Employers could improve facilities provided to teleworkers to improve their experience of teleworking. Another measure which can be taken by employers is the introduction of a trading or enrolling scheme for parking or office space, to spread demand over the week. This could prevent crowding on certain days.

The government should not enforce behaviour, but can use pricing to stimulate desired behaviour. Policy measures of different kinds can be taken to stimulate teleworking. As first there is reforming of the compensation system. Providing telework compensation will satisfy employees, but will not tackle the problem that travel costs are not felt by employees. Reforming travel compensation to a fixed compensation would help solving this problem. Furthermore, peak travel costs can be increased to spread the demand for office space.

The government should take a leading role in promoting teleworking. Proposed policy measures include forcing government officials and students to telework and avoid rush hours. The government can make arrangements with universities, to shift lecture hours so that the overlap with commuting peaks is limited. By using this the government can set an example for other businesses to implement similar measures.

8 Policy Strategy Design

In the previous chapters, combined results of the research methods were given. This chapter gives the final result of this research, which is the proposed policy design. In this chapter the policies which have to be implemented to ensure that employees keep teleworking in the future are proposed.

8.1 Sub-problems

Before a policy strategy can be recommended, it has to be clear what the problem is. This was analysed in the previous chapters. Combining the results of these chapters, a clear picture arises from the different sub-problems.

What are the problems we are trying to solve using this policy? This can be divided into different sub-problems, which were encountered during the research. These sub-problems are limitations when trying to sustain the change in teleworking in the future.

8.1.1 Social problems

While on average the attitudes of employees have positively changed, there is still a minority (about 1/3) of employers who do not have a positive attitude towards teleworking. Lack of social contact was the most dominant stated disadvantage of teleworking, difficult communication and remaining an comfortable work-life balance were other disadvantages mentioned. Another challenge is the cooperation between employees working at the office and teleworkers.

Challenges:

1. Cooperation between teleworkers and employees at the office
2. Improving social interaction
3. Improving communication
4. Improving work-life balance

8.1.2 Norms set by employers and colleagues

Because of the COVID-19 pandemic, behaviour has changed, which led to processes that changed attitudes and habits on teleworking. It is unclear how attitudes will develop in the future when the pandemic has ended. Based on the interviews and the focus group, concluded is that most people are willing to keep teleworking, but social norms and lack of facilities provided by the employer could change this attitude. Policy should be aimed at facilitating employees to keep teleworking. To enduringly change teleworking in the future, it is important that positive attitude changes are sustained and new habits are not discontinued when the pandemic has ended. The most predominant challengers are related to norms and arrangements with employers and colleagues.

To ensure employees keep teleworking, employers should facilitate teleworking and social norms should not enforce employees to come to the office when it is not strictly necessary. Colleagues can (unintentionally) pressure employees to come to the office by social norms. Furthermore, prevented should be that employers will all work at the office and telework on the same days, because this limits benefits of teleworking such as reduced travel demand and reduced needed office space.

Challenges:

5. Norms on teleworking set by employers
6. Socials norms between colleagues
7. Avoiding peak demand in office work days

8.1.3 Inadequate policies

Policies can be introduced to sustain aspects of the current teleworking behaviour. Current policies are likely not adequate to ensure this enduring change of teleworking. At this moment employees are not compensated for costs made while teleworking, but only for travel costs. This travel compensation system can be reformed to incorporate the compensation of teleworking costs. Clear tax regulation is something which is also lacking at this moment, only travel costs are regulated. An additional challenge is that travel costs are at this moment often not felt by the employee. Because travel costs are often compensated, employees do not feel an incentive to reduce travelling. Increasing this incentive could help employees to make more deliberate decisions.

Challenges:

8. Current tax regulations are not equipped to cope with teleworking
9. Employees are not compensated for costs made while teleworking
10. Incentives to reduce travelling are limited

8.2 Policy measures to overcome challenges

Additional policy measures are necessary to overcome the challenges stated in the previous paragraph. The policy measures collected during the research methods are briefly explained in this paragraph.

Telework compensation

This measure was often mentioned as a necessity to make teleworking more attractive, both in the individual interviews (Chapter 5), as in the focus group (Chapter 6). This addresses the challenge that employees are not compensated for their costs while teleworking (challenge 9), such as costs for heating, electricity and internet. The impact of this measure on teleworking is not clear, this should be further researched.

Reform travel compensation

At this moment at most employers only travel costs are compensated, costs for teleworking are not compensated. Instead of an additional compensation for teleworking, this can also be addressed by reforming the current travel compensation system by introducing a fixed general compensation. In this way, employees receive a fixed amount of compensation, independent of the days they travel to work or telework. In this measure, also current fiscal measures on car leasing should be re-evaluated. This would lead to a less complicated system and also introduces an incentive to telework (challenge 10). To remain the fiscal benefits, of travel compensation provided currently, new tax regulations have to be made to accommodate this in the new system (challenge 8).

Rewarding teleworking

Teleworking can also be stimulated by the use of rewarding systems. These rewarding systems have already been applied for the avoidance of peak hours in earlier projects (I&O Research, 2015). Rewarding systems appeared to be an effective method to change behaviour. Different kinds of systems could be applied. An example of this system is the user receives a small amount of money for each avoided trip. Discussions have to be made on whether the employer or the government should provide the rewards. The rewards introduce an incentive to telework (challenge 10).

Force employers to facilitate teleworking

Some employers are not eager to promote teleworking. Because most employees do have a positive attitude towards teleworking (see previous chapters) measures can be taken to force employers to facilitate teleworking. At first, this can be tried by making arrangements between the government, labour unions and employers, but when this is insufficient, the government can also implement legislation to enforce this.

Rules on teleworking

Based on the individual interviews (Chapter 5), it is not always clear what employers and colleagues expect from each other while teleworking. Rules can be made to address this problem. This could lead to improved communication (challenge 2) and social interaction (challenge 3), help to keep a clear distinction between private and work life (challenge 4). These rules can also help to change norms to provide teleworking at employers and colleagues, it is more clear what behaviour is expected (challenges 5 & 6).

This measure can't be implemented by the government, but is something employers and employees have to address between each other. The government could help by facilitating them by making guidelines.

Increasing peak travel costs

A method to reduce peak travel and crowding of office space (challenge 7) is to increase peak travel costs. This is an unpopular measure for employees but advised by experts (Chapter 6). Pricing is seen as an appropriate method to balance supply and demand, using this reasoning it

would be logical to increase prices during peak hours. This would introduce more incentives for teleworking (challenge 10), but only when travel costs are not compensated.

Leading role governmental organizations

Proposed by experts is a leading role for the government and (semi-)governmental organizations. In this way the government can set an example on how teleworking can be implemented in an organization. The government could make arrangement on when officials are allowed to work at the office. Furthermore, it is proposed that lectures of universities are shifted to online lectures when possible or lectures are shifted in time, so overlap with commuting hours is limited (6). By setting this example, it is attempted that norms of employees and employers are also changed, which can consequently influence their behaviour on teleworking (5, 6).

Information campaign

Agreed on by experts in the focus group (Chapter 6) is that the government should not enforce behaviour, but has to provide a facilitating role. The first step could be to start an information campaign about the benefits of teleworking, such as reduced travel costs for employees and reduced necessary office space for the employer. The goal of this measure is to change the norms of employers and employees, which can lead to shifts in telework behaviour (5, 6).

Enrolling / Trading systems

An innovative way to regulate the demand for office space are trading or enrolling systems. This already have been applied in a project of the ANWB to regulate parking space, but can also be applied to office space. Introducing enrolling systems would mean that employees can enroll for offices spaces on a fixed number of days or dayparts. A trading system introduces trading between employees for a fixed number of places, in this way office space is used by the employee who is willing to sacrifice the most for the right of office space.

In Table 19 is visualized which challenges from paragraph 8.1 are addressed by the different policy measures.

Table 19. Effect of policy measures on challenges

Measure / Challenge	1	2	3	4	5	6	7	8	9	10
Telework compensation									■	
Reform travel compensation								■	■	■
Rewarding teleworking									■	
Force employers to facilitate teleworking	■				■					
Rules on teleworking		■	■	■	■					
Increasing peak travel costs							■		■	
Leading role governmental organizations					■	■	■			
Information campaign					■	■				
Trading / enrolling systems							■			

8.3 Timeline of implementation

During the focus group opinions were shared on the desirability of policy measures. Concluded was that a facilitating role was most desired and price incentives are a last resort. Resulting from these findings a timeline of the implementation of measures is presented, which is visualized in Figure 13.

This means the government should start by nudging society to change behaviour by providing information and creating awareness. This could be spread by promotional campaigns. Furthermore, the government could help business by giving recommendations on how rules and arrangements on teleworking could be integrated in the organization. The next step for the government is to set an example in their own organizations. Travelling of officials and students during peak hours should be avoided. Consequently, teleworking should be forced for officials. Universities could be persuaded to provide online lectures to avoid peak travelling of students. Thereafter, companies could be targeted, to force them to stimulate teleworking in their organizations. The first necessary measure is compensating teleworkers by providing compensation for costs made while teleworking. Additional incentives could be given by additional rewards for teleworking. Employers could be forced to allow employees to telework when this is possible. Preferred is that this is agreed using arrangements made between employers and labour unions, when these results are unsatisfactory the government could determine legislative steps. Employers which acknowledge the advantages of teleworking can introduce enrolling or trading systems to regulate the decreased office space. In this way also crowding on certain days is avoided.

Lastly, price incentives come into play. Reforming current travel compensation schemes to a general compensation would be the most simple way to introduce price incentives. This measure could also discourage car leasing to increase incentives to telework. The last resort is the increase of peak travel costs, but this is controversial because it will likely also affect employers who are not able to telework.



Figure 23. Timeline of implementation

8.4 Conclusion

In this chapter the challenges of the current situation which arose during the research are identified. The proposed measures which were obtained by the individual interviews (Chapter 6) and during the focus group (Chapter 7), are explained and analyzed on their ability to overcome the stated changes. A timeline of the implementation of policy measures is presented, based on the desirability of measures.

Limitations of this research is the lack of quantitative data on the effect of the proposed measures, in the next chapter future research is proposed to examine these effects.

9 Discussion

In the previous chapters, the results of the different research methods were given. During the research, the research lens stated in Chapter 3 was used. In this chapter is reflected on the research lens and the implications of the results on the used theories are discussed. Furthermore, the practical contribution of the research is given and the limitations of the research are discussed.

9.1 Theoretical Contribution of the research

In this section the findings from the research methods are compared to the framework which is provided in the research lens.

9.1.1 Integrated attitude model on travel behaviour change

In the research lens (Chapter 3) an integrated model was proposed to incorporate three theoretical models, the attitude change model (Van Wee et al., 2019), the model on the Built environment and travel behaviour (Van de Coevering et al., 2015) and the habit discontinuity theory (Verplanken et al., 2008). The model is presented in Figure 14. In Table 4, the relationships between factors in this model were explained. These relationships are validated in this research, by using desk research (Chapter 4), individual interviews (Chapter 5) and a focus group meeting consisting of experts (Chapter 6). The results from these methods are combined by using crystallization (Chapter 7).

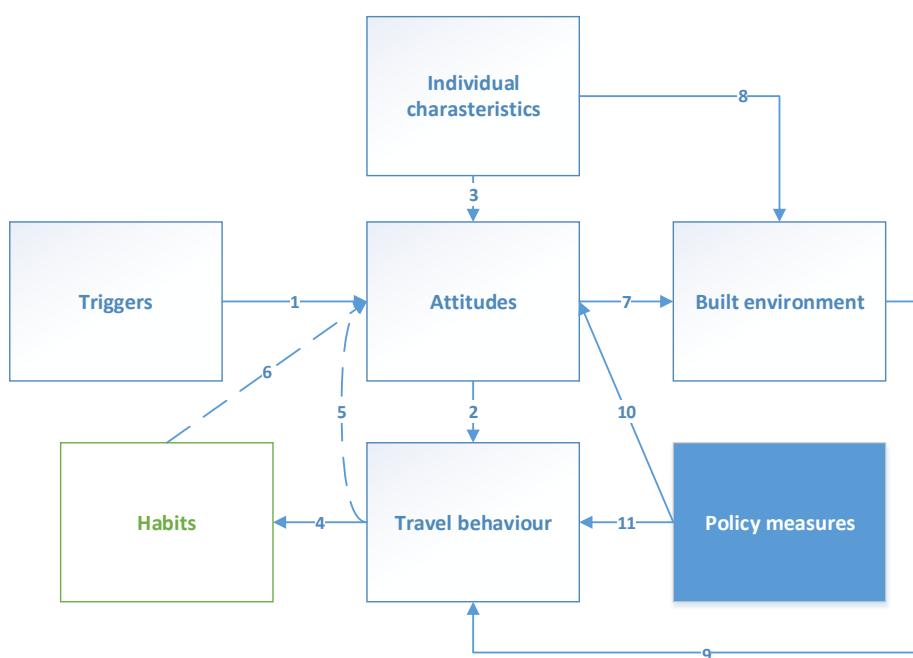


Figure 14. Integrated attitude change model

Triggers

As earlier discussed (Chapter 3) the attitude change model distinguished three different types of triggers, personal triggers, social triggers and environmental triggers. From the interviews can be concluded that different types of triggers, occur during different stages of the pandemic. When the pandemic started to reach the Netherlands in March 2020, it was considered as such a disruptive event it was unavoidable that as much employees as possible had to switch to teleworking (see Chapter 3 and 4). Most employers listened to the advice of the government to let employees work from home. This meant employees had to telework, no matter if they had the desire to do so. So it can be considered as an environmental trigger, to which they did not have an influence on. This meant they had to change their behaviour and behave differently than their habits. These behavioural changes included the use of teleconferencing tools, the use of digital communication methods and the use of remote desktops. Concluded is that the COVID-19 pandemic can be seen as a trigger in this model.

Individual characteristics

During the individual interviews (Chapter 5), it became clear that attitudes towards teleworking differ between employees. These characteristics include the type of work of employees, the type of household and the need of social interactions. The influence of individual characteristics on the built environment was also validated, because it differed between respondents whether they would like to move to a more remote area or they would look for a job with more travel distance, when they could telework more often.

Attitudes

The change of attitudes was clearly validated by all collected data, desk research (Chapter 4), individual interviews (Chapter 5) and the focus group (Chapter 6) all determined that the trigger of the COVID-19 pandemic caused changes in attitudes. The impact of attitudes on teleworking was limited during the start of the pandemic, because it was obligatory. During later phases of the pandemic, this relationship became more predominant because employees could make more often their own decisions whether they wanted to work at the office or telework. The relationship between attitudes and stated teleworking intentions for the future is more clear, employees want to remain teleworking after the pandemic. The relationship between attitudes and the built environment are validated, because shifts in housing preferences were changed for some respondents, future research might see clearer results regarding this aspect.

Teleworking

Because teleworking was forced during the pandemic, it consequently changed habits of employees. Instead of a daily commute, the habit was shifted to teleworking most of the time. The notion that teleworking itself can also change attitudes towards that behaviour is validated in the research, people got a more positive attitude towards teleworkers, because they became more aware of the advantages.

Habits

The notion that habits influence attitudes was seen in the data collected by the individual interviews (Chapter 5). Several respondents stated that before the pandemic they did not deliberately chose to work at the office, they just did it because they were used to it and it was expected from them. Respondents who did telework before the pandemic did it mostly incidentally. When habits changed, respondents became more aware of the advantages of teleworking.

Built environment

The built environment is already being impacted by the pandemic. According to the experts, employees are already moving because of a lack of an appropriate work place (Chapter 6). Half of the respondents also state that they are willing to move to a more remote residential location, when they could keep teleworking in the future. The relationship from the built environment to teleworking was not clearly seen in the data, respondents did not state teleworking depended on residential or office locations.

Policy measures

Recommendations on policy measures were collected during this research. In the previous chapter (Chapter 8) the proposed policy measures are presented. The exact effectiveness of these measures could not be determined in this research. During the interviews respondents already noted that while they feel they need to be compensated for costs made by them while teleworking and travelling, in the same time most of them state they are not sensitive for increased costs.

9.1.2 Improvements of the integrated attitude model

Several relations were noticed during the research which were not incorporated in the model. The most important noticed relationship was that teleworking itself can be also changed by triggers. When the COVID-19 pandemic began, employees were forced to telework. This did not immediately change their attitudes towards teleworked, but their behaviour was already changed. Only after a while their attitudes became more positive.

Built environment can also be changed directly by teleworking. In the model, the built environment is only affected indirectly by teleworking, via attitudes. However this does incorporate all the effects. The built environment is not only changed by the changed attitudes towards teleworking, but also by teleworking itself. In the future, companies will also look more critical to the need of office space. For companies it would be beneficial to reduce office space, because of the reduction in costs. When this perseveres, office space is freed up, which can be used for other means, such as housing and shopping areas.

In Figure 15 the improved integrated attitude change model is presented.

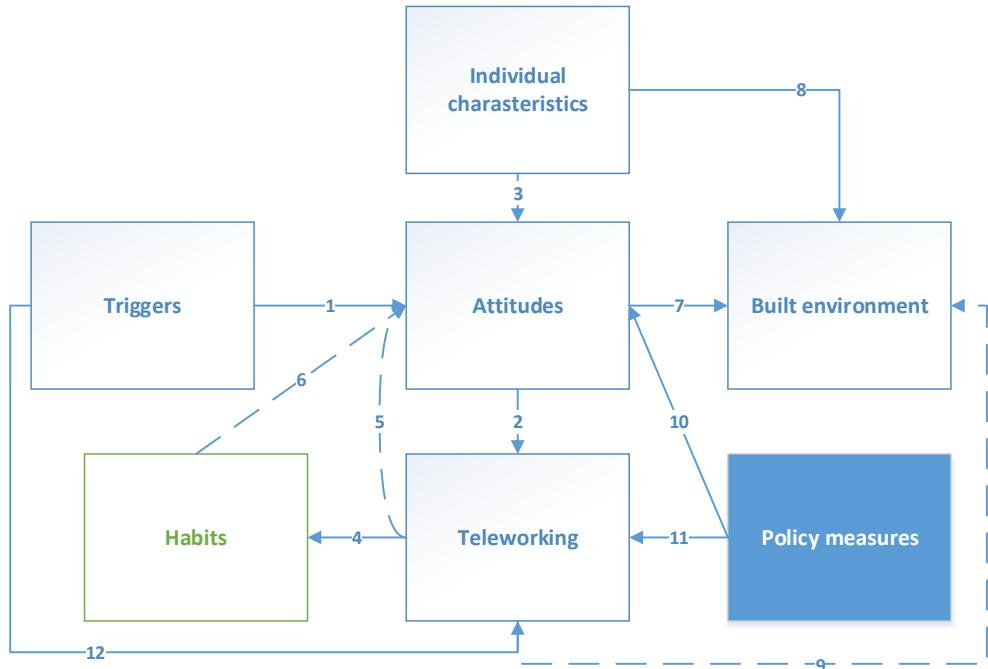


Figure 15. Improved integrated attitude change model for teleworking

9.1.3 Conclusion

In this report an integrated attitude change model was used to analyze the case of teleworking during and after the COVID-19 pandemic. The model was validated using data from desk research, individual interviews and a focus group consisting of experts. Only one of the relations could not be clearly seen in the data (from built environment to teleworking). By removing this relation and implementing the improvements suggested in the previous paragraph, a valid model is established for this case. This integrated attitude model can be used to analyze new cases of abrupt changes in the future, while the validity could differ between cases. The model is an improvement of the previous models stated in the research lens, because it combines insights from different theories and is validated by data in a real-life case.

9.2 Limitations of Research

The main limitation of this research is that it mainly focused on qualitative data collection methods. Some survey data was used to gather aggregate data, but insights of individual preferences were only gathered using individual interviews. However, stated intended behaviour does not always comply with established behaviour. This could already be seen in most surveys, that employees were already teleworking less than they intended several months before.

The desk research method was limited in time. Because the research on effects of COVID-19 on society is booming, more and more studies and reports are published during the last months of this research. Because of the limited time of this research not all studies could be examined in a high level of detail.

The individual interviews could be improved by providing more detailed questions on attitude changes. The notions that attitudes of employees have changed could clearly be proven by the data, but not all impacts could be linked to the underlying processes given in the original attitude model of Van Wee et al (2019). On the other hand, the interviews also resulted in large amounts of data which were not directly used in this report, because it was not directly linked to the subject of this research, for instances improvements which could be made which are only applicable to their employer. Another limiting factor is that only employees were interviewed in this research, but during the research was found out attitudes of employers were also of importance for the use of teleworking.

While the focus group provided interesting insights from the experts in the field, the duration of the meeting limited the amount of information that could be shared. More information could be gathered when the meeting could have taken longer. Another limitation is that the focus group only consisted of mobility experts and no representatives of employers participated, this limits the view of the group.

Furthermore, the validity of the results could be affected by the interpretations of the researcher. Also the interviewer could have introduced bias in the results by steering towards desired answers, while this was tried to be avoided. The researcher tried to remove any bias during the research, nonetheless this could have unintentionally influenced the results. All interviews and the focus group meeting have been recorded, so the collected data can be checked when questions on this arise. In Appendix C notes of the interviews are given.

Finally, this report mainly focuses on the impacts of the COVID-19 pandemic on attitudes on teleworking. In the research lens and the desk research some other cases are also mentioned, but the paper is mainly focused on the pandemic. This can reduce the generalisation of the study to other cases.

9.3 Recommendations for further research

This research contributes to the limited validity of current models for travel behaviour change. The proposed integrated attitude change model was validated by using qualitative data.

Recommendations for further research are to examine the validity of the model by also analysing revealed data. This research should be persevered after the pandemic has ended, to determine the enduring effects on teleworking. This would increase the value of the proposed model.

Further research on this case has to be conducted on the effectiveness and the feasibility of the policy measures. The data collection methods provided an extensive list of proposed policy measures, which were proposed in the policy design. The impact of these measures on the mentioned challenges were identified, but quantified effects were not provided in this research. These could be estimated by future research. The next phase of research could be to quantify the enduring effects on travel indicators, for instance by the 'Mobiliteitsscan' of Rijkswaterstaat. This information could be used in the decision making processes for investments in road infrastructure in the future.

10 Conclusion

This thesis is finalised in the conclusion, which gives answers to the research questions. The answers of the research questions are summarized. More detailed results can be found in the crystallization chapter (Chapter 7) and the chapters of the research methods desk research (Chapter 4), individual interviews (Chapter 5) and focus group meeting (Chapter 6). Lastly, the final conclusions of this research is given.

10.1 Answering the Research Questions

The main research question which was asked in this report, was:

What policy strategy design can be introduced, so that teleworking conditions are continued in the future to reduce congestion?

Three sub-questions were introduced to answer this research question. The answers of these research questions were used to validate an integrated attitude change model on travel behaviour and to propose a policy strategy design which stimulates to continue teleworking in the future.

10.1.1 **What are the attitude changes on teleworking caused by the COVID-19 pandemic?**

Models on attitude changes state that attitudes can be changed by triggers (Van Wee et al., 2019). Pandemics such as COVID-19 can generate such triggers (Van Wee, 2020). Aggregated data showed that attitudes regarding teleworking have positively increased during the lockdown caused by the pandemic (Chapter 4). This could also be seen in the data collected by the individual interviews (Chapter 5). Overall, the advantages outweigh the disadvantages for most employees. Employees have in general become more appreciating towards teleworking during the pandemic. However, attention has also been drawn to the notion that a minority of employees who have a negative attitude towards teleworking. Concluded was that attitudes were positively changed regarding teleworking.

10.1.2 **What could be the enduring effects of the COVID-19 outbreak on teleworking and related travel behaviour, based on theories for travel behaviour changes?**

Previous epidemics did not cause enduring change of behaviour, but this is likely to be different for the COVID-19 pandemic. The large shifts in behaviour, the increase and prolonged use of teleworking have changed habits of employees. These shifts are present in the collected aggregate data (Chapter 4), but also validated by the qualitative data collected by the individual interviews (Chapter 5) and the focus group meeting (Chapter 6). Most employees state they want to remain teleworking, most of them part-time. This can be seen both in aggregated in the collected qualitative data. However, recent survey data showed that teleworking is already used less than intended (MuConsult, 2021). Challenges which can limit the execution of these intentions are social

norms from colleagues and lack of support of employers. Cooperation between colleagues working from home and from the office can be difficult, which pressures employees to come to the office. Employers are advised to make policies to spread office demand over the week days, otherwise crowding on certain days will occur.

10.1.3 What policy measures can be taken to facilitate enduring change of teleworking when COVID-19 related measures are discontinued?

From the habit discontinuity theory is derived that implementing policies is more effective, when implemented after a context change, such as the COVID-19 pandemic. This means policies can be made to sustain the change in travel behaviour regarding teleworking. This was conceptualized in the proposed integrated attitude change model, which combined the insights of different theoretical behaviour change models. Challenges which have to be addressed by policies are present in three categories, social problems, norms and inadequate current policies. Challenges related to social problems are cooperation between teleworkers and employees at the office, improving social interaction, improving communication and improving work-life balance. Proposed measures to tackle these challenges are stimulating employers to make rules on teleworking and forcing employers to facilitate teleworking. Challenges related to norms which occur are norms on teleworking set by employers, social norms between colleagues and avoiding peak demand in office work days (crowding of office workers during certain days). The government should set an example on how arrangements can be made to combat these problems, by forcing officials and students to telework when necessary and spread demand of office/lecture hours. By setting this example, and additional information campaigns, other employers can be persuaded to follow this behaviour. Employers can also introduce enrolling or trading systems to regulate a fixed supply of office spaces. Another, less desired way is the increase of peak travel costs. Challenges related to inadequate policies are that the current tax regulations are not equipped to cope with teleworking, employees are not compensated for costs made while teleworking and incentives to reduce travelling are limited. Measures which address these challenges are introducing teleworking compensation or reforming travel compensation to a general compensation. Peak travel costs can be increased, when teleworking compensation is provided, but rewarding is more desired than pricing and was already successfully used to decrease peak travel demand. More elaboration on the policy measures is found in Chapter 8.

10.2 Final Conclusions

In this paper an integrated model was proposed to incorporate three theoretical models, the attitude change model (Van Wee et al., 2019), the model on the Built environment and travel behaviour (Van de Coevering et al., 2015) and the habit discontinuity theory (Verplanken et al., 2008). These relationships are validated in this research, by using desk research (Chapter 4), individual interviews (Chapter 5) and a focus group meeting consisting of experts (Chapter 6). The results from these methods are combined by using crystallization (Chapter 7).

This model is used as the research lens for answering the research questions. These questions are answered in the previous paragraph. Concluded is that the proposed model provided tools to analyse the data, which helped answering the research questions. The model should be validated by revealed data when the pandemic has ended to ensure stated intentions comply with revealed behaviour. The model can be used to analyse the impacts of new abrupt changes in the future.

The result of this research is the proposed Policy Strategy Design, which formulates the policy measures in a coherent strategy (Chapter 8). This design provides policy makers with a design which intends to change teleworking enduringly. The policy strategy helps to address ongoing concerns regarding congestion and emissions in the future. Using the proposed design, attitudes on teleworking could be improved and teleworking could be sustained in the future, which would lead to reduced travel volumes and congestion on the road infrastructure and consequently lower emissions. This is important for Rijkswaterstaat, because it affects traffic flows which needs to be accommodated. The policy strategy could lead to a higher reliability of the road network, because of the reduced peak traffic flows, variances of travel time can be reduced. The Ministry of Infrastructure & Water Management is recommended to do further research on the impact of the proposed policies, because it could influence the need of future investments in road infrastructure.

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Appendix A: Scientific Paper

Implementing policy strategies to stimulate teleworking

Dennis Begheijn

Master Thesis Transport, Infrastructure & Logistics

Abstract:

Travel volumes on Dutch road kept increasing the last decade, which resulted in congestion and increasing emissions. This changes when in March 2020, the COVID-19 pandemic reached the Netherlands and resulted into lockdowns. Employees shifted to teleworking, which reduced congestion and emissions. However, it is unclear whether this new behaviour will be sustained when the pandemic has ended. At this time it is uncertain whether the pandemic will have enduring impacts on travel behaviour. It is unclear how the pandemic compares to other abrupt changes in terms of the ability to substantially change travel behaviour, whether this can be influenced by policies, and which policy measures can be applied. Current theoretical models do not fully explain the enduring impact of abrupt changes on travel behaviour and are not validated by qualitative data. This research proposed an integrated attitude change model and validates this model by desk research, individual interviews and a focus group meeting consisting of experts. The integrated attitude model was validated by the collected data. Attitude changes were confirmed and enduring effects identified. Possible policy measures were gathered. The result of the research is a proposed policy strategy design which stimulates teleworking.

Keywords: Travel behaviour, attitudes, teleworking, transport policy

1. Introduction

Travel volumes on the Dutch main road network has been steadily increasing since 2013, after a stagnation resulted from the recession caused by the economic crises during 2008-2012 (Ministry of Infrastructure and Water Management, 2019). The increase of traffic volumes resulted in more congestion and so more travel delays (travel time lost) and increased time times,(Kennisinstituut voor Mobiliteitsbeleid, 2020a). This development was limited by the increase of lanes on the main road network and increase of flexible working methods (Kennisinstituut voor Mobiliteitsbeleid, 2016; Ministry of Infrastructure and Water Management, 2019). Congestion and delays result in societal costs, which also have been increasing to 4.3 billion euros in 2018. (Ministry of Infrastructure and Water Management, 2019). These are not just direct

costs, but also indirect costs, like the decrease of productivity.

This increase was interrupted, when in the beginning of 2020, the deadly COVID-19 virus infection originated in Wuhan (China), turned quickly into a pandemic. This resulted in lockdowns the Netherlands. This led to a rapid increase in the use of teleworking (Faber, Haas, & Hamersma, 2021; Kennisinstituut voor Mobiliteitsbeleid, 2020b). The average travel demand decreased up to 40% in the end of March, with the highest decline during peak hours (Turpijn, 2020). Even though travel demand increased again in the following months, trips were still more spread out during the day (Turpijn, 2020). Car travel movements were clearly reduced compared to earlier years (Ministry of Infrastructure and Water Management, 2021).

The effect of teleworking was seen in the travel data, with a reduction of work and education related travel movements starting from March, a slight recovery until the second lockdown starting in December and a new reduction thereafter (Ministry of Infrastructure and Water Management, 2021). This results in far less congestion on the Dutch freeway network. It turned out a decline of 15% travel demand during peak hours is enough to avoid structural congestion (Turpijn, 2020). The decreased travel volumes also resulted in reduced carbon dioxide emissions by road traffic, which are estimated at 1.7 Megatons (Boot, 2020).

It is unclear whether this changed travel behaviour, resulting from the increase of teleworking, will continue when the COVID-19 outbreak has been resolved, or people will fall back in their previous behavioural patterns. Based on the recovery during the summer of 2020, argued can be that there is a possibility travel demand will recover when the pandemic has ended. Because of the decreasing impact of teleworking on congestion and so societal costs of delays, it would be a positive development if teleworking is continued and travel demand would be more spread out over the day. Since results of previous policies were limited, new policies might be needed to achieve this (Kennisinstituut voor Mobiliteitsbeleid, 2016).

Current research is not sufficient to explain the impacts of the pandemic on long-term travel behaviour, as further explained in the research lens at chapter 2.

Previous epidemics, like the MERS and SARS outbreaks did not cause substantial change in travel behaviour (Van Cranenburgh, Chorus, & Van Wee, 2012). Unclear is whether this would also apply for the COVID-19 pandemic. Research from Van Wee, Vos, & Maat (2019) did show that attitudes can influence travel behaviour, which are impacted by triggers. According to them, attitudes are usually defined as the degree to which a person favours something favourable or unfavourable, triggers. Triggers were categorized between environmental, societal and personal triggers. The

COVID-19 pandemic likely generated triggers of all three categories, which would imply it has an impact on travel behaviour, but this was not validated using data (Van Wee, 2020).

New research is needed to confirm that attitudes of employees regarding teleworking have changed, in what way they have changed, and what the causes of this were. In this research also the long-term impacts of these attitude changes on travel behaviour and the built environment will be discussed.

The limitations of earlier research are the lack of validation of travel behaviour change models for the COVID-19 case regarding teleworking and the current travel behaviour models do not incorporate the effect of policy measures. Previous research is unsuitable to determine the enduring impacts of the COVID-19 pandemic on future travel behaviour and the ability to change this behaviour with policies.

At this time it is uncertain whether the pandemic will have enduring impacts on travel behaviour. It is unclear how the pandemic compares to other abrupt changes in terms of the ability to substantially change travel behaviour, whether this can be influenced by policies, and which policy measures can be applied.

Current theoretical models do not fully explain the enduring impact of abrupt changes on travel behaviour and are not validated by qualitative data. It is uncertain whether policies can be used to ensure that travel behaviour is changed permanently.

The goals of the research which resolve the research gaps is: to introduce an integrated model which explain changes in travel behaviour caused by abrupt changes, to determine attitude changes towards teleworking caused by COVID-19, to identify enduring impacts of the COVID-19 pandemic on teleworking and to propose policy measures which sustains teleworking in the future.

To address the research gaps presented in the previous paragraphs, the following research questions are conducted: Main research question: What policy strategy

design can be introduced, so that teleworking is continued in the future to reduce congestion? Sub-questions: 1. What are the attitude changes on teleworking caused by the COVID-19 pandemic? 2. What could be the enduring effects of the COVID-19 outbreak on teleworking and related travel behaviour, based on theories for travel behaviour changes? 3. What policy measures can be taken to facilitate enduring change of teleworking when COVID-19 related measures are discontinued?

This research is scoped by the impacts on attitudes and travel behaviour of the COVID-19 pandemic. Large amounts of the effect of the pandemic on travel behaviour is related to the increase of teleworking. Therefore, this thesis is mainly focused on teleworking. Other impacts of the pandemic, such as economic impacts are not addressed. As this thesis is conducted for Rijkswaterstaat, the road authority for the Netherlands, during the case is focused on impacts which can be linked to road traffic.

2. Research Methods

As the thesis consists of different kinds of research, different kinds of methods will be carried out to answer the research questions. This combination of methods is called the research methodology, which will be presented in this chapter.

To explore the effects of the COVID-19 pandemic on teleworking and travel behaviour a research lens is required. In this research is chosen to focus on the study of travel behaviour choices made by individuals, rather than aggregated choices made by the population, because this gives the most insights in the underlying causes of travel behaviour choices. Therefore, during this research a qualitative approach is used to collect and analyse the change in individual preferences regarding teleworking of employees. The research lens is based on theoretical models for attitude changes and changes in travel behaviour. These models are represented in frameworks, which will be discussed in the next chapter.

Using insights of these different frameworks, an integrated framework for travel behaviour is proposed, which is used as the research lens in this report. The integrated framework is used as the lens to analyse the research questions in this thesis, the framework helps to gain a better understanding in how attitudes on teleworking have changed during the pandemic and what the long-term effects on travel behaviour will be. The research lens will be validated in the discussion, based on the results of the qualitative data collected during this research.

Desk research is used to gain insights from previous research which can be used to answer the research questions. Firstly, impacts of previous substantial changes are reviewed, thereafter previous applications of theories for attitude changes are reviewed. Furthermore, to gain more insights about the contextual situation, quantitative data from surveys on teleworking during the pandemic are and finally previous policies to stimulate teleworking are reviewed.

In this research semi-structured interviews are used to gain insights about the attitudes of employees about teleworking. Employees which have used teleworking are used as participants, because they are regarded as the experts on this subject. Employees themselves know best how their opinions towards teleworking have shifted during the pandemic. The interviews were semi-structured designed, because this research did not require binary answers, but was instead looking for as much qualitative information about the aspects causing attitude changes as possible. The interviewer wanted to avoid steering respondent into a particular answer, but instead provide the respondents with the opportunity to elaborate on the answer themselves. The flexibility is used to gain as much insights as possible about underlying reasons and beliefs for their attitudes. Furthermore ideas about improvements and policies to stimulate teleworking are collected using these interviews. Limitations of this method is that there is no

option to check whether the stated attitudes represent their actual attitudes and beliefs.

Employees from different sectors were interviewed, to gain a broad view of the population. No fixed number of participants was set, but instead the data collection was continued until few new arguments were given during the interviews, which was defined as the moment of theoretical saturation (Locke, 2001).

The last data collection method which was used was a focus group meeting with experts in the field of mobility (policy). Focus Groups are primarily used to collect interaction data resulting from discussions between participants, which increases the depth of the research and reveal less obvious aspects about phenomena (Lambert & Loiselle, 2008). Based on the differences or similarities between the group members, focus group meeting can produce information about the range of perspectives and experiences on a certain subject. Focus Group meetings are often combined with individual interviews, in particular to complete and confirm data from the individual interviews, to contrast perspectives and to increase the credibility of the findings (Lambert & Loiselle, 2008). Combining results from different data collection methods is called triangulation or crystallization, with crystallization the more appropriate term for this research, because it does not only use the focus group for the confirmation of data, but also uses it to get a more multi-dimensional view of the subject (Tobin & Begley, 2004). The focus group for this research was organized to validate and reflect on the results from the interviews and to complement the insights with additional information. The participants of the focus group meeting were experts from different organizations, both public and private organizations. This helps to gain an multi-dimensional view on the topics, the different perspectives enriches the discussion and can lead to new insights.

3. Research Lens

The research lens gives an overview of applicable theoretical frameworks and theories which are applied during this research. This enables the researcher scientifically explore the effects of the COVID-19 pandemic on enduring travel behaviour changes. The first theory which is used is the typology of substantial changes. This theory was introduced by Van Cranenburgh et al. (2012) and discusses the impacts of previous changes on mobility patterns. Discussed is that mobility patterns do not just follow trends, but are also shaped by unconventional changes, referred to as ‘substantial changes’. A substantial change is defined as “an unconventional change that directly or indirectly causes an “enduring” change in at least one principal indicator of mobility of at least 5% on a supranational scale” (Van Cranenburgh et al., 2012). Based on the definition of the biosphere in the paper of Van Cranenburgh et al. (2012), and the application of the typology on earlier epidemics the COVID-19 pandemic can be typologised as a disaster, an abrupt change in the biosphere. The research on long term effects of disasters on travel behaviour is limited. Research on substantial changes determined that the SARS-CoV-1 epidemic only caused temporal impacts on travel behaviour (Van Cranenburgh et al., 2012). Hypothesized can be whether the impacts of the COVID-19 pandemic will be equivalent of earlier epidemics. While the pandemic as such can be seen as an abrupt event, teleworking is not a new phenomenon. Teleworking has become more popular in the past decades, because of the rise in digital communication methods (Van der Loop, Willigers, & Haaijer, 2019). ICT development was stated as a substantial change which changed travel behaviour enduringly (Van Cranenburgh et al., 2012). The pandemic could cause a flywheel effect which accelerates the development of teleworking. This would imply the pandemic should not be only seen as an independent abrupt change, but as a factor which influences the development of teleworking.

Another theory which is used to explain changes in travel behaviour, is the attitude change model. Attitudes can be defined as the degree in which someone favours the certain behaviour (Thorhauge, Haustein, & Cherchi, 2016). The theory that behaviour is influenced by attitudes towards behaviour, was first defined by Ajzen's (1991) theory of planned behaviour. Some insights on attitude change can be provided by the cognitive dissonance theory which states that people strive to hold attitudes and behaviour in harmony, and inconsistency between attitudes and behaviour should be eliminated (Festinger, 1962). Van Wee, Vos, & Maat (2019) defined a conceptual model for attitude changes. These were assumed to be changed by triggers. These triggers impact the three processes and resulting from these processes, attitudes can change. The processes can also affect each other. The relationship between attitudes and behaviour can be directed in both ways. The relations between attitudes, travel behaviour and the built environment is further conceptualized in the model of Van de Coevering, Maat, & Van Wee (2015). This model represents the two-way relations between attitudes, residential choice and travel behaviour. Van Wee (2020) already discussed that the COVID-19 pandemic can be seen as a trigger. This means the pandemic have changed attitudes and consequently travel behaviour and the built environment. This assumption is however not validated with data. Furthermore, it is unclear if attitudes can also be reversely changed, when the pandemic has ended. The model also does not incorporate the effect of policy on travel behaviour, so it is unclear how travel behaviour can be influenced by policy. The impacts of policies was incorporated in the attitude change model by Elias, Albert, & Shiftan (2013).

Not only attitudes affect travel behaviour, but also habits. This implies that changing habits could affect travel behaviour. Following the habit discontinuity hypothesis, habits can be changed by context changes, which leads to more deliberately chosen behaviour (Verplanken, Walker, Davis, & Jurasek, 2008). Context

change gives a chance to reflect on previous habits and motivates to reevaluate travel behaviour (Bamberg, 2006). The COVID-19 pandemic could be such a context change, which changes habits and consequently travel behaviour. Because of this re-evaluation of current behaviour, an opportunity windows is created to change behaviour enduringly.

Using insights from the three theories provided in this chapter, a framework was designed for integrate all these theories and focus on the relevant aspects for the development of teleworking.

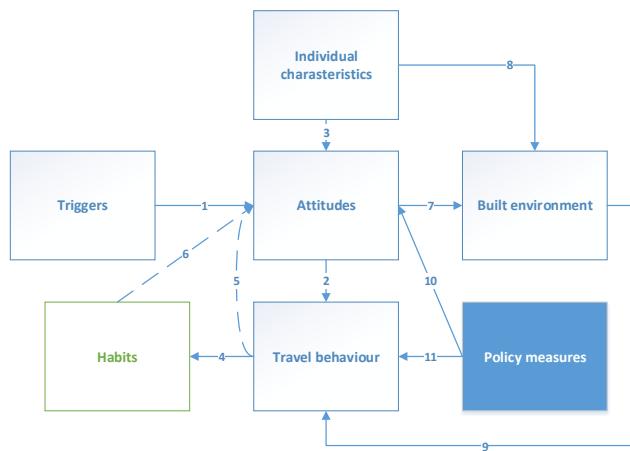


Figure 1. Integrated attitude model on teleworking.

4. Desk Research

Some aggregate data about attitude changes are available, different surveys were carried out asking questions about teleworking (Kennisinstituut voor Mobiliteitsbeleid, 2020b). The surveys also asked in different ways the respondent whether their attitude towards teleworking has positively changed. All of these surveys showed a positive attitude change during the first phase of the pandemic. The ANWB survey already showed some decrease in attitude in the summer of 2020. More recent data showed that while more people had a positive attitude towards teleworking, the number of hours people are willing to telework in the future is decreasing (Faber et al., 2021). The NS survey also found that employees are willing to telework more days in the future. This was also found in the KiM survey, the share that is willing to telework even increased over time (Faber et al., 2021). These positive

attitude changes were not only present in the Netherlands, but was also found in an Australian survey (Beck, Hensher, & Wei, 2020). Most predominant benefits of teleworking were the lack of travel time (stated by 77%), flexible working hours (38%) and more free time (28%) (MuConsult, 2021). Downsides were experienced more negatively as the pandemic continued (Faber et al., 2021). Respondents felt less connected with colleagues, the lack of appropriate work place, lack of facilities, difficult work-life balance, the stated support from the employer decreased and the place they used to telework felt less suitable (Faber et al., 2021; MuConsult, 2021). Changes in perceived productiveness differs between respondents. In April 2020 respondents stating higher and lower perceived productivity was the same at 34%, this increased to 38% higher productivity and 20% lower productivity in 2020. The ability of respondents to predict the future developments in teleworking seem to be lacking. In October 2020 respondents were already less teleworking than they intended in the survey of April 2020 (MuConsult, 2021).

An explaining factor can be that 50-70% of the respondents stated that the reasons to telework were it was recommended by the government or obligated by the employer. More than half of the participants stated that financial compensation and facilitating necessities is needed, other measures which are proposed are stated active stimulus of teleworking (42%), making arrangements about telework days (35%) and more guidance (10%) (MuConsult, 2021). While this data gives interesting data about attitudes changes, aggregate data can lead to misleading conclusions about individual preferences and variances in the data (Holderness, 2016). In the Netherlands few studies were done on teleworking policies before the pandemic. However, some studies were done to other forms of flexible working, like avoiding peak hours. Research using a survey among participants of different rewarding schemes for avoiding peak hours, concluded that 10-25% stated that the scheme impacted their travel

behaviour (I&O Research, 2015). This is an promising finding which may be broader applied to other forms of flexible working, such as teleworking.

5. Individual Interviews

In this chapter individual interviews were used to gain insights of people's individual experiences and changes in attitudes. The majority of the participants did not have much previous experiences with teleworking. The participants who did have experience with teleworking, used it mainly to avoid rush hours, or to combine working with private activities. This all changed when COVID-19 entered the Netherlands and the government advised all employees to work at home when possible. Most of the respondents all shifted to teleworking quickly after this announcement. Some respondents stated that before the pandemic, they had negative bias towards teleworking since they did not have experience with it. Teleworking was something respondent mainly did for a particular reason. Mainly this was done because of the combination with private activities.

The lack of travel time was the most predominant advantage stated by the respondents. Respondents liked the fact that they did not have to get up early and have more free time in the afternoon. Most respondents also stated an increase in productivity, especially for individual tasks for which no colleagues were needed. Respondents were less likely to get distracted, because of a more quiet work place. The flexibility of the work day is also a main issue. Employees like the fact that they can manage their own time. More time can be spent on private activities compared to when employees are in office. Examples are grocery shopping, accepting packages or taking a walk during lunch break. On the other hand, some respondents state their work day is more predictable, they have less unscheduled meetings when teleworking. Some respondents also state they can multitask during meeting, meetings take less time and they have the feeling they are less controlled by their employer and their colleagues. The main disadvantage

which was felt by almost all respondents was the lack of social activity with colleagues. People are likely to feel disconnected from their colleagues and their work place. While some employers try to keep contact with their employees by digital meeting, coffee breaks or quizzes, the respondents still missed the social interactions which occurs when working in office. However, not all respondents stated this and the extent to which the lack of social activity was felt differs between employees. This seems to depend on the living situation of the employee, when living alone the desire for social interaction with colleagues is higher compared to someone living more house members. Another disadvantage which was stated by many respondents, was the distinction between work and private life. Travelling meant there was a clear distinction between private life and work life, one respondents stated he misses travel time, because it was a way to start and to end the work day. Other disadvantages stated by respondent were that it was harder to concentrate because of the lack of social control, the increase of digital meetings and the visibility to their superiors. Concluded was that 8/10 respondents stated they became more positive about teleworking, one respondent did not state a difference and one respondents state becoming more negative.

The respondents who stated they became more positive, often refer to the advantages they stated earlier in the interview. The absence of travel time, being more productive and flexibility are key factors for the change in attitude.

Respondents were asked if they want to keep teleworking in the future and to what extent. Most of the respondents state they want to telework partly, being 2-3 days per week. This is mainly because of the largest disadvantage of teleworking, the lack of social interaction. None of the respondents stated they want to telework full-time. The number of days employees are willing to telework also depends on the work they do, for many jobs operated in office a share of tasks can be

done by teleworking, but there is also a share for which you need interaction with colleagues, customers or patients which is hard or even impossible to reach from home.

There is a large extent of uncertainty when asking respondents how many days they are willing to telework in the future. This is because they do not know how their work situation will change in the future. Employees depend on employers which has to be open to the idea of teleworking. It is uncertain whether teleworking will remain the norm, or working at the office will be the norm again when the pandemic has ended. This does not only apply to the norms set by the employer, but also on social norms by colleagues. When the norm is that all members of a team come in office for a meeting, people feel forced to come as well. The cooperation between employees working at the office and working from home can become a challenge, especially when working in creative sessions.

Ideas on possible policy measures were gathered by individual interviews. The measures proposed were telework compensation, rewarding teleworking, reforming travel compensation to general compensation, forcing employer to provide facilities, discouraging travelling to office, applying rules for home work place, forcing right to telework and increasing peak travel costs.

6. Focus Group

The focus groups increases the depth of the research, because of interaction data which results from the discussion between experts. The main goal of the focus group was to develop a policy strategy which combines all insights from both quantitative and qualitative research.

The experts acknowledged the fact that attitudes on teleworking are generally positively changed. Employees have more flexibility of their time and it is easier to concentrate at home. Furthermore, people get used to teleworking, which embraces the idea that habits are changed. The expert from NS signaled that more people were already travelling again, but are only avoiding peak

hours. We have to look out for the effect that all employees go to the office on the same day, because in this way many of the advantages of teleworking like the reduction of congestion are reduced. The group recognized the desire to telework part of the time. The group made clear that the important factor for the future is the policy of business and organizations. Employers have also seen the advantages of teleworking during the pandemic. The reduction of office space can save costs. Employers have to make plans to spread the employers, so not all employees come to the office on the same days. This means they have to find ways to tackle the social norms to go to the office. A strategy should be made by employers in cooperation with labor unions and the government. The focus group also discussed the desired situation on teleworking, what the balance between teleworking and working at the office should be. The group recognizes that more teleworking is preferred, because of the reduction of travel moments, which reduces the environmental impact. Another advantage of teleworking is the ability to do short private tasks during the work day.

However, advantages of working at an office still exists, there has to be variety. The group also states that it is important to look at personal factors, not everyone can work productively at home, for example parents with young children. Also the type of job is of importance. Stated is that about 1/3 has a negative experience on teleworking, but it is not clear if this can be resolved by working at the office for a couple of days per week. Firstly was discussed whether the government has a role in stimulating teleworking in the future. All of the participants shared the opinion that the government should take a role on this subject, because of the positive effects like the reduction of infrastructure expenses and environmental impact. The participants differ on what the role of the government should be. ANWB states that the government should not force people, but facilitate. According to the I&W this is what the government is already doing, but also states that

regulation for travel expenses can be changed, if this means targets for sustainability can be reached. All participants agree that the government should not force behaviour to harshly, but has to do enough to prevent people falling back in their previous patterns. Something the government can do is giving an example. The government should make policies to facilitate the employees of their organizations in teleworking. Government officials can be forced to spread employees during the week. Also, students can be forced to begin their days after peak hours. The tax regulation about travel expenses should be reformed, but details how this could be done were not adequately discussed. Price mechanisms can be used to reduce peak demand, the government could increase peak pricing, for both train travelling as travelling by car. The downside of this is you also target people which have to work on a location, to tackle this you would need to make exceptions. Rewarding systems were also discussed, this could work better, because people are more triggered by rewards than by costs. Examples of this are already implemented at the ministry. It is important that the reward is tangible, that is not simple an addition to the salary (NS). The last type of system which was discussed were the example of tradable parking rights, which was used in a pilot of the ANWB. This could also be used to reserve office space.

The meeting was ended on the remark that workers who can't work from home should not be forgotten.

7. Crystallization

In this chapter the insights from all these methods are combined resulting in a comprehensive understanding of the problems and possible policy measures. The crystallization is visualized in Figure 2. This crystallization integrates the findings of the desk research, the individual interviews and the focus group.

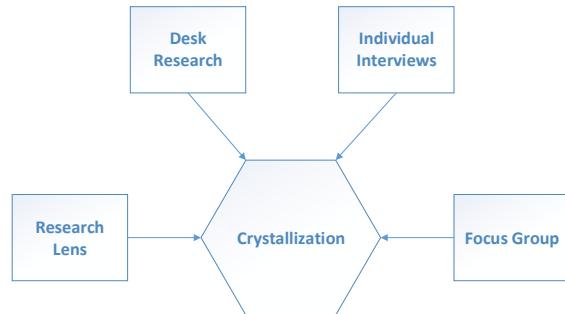


Figure 2. Crystallization

Based on the crystallization of the three research methods is that attitudes on teleworking have positively during the COVID-19 pandemic. The pandemic generated triggers which altered behaviour, generated new information and led to changes in emotions regarding teleworking. Advantages of teleworking which were experienced included the lack of travel time, higher productivity and higher flexibility. The most predominant disadvantage was the lack of social contact with colleagues, which has various consequences. Perceived productivity while teleworking is higher and increasing over time, however there is still a minority with a perceived decrease of productivity. Overall, concluded is that attitudes towards teleworking have been improved. Still, attention has to be drawn to the group which a unfavourable attitude towards teleworking.

All data collected showed that employees are willing to keep teleworking after the pandemic, most of them part-time (2-3 days per week). Several challenges arise when this intended use of teleworking has to become reality in the future. Most predominant is the norms set by employers. Employers have to facilitate teleworking for employers, not only by allowing them to facilitate, but also by avoiding social norms set by themselves or by colleagues. When employers are allowed to work at the office again, arrangements have to be made between employees working from the office and those teleworking. At the same time must be prevented employers will all telework and work at the office at the same time. A clear division of 'telework days' and 'office days' should be prevented, because this limits the effects

of teleworking in terms of congestion and reduced necessary office space. Policies by both employers themselves as policies introduced by the government could help prevent these effects. Concluded is that the COVID-19 pandemic is likely to have enduring effects on travel behaviour, but policies are needed to help sustain the changed travel behaviour in terms of teleworking, because otherwise the positive effects can be limited.

To prevent that employees will return going full-time to office, policy measures should be implemented. The pandemic gives an unique opportunity to implement policy measures, because the habits have already been changed, the policy only has to prevent people falling back in their previous habits.

Employers are a limiting factor for teleworking, when employers force employees to work at the office, the habit of teleworking will dissolve. New norms should be embedded by employers, arrangement have to be made between employers and employees, to determine how and when employees should telework. Employers organizations and labour unions can play a role in this discussion. Employers could improve facilities provided to teleworkers to improve their experience of teleworking. Another measure which can be taken by employers is the introduction of a trading or enrolling scheme for parking or office space, to spread demand over the week. This could prevent crowding on certain days. The government should not enforce behaviour, but can use pricing to stimulate desired behaviour. Policy measures of different kinds can be taken to stimulate teleworking. As first there is reforming the compensation system. Providing telework compensation will satisfy employers, but will not tackle the problem that travel costs are not felt by employees. Reforming travel compensation to a fixed compensation would help solving this problem. Furthermore peak travel costs can be increased to spread the demand for office space. The government should take a leading role in promoting teleworking. Proposed policy measures include forcing

government officials and students to telework and avoid rush hours. The government can make arrangements with universities, to shift college so it the overlap with commuting peaks is limited. By using this the government can set an example for other business to implement similar measures.

8. Policy Strategy Design

Before a policy strategy can be recommended, it has to be clear what the problem is. This was analysed in the previous chapters. Combining the results of these chapters, a clear picture arises from the different sub-problems. The social challenges which arose were cooperation between teleworkers and employees at the office (1), improving social interaction (2), improving communication (3) and improving work-life balance (4). Challenges related to norms were norms on teleworking set by employers (5), social norms between colleagues (6) and avoiding peak demand in office work days (7). Challenges related to inadequate policies were current tax regulations are not equipped to cope with teleworking (8), employees are not compensated for costs made while teleworking (9) and incentives to reduce travelling are limited (10).

In table 1 the impact of policy measures to overcome the challenge is presented.

Table 1. Impact of policy measures on challenges

Measure / Challenge	1	2	3	4	5	6	7	8	9	10
Telework compensation									■	
Reform travel compensation								■	■	
Rewarding teleworking										■
Force employers	■				■					
Rules on teleworking		■	■	■	■					
Increasing peak travel costs						■				■
Leading role government					■	■	■			
Information campaign					■	■				
Trading / enrolling systems							■			

During the focus group opinions were shared on the desirability of policy measures. Concluded was that a facilitating role was most desired. This means the government should start by introducing information campaign and stimulate companies to implement rules and arrangements on teleworking. The next step for the

government is to implement measures in their own organizations, by forcing officials and students to telework and avoid peak hours. This could also be implemented by individual companies, for instance by introducing trading or enrolling system. Thereafter price incentives come into play, the most desired is the telework compensation. Rewarding systems can be applied to further stimulate teleworking. Effectivity can be increased by reforming the current compensation schemes to a general compensation program. The last resort is the increase of higher peak travel costs, but this is controversial because it will likely also effect employers who are not able to telework.

9. Discussion

In this chapter is reflected on the research lens and the implications of the results on the used theories are discussed. In this report an integrated attitude change model was used to analyze the case of teleworking during and after the COVID-19 pandemic.

Some relationships in the model could not be validated. Built environment can also be changed directly by teleworking. In the model the built environment is only affected indirectly by teleworking, via attitudes.

However this does incorporate all the effects. The built environment is not only changed by the changed attitudes towards teleworking, but also by teleworking itself. The most important noticed relationship was that teleworking itself can be also changed by triggers. When the COVID-19 pandemic began, employees were forced to telework. This did not immediately change their attitudes towards teleworked, but their behaviour was already changed. Only after a while their attitudes became more positive.

The main limitation of this research is that it mainly focused on qualitative data collection methods. Some survey data was used to gather aggregate data, but insights of individual preferences were gathered using individual interviews. However, stated intended behaviour does not always comply with established

behaviour. The desk research method was limited in time.

The individual interviews could be improved by providing more detailed questions on attitude changes. While the focus group provided interesting insights from the experts in the field, the duration of the meeting limited the amount of information that could be shared. Another limitation is that the focus group only consisted of mobility experts and no representatives of employers participated, this limits the view of the group. Furthermore, the validity of the results could be affected by the interpretations of the researcher. The researcher tried to remove any bias during the research, nonetheless this could have unintentionally influenced the results. Finally, this report mainly focuses on the impacts of the COVID-19 pandemic on attitudes on teleworking. In the research lens and the desk research some other cases are also mentioned, but the paper is mainly focused on the pandemic. This can reduce the generalisation of the study to other cases.

This research contributes to the limited validity of current models for travel behaviour change. The proposed integrated attitude change model was validated by using qualitative data. Recommendations for further research are to examine the validity of the model by also analysing revealed data. This research should be persevered after the pandemic has ended, to determine the enduring effects on teleworking. This would increase the value of the proposed model.

Further research on this case have to be conducted on the effectiveness and the feasibility of the policy measures. The data collection methods provided an extensive list of proposed policy measures, which were proposed in the previous chapter. The impact of these measures on the mentioned policies were identified, but quantified effects were not provided in this research. These could be estimated by future research. The next phase of research could be to quantify the enduring

effects on travel indicators. This information could be used in the decision making processes for investments in road infrastructure in the future.

10. Conclusion

In this paper an integrated model was proposed to incorporate three theoretical models, the attitude change model (Van Wee et al., 2019), the model on the Built environment and travel behaviour (Van de Coevering et al., 2015) and the habit discontinuity theory (Verplanken et al., 2008). These relationships are validated in this research, by using desk research (Chapter 4), individual interviews (Chapter 5) and a focus group meeting consisting of experts (Chapter 6). The results from these methods are combined by using crystallization (Chapter 7). This model is used as the research lens for answering the research questions. These questions are answered in the previous paragraph. Concluded is that the proposed model provided tools to analyze the data, which helped answering the research questions. The model should be validated by revealed data when the pandemic has ended to ensure stated intentions comply with revealed behaviour. The model can be used to analyze the impacts of new abrupt changes in the future. The result of this research is the proposed Policy Strategy Design, which formulates the policy measures in a coherent strategy (Chapter 8). This design provides policy makers with a design which intends to change teleworking enduringly. The policy strategy helps to address ongoing concerns regarding congestion and emissions in the future. Using the proposed design, attitudes on teleworking could be improved and teleworking could be sustained in the future, which would lead to reduced congestion on the road infrastructure, and consequently to lower emissions. The proposed policies could ease the tasks of Rijkswaterstaat to accommodate future travel volumes. Future research should determine whether the Ministry of Water Management can reduce investments in new road infrastructure because of reduced peak traffic flows.

Appendix B: Survey Data

Survey data shifts in teleworking and attitude changes during COVID-19.

Change in working from home

Table 20. Share of people working completely from home, before and after the start of the pandemic
(Kennisinstituut voor Mobiliteitsbeleid, 2020b).

Source survey	% before	% after	Date of survey
KiM	6	39	03-2020
	6	23	06-2020
Min I&W	6	45	04-2020
ANWB	9	20	04-2020
	9	17	06-2020
	9	12	07-2020
NS	6	62	04-2020
	6	47	06-2020

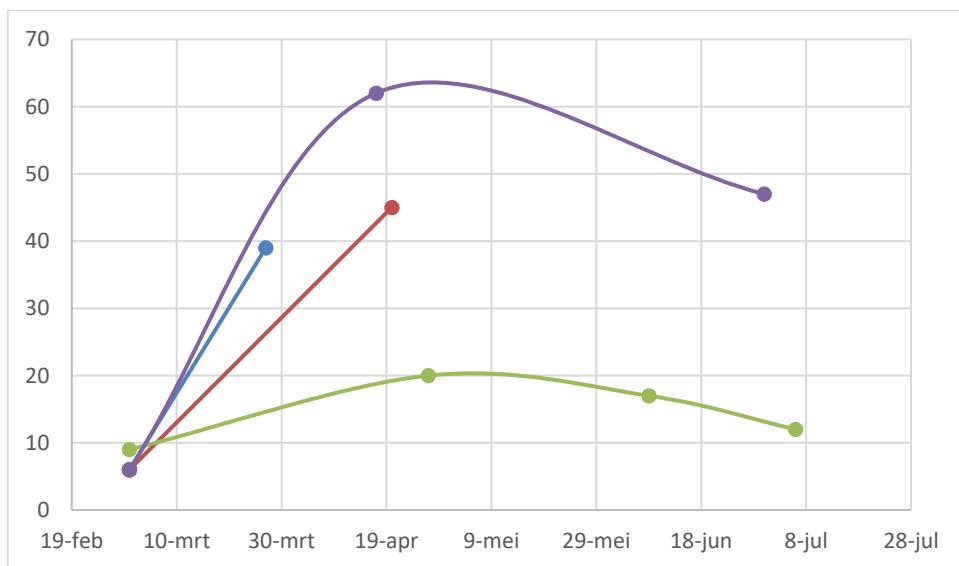


Figure 16. Share of people working completely from home, overview of several Dutch surveys
(Kennisinstituut voor Mobiliteitsbeleid, 2020b).

When looked at the share of people working completely from home, shown is that only a small minority of people worked completely from home before the pandemic. This accelerated rapidly after the first measures began in the beginning of March. When the number of COVID-19 cases decreased during the end of spring and the summer, the curve flattened and decreased a bit. The ANWB survey shows a somewhat lower percentage of flexible working, this seems to be because

more lower educated employees were involved in this survey, for which it is more uncommon to work from home (Kennisinstituut voor Mobiliteitsbeleid, 2020b).

Share of people who “sometimes” work from home, before and after the start of the pandemic

Table 21. (Kennisinstituut voor Mobiliteitsbeleid, 2020b).

	feb-20	mrt-20	apr-20	jun-20	jul-20	sep-20
KiM	33	54		48		42
Min I&W	32		69			
ANWB	35		45	42	37	
NS	42		81	75		
Reg Werkgevers	31		87			

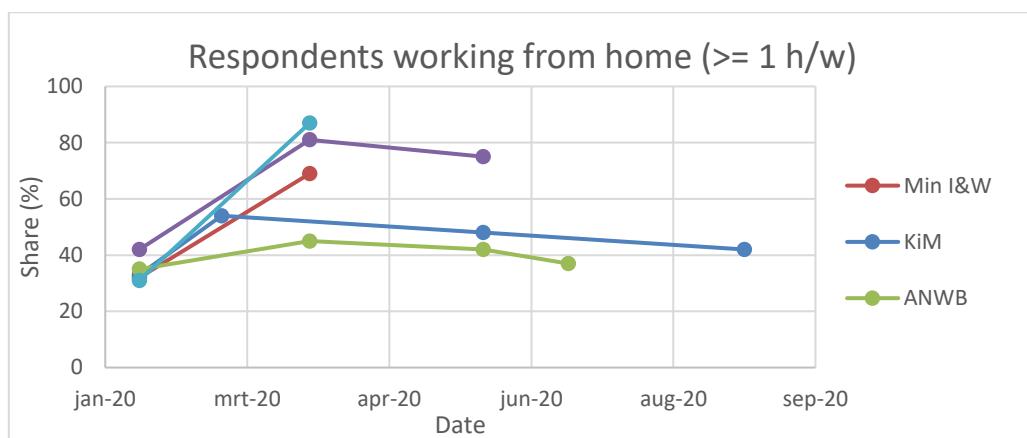


Figure 17. Share of people working from home, overview of several Dutch surveys (Faber et al., 2021; Kennisinstituut voor Mobiliteitsbeleid, 2020b).

The different surveys show more or less the same pattern, an increase during the first months of the pandemic and a slight decrease after a peak in May. The difference is that the starting point is somewhat higher, about a third of the respondents already worked from home sometimes before the pandemic. New research suggest a stabilization after the summer months, as shown in Figure 18 (Ministry of Infrastructure and Water Management, 2021).

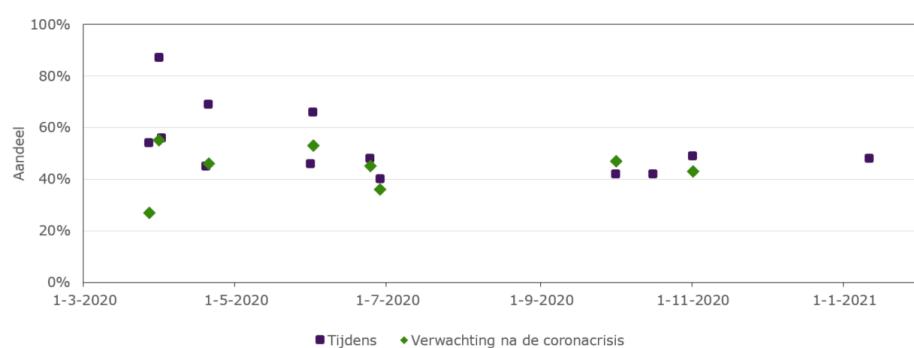


Figure 18. Trend of teleworking based on different surveys (Ministry of Infrastructure and Water Management, 2021)

Change in attitudes towards flexible working

Several surveys were performed during the pandemic about the attitudes on flexible working, but these do not have data on the attitudes before the pandemic. However, some surveys asked whether the participant has gotten a more positive attitude towards flexible working during the pandemic.

Table 22. Share of respondent who has gotten a more positive attitude towards flexible working

Source Survey	Date of survey	% more positive attitude
NS	17-04	44
ANWB	27-04	54
Regionale Werkgevers	17-04	40

Table 23. Source: KiM (September 2020)

Source Survey	Date of survey	% positive attitude	Formulation
KiM	27-03	61	Positive experience
	24-06	71	
NS	17-04	75	Positive attitude
	30-06	74	
ANWB	27-04	71	Positive attitude
	08-06	76	
	06-07	67	
NN	24-04	83	I'm good at working from home
	06-05	84	
	15-05	90	

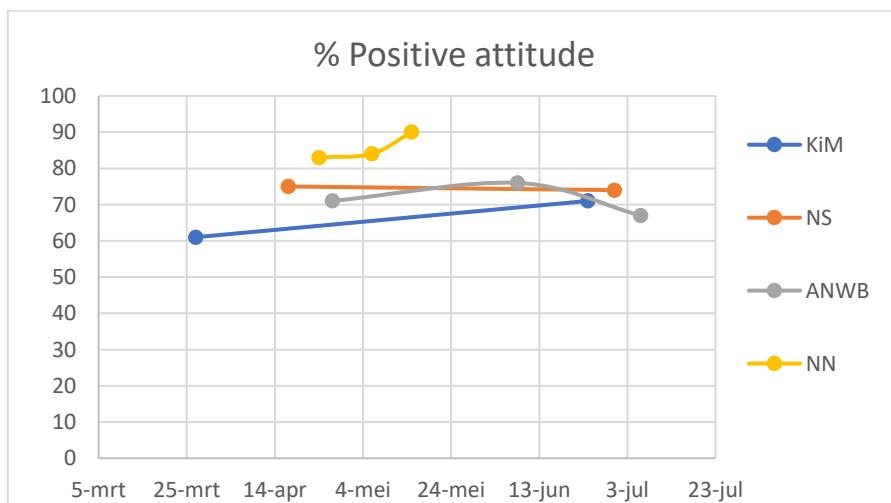


Figure 19. Increase in stated attitudes of survey respondents

Appendix C: Individual interviews

Notes of interviews

Individual interview A

Voor Corona: Soms eerste uur thuiswerken, zodat ik na de file kon gaan werken. Een keer in de twee weken ongeveer op vrijdag thuis werken.

Tijdens corona: Drie dagen na de maatregelen moesten we geheel thuiswerken. Toen maatregelen versoepeld werden mocht je om de week twee dagen naar kantoor. Meestal maar een keer per twee weken naar kantoor.

Questions:

1. Experiences

- Wat is uw ervaring met het thuiswerken tijdens de coronacrisis?

Voor corona: fijn om mail alvast weg te werken, maar ik deed geen afspraken thuis. Op vrijdag werkte ik soms wel thuis, maar dat was meer om uit te slapen, op vrijdag gaat toch bijna niemand naar kantoor.

Tijdens corona:

Ik ging het thuiswerken meer waarderen, eigen ritme is fijn. Geen reistijd was erg fijn. Skype meetings hoefden vaak niet heel alert gevuld te worden. Niet op vingers gekeken worden, als je werk maar af kwam. Sociale contacten onderhouden lukte ook wel met de buurman. Moet wel echt je ritme aanhouden, en de dag bewust afsluiten. Heb ook een dag bij vrienden op kantoor gewerkt.

- Welke voordelen van thuiswerken heeft u ervaren?

- Geen reistijd.
- Eigen ritme.
- Je wordt niet zo op je vingers gekeken

- Welke nadelen van het thuiswerken heeft u ervaren?

- Informele contacten met collega's.
- Moeilijker ritme aanhouden

- Is uw mening over thuiswerken veranderd door de coronacrisis en, zo ja, hoe?

Wel even omschakelen maar meer gaan waarderen doordat ik mijn eigen gang kon gaan. Tegelijkertijd andere dingen kunnen doen tijdens meetings, dus productiever. Ik had weinig de camera aan.

- Hoe heeft uw werkgever u gefaciliteerd in het thuiswerken?

Werkgever heeft niet zoveel gedaan. Je mocht wel een laptop meenemen. Bureau of stoel mocht je meenemen van kantoor. We hebben een paar keer met medewerkers sociale contact gehad digitaal. Vrij weinig ondersteuning vanuit werkgever.

Wel een meeting gehad. Weinig interesse in persoonlijke omstandigheden.

- Hoe is uw reispatroon veranderd vanwege de coronacrisis en wat vind u daarvan?

Van driekwartier in de auto naar 5 min na wakker worden na laptop. Na werken even hardlopen.

Auto veel minder gebruikt. Voor andere activiteiten vooral fiets en hardlopen gebruikt.

Reiskostenvergoeding werd stopgezet vanaf maart. Werd beweerd dat we er geen recht op hadden. Terwijl kosten van auto wel doorlopen. Geen andere kostenvergoeding voor thuiswerken gehad, salarisverhoging ging niet door.

2. Expectations

- Verwacht u in de toekomst ook volledig of gedeeltelijk thuis te blijven werken?

Gedeeltelijk wel. Fijn om dagje zelf in te kunnen plannen. Voor als pakketje komt of ook wat eigen dingen te kunnen doen. Vooral geen reistijd is heel fijn.

- Wilt u meer flexibel werken dan voor de coronacrisis?

Op een flexibele locatie met vrienden werken was top. Met anderen praten is ook positief voor werk. Ook wil ik meer spitsmijden gaan doen. Spitsmijden is meer ingeburgerd geworden.

Maar het ligt eraan wat de sociale norm in de toekomst wordt, als iedereen naar kantoor komt voor een meeting, wordt dat wel gewenst.

- Waarom wilt u wel/niet volledig thuis werken?

Je mist toch collega's, niet alleen voor sociale contacten maar ook om even snel iets te vragen.

- Als je meer thuis zou werken, zou dat invloed hebben op je woonplaatskeuze?

Nee, maar ik zou wel eerder een baan accepteren die wat verder weg is, als ik er minder vaak heen hoef.

3. Improvements

- Welke verbeteringen zouden er toegepast kunnen worden om het thuiswerken beter te maken?

Meer informele momenten om samen te komen, digitale borrels of pubquizzes.

Vergoeding voor thuiswerken. Ik heb nijs hoeven aanschaffen maar collega's moesten wel dingen aanschaffen, wat niet vergoed werd.

Je moet naar kantoor kunnen komen als je dat echt wil, dat moet ook mogelijk zijn.

- Welke factoren zorgen ervoor dat u liever thuiswerk, dan wel liever op kantoor werkt?

(Zie expectations – DB)

4. Policies

- Welk beleid is er nodig van de overheid om thuiswerken beter te faciliteren?
- Reiskostenvergoeding moet niet worden afgeschaft, maar worden omgezet in een andere vorm. Bedrijven hebben het gebruikt om kosten te besparen.
 - Welke beleid kan er voor zorgen dat u liever thuis werkt dan op kantoor?
- Ontmoedigen om de weg op te gaan.
- Snelheidsverlaging hielp niet mee.
- Praktische beroepen moeten worden uitgesloten, maar voor mensen die op kantoor werken kunnen de kosten van reizen wel omhoog.
 - Welke rol spelen reistijd en reiskosten in de overweging om thuis te werken?

Zolang werkgever betaalt, spelen reiskosten niet zoveel mee.

Reiskostenvergoeding dekt de kosten niet, dus naar kantoor gaan wordt minder aantrekkelijk, maar vanwege voordelen wil wel minstens 1x per week naar kantoor.

Expert interview B

Voor corona:

Soms werkte ik wel thuis. Van mijn werkgever mag je thuis werken als je wil, dat deed ik meestal 1x in de week. Maar ik werkte meestal liever op kantoor. Thuis vond ik het moeilijker concentreren. Spitsmijden gebeurde meestal vooral omdat laat beginnen prettig is. Ik heb niet veel last van de spits, omdat ik maar een kort stukje snelweg hoeft te. Spits was geen factor voor de beslissing, alleen 's middags een beetje.

Tijdens corona:

Voordat de maatregelen echt begonnen (15 mrt) kregen we bericht dat we volledig thuiswerken, naar kantoor mocht niet, is nog steeds zo (14 nov). Je had goedkeuring nodig als je wel naar kantoor wilde.

Questions:

1. Experiences

- Wat is uw ervaring met het thuiswerken tijdens de coronacrisis?

In het begin was het flink wennen, thuiswerken was eerst meer een smoes als je tussendoor iets moest doen. Je werkte dan minder hard. Dat kan nu niet meer, er moet gewoon gewerkt worden. Het heeft wel een maand geduurd voordat ik er helemaal in zat. Het voelt nu steeds meer als normaal werk.

Op het begin was ik niet productiever dan op kantoor, maar nu steeds meer. Koffiepauzes vervallen. Contacten zijn meer zakelijk.

- Welke voordelen van thuiswerken heeft u ervaren?

- Reistijd was voor mij geen grote factor, want de reisafstand was voor mij niet groot.
- Voordeel is dat tijd meer zelf ingedeeld kan worden, je kan langer doorwerken als je tussendoor iets anders moet doen. Het maakt niet uit wanneer je het doet, als het werk maar afkomt.

- Welke nadelen van het thuiswerken heeft u ervaren?

- Het meest miste ik sociale contacten. Ik ben in mijn eentje verantwoordelijk voor mijn werk, ik heb weinig andere mensen nodig voor werk. Dus je spreekt mensen niet als je ze niet nodig hebt.
- Faciliteiten op kantoor. Goede bureaustoel, goed bureau, goede monitor. Dat had ik eerst niet.
- Ik woon in een klein appartement met een partner die ook een baan heeft. Je zit de hele dag in dezelfde ruimte, dat voelt een beetje opgesloten, omdat je geen andere indrukken krijgt.
- Je krijgt minder beweging.
- Geen reden hebben om aan te kleden.
- Ik miste de reis op zo'n manier dat je rustig kunt opstarten. Niet zo lang mogelijk in bed en dan meteen achter de laptop, zoals nu. Dus nu doe ik muziek aan thuis om beetje opgewekt te worden, meezingen.

- Is uw mening over thuiswerken veranderd door de coronacrisis en, zo ja, hoe?

Alles meegenomen positiever tegenover gaan kijken. Voor en nadelen tegen elkaar afgewogen. Minder afleiding is fijn voor het werken.

- Hoe heeft uw werkgever u gefaciliteerd in het thuiswerken?

Toegang tot digitale systemen was goed, aangezien al thuisgewerkt kon worden.

Je kan aanvragen om op kantoor te werken, met goede reden.

Vergoeden internetaansluiting. €250 om spullen te kopen.

In mei kreeg ik een nieuwe functie, toen had ik wekelijks contact. Daarna heb ik een nieuwe manager gekregen, die heb ik nog nooit gesproken. Eens per 4 weken krijgen we een update met alle werknemers. Ik heb weinig tot geen contact met leidinggevenden.

Met het team heb ik wel elke week digitaal contact. Vrijdagochtend heb ik ook een meeting met het retailteam.

- Hoe is uw reispatroon veranderd vanwege de coronacrisis en wat vind u daarvan?

Eerste maanden heb ik wekenlang mijn (lease)auto niet gebruikt. Na zes weken pas weer auto gebruikt. Nu wel weer meer uitstapjes. Nieuwe elektrische lease auto mag worden uitgezocht, word nog geen rekening gehouden met meer flexibel werken.

2. Expectations

- Verwacht u in de toekomst ook volledig of gedeeltelijk thuis te blijven werken?

Meer thuis werken dan voor de coronacrisis, eerst maar 1x in week/twee weken.

Zou nu wel twee of drie keer in de week thuis willen werken. 2/3 keer naar kantoor voor sociale contacten.

- Wilt u meer flexibel werken dan voor de coronacrisis?

Ik wil wel op kantoor of thuis werken en niet op een andere flexibele locatie, want je hebt niet alle faciliteiten anders. Te veel afleiding of nieuwe indrukken werkt niet prettig. Spitsmijden had ik al ervaring mee, alleen 's ochtends thuiswerken. Niet veel verandering.

- Waarom wilt u wel/niet volledig thuis werken?

Absoluut niet. Als ik nu wist dat ik helemaal moest thuis werken, zou ik ergens anders gaan wonen, aangezien reistijd niet meer uitmaakt. Woonplek dan compleet onafhankelijk van werkplek.

3. Improvements

- Welke verbeteringen zouden er toegepast kunnen worden om het thuiswerken beter te maken?

Als werkgever wil dat je thuiswerkt, moeten zij aanbieden dat je alles hebt om goed thuis te werken. Stoel, bureau, goed internet.

Een op een contact hebben hoe thuiswerken wordt ervaren of je wel productief niet kan zijn. Meer ondersteuning voor persoonlijke en psychologische aspect.

Interesse in het welzijn van de medewerkers.

Meer interesse in persoonlijke omstandigheden.

Werd weinig rekening gehouden met mensen die niet thuis kunnen werken. Soms hoor je dagenlang niks van iemand, managers moeten daar wel contact mee houden anders werken ze misschien niet.

- Welke factoren zorgen ervoor dat u liever thuiswerkt, dan wel liever op kantoor werkt?

Als ik geen lease-auto zou hebben is er wel een hogere drempel, maar dan zou ik waarschijnlijk met eigen auto gaan.

Als ik alleen met OV zou mogen gaan, zou ik eerder thuiswerken.

4. Policies

- Welk beleid is er nodig van de overheid om thuiswerken beter te faciliteren?
- Thuiswerkvergoeding.
- Fiscale maatregelen om reizen in de spits te verminderen.

- Welke beleid kan er voor zorgen dat u liever thuis werkt dan op kantoor?

- Premie om thuis te werken.
- Heffing voor reizen naar kantoor.

- Welke rol spelen reistijd en reiskosten in de overweging om thuis te werken?

Ik heb nu een tankpas en leaseauto, daardoor zijn reiskosten niet zo hoog.

De Auto wordt veel privé gebruikt, dus die wil ik wel houden. Als ik geen leaseauto meer krijg, neem ik weer een privéauto.

Expert interview C

Questions:

1. Experiences

- Wat is uw ervaring met het thuiswerken voor en tijdens de coronacrisis?

Voor corona:

Voor corona werkte ik bijna nooit thuis. Het kon wel, als het in overleg gebeurde. Alleen als er bijvoorbeeld een monteur o.i.d. thuis kwam werkte ik thuis, misschien 1x per maand. Dan spaarde ik werk op dat ik thuis kon doen, zoals mails beantwoorden. Maar in principe werkte ik niet thuis. Last van files heb ik eigenlijk niet, ik woon ongeveer een kwartier van mijn werk. Met mijn functie moet ik mensen aansturen, die op locatie werken. Vanaf thuis gaat dat aansturen lastig.

Tijdens corona:

Vanaf eind februari moest in Brabant iedereen thuiswerken. Dat ging vrij goed, omdat iedereen tegelijk thuis moest werken.

- Welke voordelen van thuiswerken heeft u ervaren?

- Sommige dingen gaan productiever. Vooral als iemand een specifieke taak heeft om in z'n eentje uit te voeren. Je wordt minder snel afgeleid, door mensen die korte vragen stellen of door koffiepauzes.
- In de ochtend is het fijn dat er geen reistijd meer is. Ik kan nu later opstaan.

- Welke nadelen van het thuiswerken heeft u ervaren?

- Samen werken gaat lastiger. Dingen even kort afstemmen is moeilijker.
- Verder mis je na verloop van tijd de sociale contacten.
- Wat je mist is dat de werkdag niet afgesloten is.
- Scheiding tussen werk-privé is lastiger geworden.

- Is uw mening over thuiswerken veranderd door de coronacrisis en, zo ja, hoe?

Mijn mening over thuiswerken is verbeterd in de loop van de tijd.

Vanaf juni mochten we om de dag weer naar kantoor. Af en toe naar kantoor is fijn, dat breekt toch de week van het thuiswerken. Omdat maar de helft naar kantoor kon, zaten de meesten alsnog op kantoor te videobellen. Door de gebruikte headsets, was dit geen probleem.

- Hoe heeft uw werkgever u gefaciliteerd in het thuiswerken?

Je mocht zaken als beeldscherm, bureaustoel, muis en toetsenbord meenemen van kantoor.

Per team was er een wekelijkse check-in, daardoor voelde je je nog wel verbonden bij het werk. Door de werkgever zelf waren er geen echte checks. Er waren vaste pauzemomenten, zodat je je dan even af kon sluiten van het werk.

Er waren verder geen digitale borrels of koffiemomenten o.i.d.

Mensen die het thuis echt moeilijk hadden, door bijvoorbeeld thuiswerkende partner of drukte met kinderen, mochten alsnog naar kantoor blijven gaan.

- Hoe is uw reispatroon veranderd vanwege de coronacrisis en wat vind u daarvan?

In het begin gebruikte je auto bijna niet.

Nu gebruiken we wel relatief de auto meer ten koste van het OV.

2. Expectations

- Verwacht u in de toekomst ook volledig of gedeeltelijk thuis te blijven werken?

Ik verwacht wel dat dit mag van de werkgever.

Zou zelf 1 dag in de week thuis willen werken, om dan werk te doen wat je opspaart.

Liever niet meer, omdat ik een team aan moet sturen en dat gaat lastig vanuit huis.

- Wilt u meer flexibel werken dan voor de coronacrisis?

Als ik meer last van congestie krijgt, dan wel. Maar dat is momenteel meestal niet het geval.

- Waarom wilt u wel/niet volledig thuis werken?

Moeilijk dingen lastig af stemmen.

Je mist het sociale contact met je collega's.

- Als je meer thuis zou werken, zou dat invloed hebben op je woonplaatskeuze?

Andersom, eerder baan verder weg accepteren.

3. Improvements

- Welke verbeteringen zouden er toegepast kunnen worden om het thuiswerken beter te maken?

Regels over hoe je thuis werkt. Wanneer word je geacht bereikbaar te zijn? Hoe lang duurt een meeting? Welk programma gebruik je? Maak hier een soort protocollen/handvatten voor.

Coaching om te helpen met thuiswerken

- Welke factoren zorgen ervoor dat u liever thuiswerkt, dan wel liever op kantoor werkt?

(Zie vorige antwoorden – DB)

4. Policies

- Welk beleid is er nodig van de overheid om thuiswerken beter te faciliteren?

Als corona over is, gaan veel mensen weer naar kantoor.

- Misschien moeten mensen verplicht worden een dag in de week thuis te werken.
- Premie voor thuiswerken.
- Financiële prikkels.

- Welke beleid kan er voor zorgen dat u liever thuis werkt dan op kantoor?

- Goede spullen hebben is wel belangrijk.

- Sommige mensen zouden wel thuis kunnen werken, maar dan hebben bedrijven het niet goed geregeld voor thuiswerken.
- Voor kantoorwerk zou thuiswerken een verplichte optie moeten kunnen worden.

- Welke rol spelen reistijd en reiskosten in de overweging om thuis te werken?

Dit heeft niet veel invloed op mijn autokeuze. Misschien zou ik wel eerder een benzineauto kopen i.p.v. een diesel nu.

Mijn vaste reiskostenvergoeding is afgeschaft. Ik heb geen leaseauto.

Nu wordt het vergoed als ik naar kantoor ga, als dat niet gebeurt zou ik wel eerder thuiswerken.

Expert interview D

Ik begeleid kinderen met licht verstandelijke beperking op opvoedkundig gebied, bijvoorbeeld met therapie. Ik coördineer alles, stuur het team aan. Leidinggevende functie.

Questions:

1. Experiences

- Wat is uw ervaring met het thuiswerken voor en tijdens de coronacrisis?

Voor corona:

Toen werkte ik helemaal niet thuis. Had ik geen ervaring mee.

Tijdens corona:

Kinderen wonen bij ons in. Het is dus niet wenselijk dat je helemaal thuis werkt, omdat het team je niet ziet. Dat werkt niet goed met aansturen. Normaal werk je altijd metzelfde collega's op kantoor. Twee dagen per week kantoor, rest werk je thuis. Zelfde werk als op kantoor, behalve face-to-face. Leidinggevende functie vervul ik telefonisch en via teams, bijna 8 uur per dag aan het bellen.

Dit bleef hetzelfde tijdens de zomer, ook omdat het op kantoor niet coronaproof is. Kleine groepen mochten wel op kantoor, maar alle overleggen zijn wel op Teams, vanwege de grote groep.

Over het algemeen vond ik het thuiswerken wel prettig, je kan goed focussen, en overleggen zijn ingepland.

- Welke voordelen van thuiswerken heeft u ervaren?

- Wel productiever thuis, vooral bepaalde taken, kan goed focussen.
- Ook in zijn algemeenheid vond ik het prettiger werken.
- Reistijd van Amsterdam naar Driehuis, normaal is daar veel file. Fijn om dat niet meer te hebben.

- Welke nadelen van het thuiswerken heeft u ervaren?

- Vooral bij meer dagen achter elkaar thuiswerken ervaarde ik nadelen.
- Dan mis je het sociale gedeelte.
- Je hebt ook te weinig zicht op patiënten.
- En mis ik fysiek contact met collega's. Op kantoor loop je snel even langs.
- Reistijd is ook wel fijn om dag af te sluiten. Heftige problematiek neem je dan niet mee naar huis, als je leuke muziek aan zet. Nu denk je er vaak in weekend nog aan.
- Patiënten, kinderen met beperking snappen het videobellen niet.

- Is uw mening over thuiswerken veranderd door de coronacrisis en, zo ja, hoe?

Voor coronacrisis dacht ik dat het helemaal niet kan. In de zorg is het niet gebruikelijk om thuis te werken, ook leidinggevenden niet, je dacht er niet aan. Nu in huidige opstelling is het beter dan het eerst was. (Positiever - DB)

- Hoe heeft uw werkgever u gefaciliteerd in het thuiswerken?

Werktelefoon en laptop hadden we al. Dossiers waren al digitaal. Je werkte vroeger op verschillende locaties, dus was al flexibel. Maar systemen werken niet altijd goed. Ik heb verder alleen MS Teams gekregen. Er is nergens geld voor, geen stoel, geen bureau, scherm etc.

- Hoe is uw reispatroon veranderd vanwege de coronacrisis en wat vind u daarvan?

Auto gebruik ik nauwelijks meer, ook niet voor andere activiteiten. Normaal rijdt je snel even door. Maar dat mis ik niet.

2. Expectations

- Verwacht u in de toekomst ook volledig of gedeeltelijk thuis te blijven werken?

Denk in de huidige vorm. Niet 9 tot 17, maar meer flexibel.

Werkgever maakt het niet uit.

Misschien dat je wel door sociale druk naar kantoor moet als meerderheid van team op kantoor zit. Oudere generatie is minder flexibel met werktijden en communicatie.

- Wilt u meer flexibel werken dan voor de coronacrisis?

Spitsmijden wil ik sowieso meer doen. Eerst was het normaal om een half uur in de file te staan, maar nu klinkt dat absurd, ik heb al half jaar niet in de file gestaan.

- Waarom wilt u wel/niet volledig thuis werken?

Dat kan echt niet met deze functie. Kinderen met beperking snappen het niet als je moet videobellen.

- Als je volledig thuis zou werken, zou dat invloed hebben op je woonplaatskeuze?

Nee. Ik zou liever niet verder willen reizen. Ik ben reistijd juist vervelender gaan vinden.

3. Improvements

- Welke verbeteringen zouden er toegepast kunnen worden om het thuiswerken beter te maken?

Systemen. Beveiligde systemen werken niet goed. Kan vaak niet goed in dossier komen. Dingen op locatie worden niet goed doorgegeven aan thuiswerkers.

Ik heb pijn aan mijn rug door slechte stoel, dus ik vind dat ik een betere stoel moet krijgen.

Ik heb ook geen extra scherm.

- Welke factoren zorgen ervoor dat u liever thuiswerk, dan wel liever op kantoor werkt?

(Zie voordelen - DB)

4. Policies

- Welk beleid is er nodig van de overheid om thuiswerken beter te faciliteren?

Ik vind niet dat overheid een rol in speelt voor faciliteren voor thuiswerken.

- Welke beleid kan er voor zorgen dat u liever thuis werkt dan op kantoor?

- Geen.
- Wel vind ik het milieu een reden om eerder thuis te werken.
- Werkgever moet faciliteren dat je thuis kunt werken.

- Welke rol spelen reistijd en reiskosten in de overweging om thuis te werken?

Ik vind het fijn dat je geen reistijd hebt. Want dan kan ik sporten in de ochtend.

Kosten spelen nu helemaal niet mee, want die worden vergoed.

Als kosten stijgen, zou ik daar nog niet door geprikkeld worden.

Ik werk voornamelijk thuis als ik veel te doen heb.

Expert interview E

Questions:

1. Experiences

- Wat is uw ervaring met het thuiswerken voor en tijdens de coronacrisis?

Voor corona:

Had ik helemaal geen ervaring met thuiswerken. Voor corona hield mijn baas er niet van als ik thuis werkte. Er is dan geen sociale controle, je kan niet zien of mensen aan het werk zijn. Als mensen vroegen thuis te werken om te focussen, was het moeilijk om toestemming te krijgen. Ik deed het liever niet. Ik was toen nog vooral in lab aan het werk. Ook voorbereiden en uitwerken deed je op kantoor. Alleen als je iets niet af kreeg ging je nog thuis even verder. Klein beetje spitsmijden deed ik al, ik zat vaak pas tegen 9 uur in de auto. En was ook vaak tot laat bezig, dus tot na de spits.

Tijdens corona:

Eind maart gingen we 100% dicht, dus iedereen moest thuiswerken. LUMC heeft gezegd: iedereen moet thuiswerken. Ook benodigheden om in het lab te werken werden schaars vanwege coronacrisis. Ondertussen mogen we weer deels op locatie werken, er mag maximaal 60% in het lab aanwezig zijn.

- Welke voordelen van thuiswerken heeft u ervaren?

- Part time thuiswerken ging wel goed, omdat het een keuze was.
- 100% ging niet, maar nu 5% op lab, 95% thuis. Ik ben nu meer efficiënt bezig op lab.
- Lezen van papers gaat beter thuis, literatuur onderzoeken.
- Je kan niet worden gestoord door mensen die dingen vragen aan jou of collega's.
- Taken die meer concentratie vereisen gaan thuis beter.
- Fijn om geen reistijd te hebben.

- Welke nadelen van het thuiswerken heeft u ervaren?

- Eerste paar weken ging het dramatisch slecht, totaal niet productief.
- Had niet voorbereid om thuis bezig te zijn, had nog lab dingen gepland.
- Omschakelingen naar theoretisch onderzoek.
- Het werd thuis heel warm en buren gingen verbouwen.
- Videoverbindingen konden niet vanwege geluidsoverlast.
- Anderen helpen gaat ook niet vanuit huis, wat gebruikelijk is op het lab.
- Dagritme is verstoord.
- Geen sociale controle om op tijd op lab te zijn.
- Reistijd zorgt voor ontkoppeling met je werk, om je werk af te sluiten.
- Computer moet je echt afsluiten om te voorkomen dat je niet aan het werk gaat.
- Je hebt nu ook geen andere dingen die je even kan doen op het lab als je ergens mee vastloopt.

- Miste m'n collega's, ga ik ook mee op wintersport enz., zijn soort vrienden van me. Wel digitale kopjes koffie gedaan. Normaal doe je dat tijdens het wachten op proeven.

- Is uw mening over thuiswerken veranderd door de coronacrisis en, zo ja, hoe?

Ik had gedacht dat ik het heel lastig te vinden om een hele dag thuis te werken, o.b.v. eerdere ervaringen. Lastig om een hele dag te gefocust te zijn en zonder controle. Terwijl er eigenlijk geen echte controle op me is op het werk. Gaat nu wel steeds beter. (*Positiever – DB*)

- Hoe heeft uw werkgever u gefaciliteerd in het thuiswerken?

Ik mocht materiaal meenemen van kantoor. Toetsenbord en muis mocht mee. In theorie mocht stoel meenemen, maar dan had ik op kantoor geen stoel meer. Zelfs laptop kon worden geregeld. Er is ook psychologische hulp aangeboden, via mails. Dit was vooral bij overlijden van groepsleider. Ook enquêtes over thuiswerken, wat mensen missen. Werd ook wat meegedaan, bijvoorbeeld digitale activiteiten.

Ook voor Sinterklaas was wat georganiseerd.

Er was ook een app-groep met collega's.

- Hoe is uw reispatroon veranderd vanwege de coronacrisis en wat vind u daarvan?

Ik heb een eigen auto, die gebruik ik nu veel minder. Gebruik hem nog wel om naar sporten te gaan, ook voor kapper en tandarts, maar dat deed ik altijd al. Fijn om even naar andere omgeving te gaan.

Ik heb vooral minder reisbewegingen gedaan. Had geen neiging om naar andere plekken te gaan vanwege het gebrek aan reisbewegingen.

2. Expectations

- Verwacht u in de toekomst ook volledig of gedeeltelijk thuis te blijven werken?

Zoals het nu is, is best ideaal. Kan nu dingen die thuis goed gaan thuis doen, en vice versa. Heb nu veel thuiswerk, dus kan veel thuis doen, maar in de toekomst zal ik weer meer praktisch gaan doen. Heb schrijfwerk opgespaard, dus dat nu vooral gedaan. Naar lab gaan is wel fijn om weer korte overleggen met collega's te hebben die niet geforceerd te zijn.

Sociale druk moet zo zijn, dat je thuis kan werken als je dat wil, en op het lab als je dat wil.

- Wilt u meer flexibel werken dan voor de coronacrisis?

Ik wil weer op zelfde manier werken als eerst, want ik had toch weinig last van files. Voor mijn werk is het niet handig om heel laat binnen te komen, want dan moet je ook lang door.

Ik mocht ook in vergaderzalen werken (ander soort vorm van flexibel werken). Zelf vind ik het niet fijn om in te werken. Ik houd van vaste plekken, waar ik dingen kan laten liggen.

- Waarom wilt u wel/niet volledig thuis werken?

Ook als het wel had gekund, had ik het niet gewild. Bijvoorbeeld discussies voeren via het scherm, is al lastig. Discussies worden minder levendig. Je mist non-verbale communicatie tijdens presentatie en mogelijkheid door elkaar heen te praten.

- Als je volledig thuis zou werken, zou dat invloed hebben op je woonplaatskeuze?

Ligt er aan wat de verhouding is.

Het is hier te druk om fulltime thuis te werken (Amsterdam). Moeilijk om een rustige omgeving te creëren thuis.

Als ik veel thuis zou moeten werken, dan ga ik liever ergens wonen waar je rustiger is. Als ik maar 2x per week zou moeten reizen, kan ik meer reistijd accepteren.

3. Improvements

- Welke verbeteringen zouden er toegepast kunnen worden om het thuiswerken beter te maken?

Op kantoor heb ik twee schermen, heel fijn om mee te werken. Maar remote desktop van LUMC ondersteunt geen twee schermen. Dat vind ik heel vervelend.

Ook waren er storingen in het systeem. ICT systemen moeten gebruiksvriendelijker en betrouwbaarder. Sommige dingen kunnen niet via remote desktop.

Software faciliteren om goed thuis te werken, bijvoorbeeld office cloud.

Ik had geen printer en scanner, dat soort dingen moeten gefaciliteerd worden.

- Welke factoren zorgen ervoor dat u liever thuiswerk, dan wel liever op kantoor werkt?

(Zie voordeLEN – DB)

4. Policies

- Welke rol spelen reistijd en reiskosten in de overweging om thuis te werken?

Ik krijg geen reiskostenvergoeding, alleen belastingvrijstelling.

Hogere reiskosten zorgen vooral voor frustratie.

Ik wil al niet voor halve dagen naar kantoor, om reiskosten te sparen.

Zou bij grote stijging wel invloed kunnen hebben.

- Welk beleid is er nodig van de overheid om thuiswerken beter te faciliteren?

Nu heb je belastingvoordeel als je wel gaat reizen, probeer het om te draaien dat je gestraft wordt om naar kantoor te gaan. Vergoeding om dichterbij werk te gaan wonen.

Vergoeding voor verwarming etc. Thuiswerkvergoeding.

Lijkt me ook logisch dat werkgevers verplicht moeten worden om goed te faciliteren dat mensen thuis kunnen werken.

Al is het lastig omdat ze vroeger ook niet alle autokosten betaalden.

- Welke beleid kan er voor zorgen dat u liever thuis werkt dan op kantoor?

Vergoeding voor licht en verwarming.

Lastig, want korte overleggen mis je nog steeds, welk beleid je ook maakt

Expert interview F

Questions:

1. Experiences

- Wat is uw ervaring met het thuiswerken voor en tijdens de coronacrisis?

Voor corona:

Had ik helemaal geen ervaring met thuiswerken.

Tijdens corona:

Toen we het net te horen kregen, zijn wij in shifts gaan werken, de ene week thuis, de andere week op kantoor. Dit was om te voorkomen dat hele dienstverlening plat komt te liggen.

Halverwege juni is konden we weer wat meer op locatie gaan werken, geprioriteerd werken.

We moesten dingen verzinnen die je thuis kon doen. Bepaalde documenten zijn beveiligd, dus mocht je niet mee naar huis meenemen. Telefoonjes en mails beantwoorden kon thuis en huwelijken voorbereiden (die uiteindelijk gecanceld werden).

- Welke voordelen van thuiswerken heeft u ervaren?

- Ik had al weinig reistijd.
- Fijn dat je wat meer thuis zit, dat je even boodschappen kan doen. Dat je een wasje kan doen.
- Niet zo'n strakke planning, wat meer zelfsturing.
- Flexibiliteit.
- Geen verplichting om op vaste tijd op werk te zijn.
- Geen afleiding.
- Beter in m'n vel.
- Kan even lekker wandelen.
- Minder last van bedrijfsregeltjes en sociale normen.

- Welke nadelen van het thuiswerken heeft u ervaren?

- Het duurt bij een Gemeente duurt lang om te veranderen.
- Sociale aspect, geen teamuitjes.
- Voor andere mensen soms lastig om mee te gaan met digitale systemen. Mensen die zoom niet snappen.
- Niet al het werk kon thuis.
- Als verder niemand thuis is, is het wel saai, dan is het stil in huis.
- Je moet wel zorgen dat je ook buiten komt.

- Is uw mening over thuiswerken veranderd door de coronacrisis en, zo ja, hoe?

Ik dacht er eerst niet over na. Als iemand een dag thuis werkte, dacht ik dat lijkt me heerlijk.

Het was een taboe. Nu is het gewoon normaalste zaak van de wereld. (*Positiever – DB*).

- Hoe heeft uw werkgever u gefaciliteerd in het thuiswerken?

We kregen alles. Toetsenbord, muis, stoel. Alles erop en eraan. Zelfs een bureau kon.

Hadden wel wekelijks overleg, vragen wel hoe het met je gaat.

Bij het begin werden er wel borreltjes georganiseerd. Met kerst ook een soort borrel.

- Hoe is uw reispatroon veranderd vanwege de coronacrisis en wat vind u daarvan?

Ik heb een eigen auto, die heb ik veel gebruikt, ook niet voor andere dingen.

2. Expectations

- Verwacht u in de toekomst ook volledig of gedeeltelijk thuis te blijven werken?

Zou niet meer de hele week op mijn werk willen zitten.

Maar het kan niet volledig vanwege het klantcontact.

Minstens een dag in de week zou ik thuis willen werken. Hoop eigenlijk twee dagen.

- Wilt u meer flexibel werken dan voor de coronacrisis?

Als het kan zou ik het liefst twee dagen in de week thuis willen werken.

Wel gehoord van mensen die niet op kantoor werken, maar samen ergens anders.

- Waarom wilt u wel/niet volledig thuis werken?

Vooral vanwege het klantcontact.

- Als je volledig thuis zou werken, zou dat invloed hebben op je woonplaatskeuze?

Ja tuurlijk. Heb nu max een half uur. Bij leuk bedrijf zou ik wel langer in de auto willen zitten 2x in de week. Zou eerder een baan accepteren die iets verder weg ligt.

3. Improvements

- Welke verbeteringen zouden er toegepast kunnen worden om het thuiswerken beter te maken?

Digitale dienst. Dingen kunnen controleren vanuit huis. Veel mensen moeten nu fysiek naar de balie komen.

Ontwikkelen van digitale dienstverlening.

Mensen die hier werken zijn niet zo flexibel in het omschakelen.

Werk leuker maken thuis.

- Welke factoren zorgen ervoor dat u liever thuiswerk, dan wel liever op kantoor werkt?

(Zie voordeLEN - DB)

4. Policies

- Welke rol spelen reistijd en reiskosten in de overweging om thuis te werken?

Speelt voor mij nauwelijks een rol, het is onregelmatig wanneer ik naar het werk ga. Als het moet dan ga je.

Omdat je minder naar je werk gaat is het minder erg om te reizen.

- Welk beleid is er nodig van de overheid om thuiswerken beter te faciliteren?

Als het verplicht is om thuis te werken, moet de werkgever zorgen voor goede faciliteiten.

Als het geen verplichting is, vind ik dat mensen er zelf voor moeten zorgen.

Er moet een thuiswerkvergoeding komen.

- Welke beleid kan er voor zorgen dat u liever thuis werkt dan op kantoor?

Als ik de keuze heb, en reiskosten om naar kantoor te gaan zouden stijgen, zou ik liever thuis blijven werken.

Expert interview G

Questions:

1. Experiences

- Wat is uw ervaring met het thuiswerken voor en tijdens de coronacrisis?

Voor corona:

Ik zat 5 dagen op kantoor. Dit was wel de eerste half jaar van mijn werkervaring. Vrijdag werkten collega's wel vaak thuis.

Tijdens corona:

Het is een semioverheidsinstelling, dus regels werden strikt gevolgd. Dus meteen allemaal thuis werken.

Jonge ingenieurs die nog weinig ervaring hadden hebben het echt lastig, omdat ze moeilijker dingen kunnen volgen.

In de zomer, mocht je weer 1 a 2 dagen naar kantoor. In praktijk minder omdat er ook zomervakanties waren. Je gaat naar kantoor vanwege collega's, maar als meesten op vakantie zijn is dat niet nuttig.

Nu gemiddeld 2 dagen op kantoor in de week. Meer ervaren werknemers werken meer thuis.

- Welke voordelen van thuiswerken heeft u ervaren?

- Hardcore engineering doe je liever thuis, want geen afleiding.
- Beter focussen.
- Verre collega's is makkelijker contact mee te leggen. Het is normaler om een random collega's meteen te contacten. Je plant nu eerder een meeting met collega's die je niet eerder hebt gesproken via Teams i.p.v. vroeger fysiek.
- Ideaal dat ik geen reistijd meer had (1,5 uur enkele reis).
- Ik slaap langer.
- Flexibiliteit om je eigen dag in te delen, even snel boodschappen doen etc.
- Sociale normen vervagen, je mag zelf weten wanneer je werkt, als je 40 uur maar vol maakt.

- Welke nadelen van het thuiswerken heeft u ervaren?

- Ik was niet productiever.
- Niet ervaren genoeg om mijn werk te kunnen doen, zat nog in het leerproces. Kon niet goed zelfstandig werken.
- Moeite met opletten, als het me niet interesseert. Zat soms spelletjes te spelen tijdens presentaties.
- Disconnectie met collega's, zowel inhoudelijk als persoonlijk. Sociale aspect zorgt ervoor dat je mensen makkelijker benadert als je iets even niet weet, voor kleine vraagjes.
- Sociaal contact met collega's is erg belangrijk voor je netwerk, zodat je weet wie je moet benaderen.

- Kan niet goed meer zien wanneer iemand beschikbaar is als je iemand belt, i.p.v. als iemand achter bureau zit. Sommige collega's hanteren vaste werktijden niet. Of gaan andere dingen doen tijdens werktijd, rondje fietsen, met kinderen bezig.

- Is uw mening over thuiswerken veranderd door de coronacrisis en, zo ja, hoe?

Nee. Het heeft voordelen en nadelen, dat vind ik nog steeds.

- Hoe heeft uw werkgever u gefaciliteerd in het thuiswerken?

We gebruiken Skype en Teams.

Eigen werkgever (detachering) heeft niks gedaan.

Collega's die in dienst zijn hebben wel apparatuur meegekregen. Stabureau's en extra schermen. Bij opdrachtgever hadden we elke week een weekstart. Ook teamoverleg, waar iedereen bij moet zijn. Verder hadden we niet veel ondersteuning. Had wel behoefte aan sociale activiteiten.

- Hoe is uw reispatroon veranderd vanwege de coronacrisis en wat vind u daarvan?

Ik ga nog wel naar vrienden etc. Ik begin nu altijd wel in Delft. Er ga minder snel naar spontane dingen onderweg. Maar voornamelijk doordat andere mensen ook minder af willen spreken.

2. Expectations

- Verwacht u in de toekomst ook volledig of gedeeltelijk thuis te blijven werken?

1x in de dag thuis. Ik wil in hybride vorm werken. Hooguit 2 dagen in de week thuis.

Werkgever staat hier wel voor open, als je ervaren genoeg bent.

- Wilt u meer flexibel werken dan voor de coronacrisis?

Spitsmijden is niet handig voor mij, dan heeft het voor mij geen nut meer om naar kantoor te gaan. Dat zorgt ook voor irritatie bij collega's.

- Waarom wilt u wel/niet volledig thuis werken?

Kan niet echt voor mijn werk. (*Zie redenen bij nadelen – DB*)

- Als je volledig thuis zou werken, zou dat invloed hebben op je woonplaatskeuze?

Niet echt.

Dat is geen reden om van baan te wisselen.

Ik wil minder dan een half uur reistijd, hoe vaak ik ook naar kantoor moet.

3. Improvements

- Welke verbeteringen zouden er toegepast kunnen worden om het thuiswerken beter te maken?

Verbetering in mijn woonruimte, zodat ik een aparte studeerkamer heb. Hiermee creëer je een fysieke scheiding met werk en privé.

Digitale opslagsysteem verbeteren. Daarom heb ik nu collega's nodig om uit te leggen waar ik alles kan vinden.

- Welke factoren zorgen ervoor dat u liever thuiswerkt, dan wel liever op kantoor werkt?

N.v.t. Ik werk liever op kantoor.

4. Policies

- Welke rol spelen reistijd en reiskosten in de overweging om thuis te werken?

Reiskosten worden volledig vergoed (OV), dus dat is geen reden voor mij om thuis te blijven.

Als ik het zelf moet betalen, ligt het eraan hoe hoog de kosten worden.

De efficiëntie is op kantoor zoveel hoger.

- Welk beleid is er nodig van de overheid om thuiswerken beter te faciliteren?

Ik vind dat werkgever ook thuiswerkcosten moet vergoeden.

Degelijke internetverbinding is echt vereist.

Moet een standaard komen voor thuiswerkcosten.

Reiskostenvergoeding kan omgezet worden naar een algemene vergoeding.

Je moet onderscheid maken tussen mensen die wel en niet thuis kunnen werken.

- Welke beleid kan er voor zorgen dat u liever thuis werkt dan op kantoor?

N.v.t.

Expert interview H

Questions:

1. Experiences

- Wat is uw ervaring met het thuiswerken voor en tijdens de coronacrisis?

Voor corona:

Daar had ik geen ervaring mee. Ik zit dicht bij m'n werk. Was altijd van mening dat je om zichtbaar te zijn rond moet lopen op kantoor. Je moet mensen kunnen aanspreken. Had het idee dat je als je thuis werkt, je ook niet serieus genomen wordt. Het was geen gemeengoed, je moest toestemming vragen

Tijdens corona:

Toen vanaf maart duidelijke werd dat gezondheid in geding kwam, moest iedereen meteen thuiswerken.

Techniek werkte in het begin soms niet even goed, sommige mensen er nog onhandig mee.

Ik vond het vanaf begin aan best wel goed gaan.

- Welke voordelen van thuiswerken heeft u ervaren?

- Het doet iets met machtsstructuur. Op kantoor heb je hiërarchische verhouding, wordt bestempeld door plek op kantoor, leaseauto etc. Dat zie je in de fysieke cultuur. Dat vervaagt in de digitale wereld. Belangrijk voor gelijkheid en machtsstructuur.
- Beter voor stressbeleving van mensen.
- Communicatie verloopt veel efficiënter. Meetings lopen niet uit. Communicatie verloopt bondig. Tijdens presentatie kan gemultitasked bezig.
- Efficiënter met tijd omgaan.
- Mensen hebben opeens wel tijd voor je. Mensen worden niet afgeleid door taken die eigenlijk niet voor hun relevant bent.

- Welke nadelen van het thuiswerken heeft u ervaren?

Sociale gevolgen. Maar dit is gevolg van gewoontes van afgelopen decennia.

Sommigen worden depressief van het thuiswerken. Maar je moet oorzaak en gevolg scheiden. Is vaak omdat ze in de thuissituatie weinig sociale contacten hebben. Die mensen halen sociaal contact uit het werk. Die mensen kunnen wel in een isolement komen. Je moet zorgen dat mensen vanuit vrije keuze sociaal contact op kunnen zoeken.

- Is uw mening over thuiswerken veranderd door de coronacrisis en, zo ja, hoe?

Positiever gaan denken. (*Zie antwoord eerste vraag – DB*)

Er wordt nu veel meer nagedacht waarom eigenlijk zon groot gebouw nodig is, is het echt nuttig dat al die mensen naar kantoor gaan? Terwijl dat gewoon met huidige middelen ook ergens anders kunnen doen.

- Hoe heeft uw werkgever u gefaciliteerd in het thuiswerken?

N.v.t.

- Hoe is uw reispatroon veranderd vanwege de coronacrisis en wat vind u daarvan?

Mensen zoeken het veel meer dicht bij huis.

Mensen hebben ritme nodig. Tussen de middag ga ik fitnessen of boodschappen doen.

Vroeger leefde je van maandag tot vrijdag. Het weekend was een feestje.

Nu krijg je meer een constant ritme. We zijn onderdeel van het instituut waar we werken.

Sommigen missen de veiligheid van het ritme. Sommigen vinden het moeilijk om dat te veranderen.

Ik voel me niet schuldig om midden op de dag een stuk te gaan fietsen.

2. Expectations

- Verwacht u in de toekomst ook volledig of gedeeltelijk thuis te blijven werken?

Als je zegt we moeten weer naar kantoor, omdat we zeggen dat het belangrijk is om elkaar te zien, dan gaan mensen waarschijnlijk weer terug naar kantoor. Denk dat mensen ook in die zichtbare wereld op kantoor willen zijn. Maar ik zou dat triest vinden.

Als je het open laat, denk ik dat mensen er veel bewuster over na gaan denken.

Zelf wil ik meer thuis blijven werken.

- Wilt u meer flexibel werken dan voor de coronacrisis?

Op tijd op werk komen hoort samen met sociale status. Mensen willen laten zien hoe belangrijk ze zijn.

Dus het ligt aan de sociale normen die heersen.

- Waarom wilt u wel/niet volledig thuis werken?

Natuurlijke manier van werken is in en om het huis werken. Van nature willen mensen dat.

Digitalisering geeft ons de mogelijkheid om weer deze stap terug te doen.

We moeten ontwennen van vorige generaties die naar kantoor gingen, om weer terug te gaan naar wat normaal is.

Voordeel is dat je je thuiswereld kan combineren met het werkleven.

- Als je volledig thuis zou werken, zou dat invloed hebben op je woonplaatskeuze?

Zeker. Op teams kan je achtergrond kiezen, dan kan je doen alsof je op Hawaï zit. Dat kan werkelijkheid worden.

Werknemer kan ook in fiscaal meest vriendelijke land gaan wonen.

Voordeel voor werkgever dat hij beste persoon ter wereld kan zoeken, want hoeft toch niet te verhuizen e.d.

Eventueel kan je flexibele plekken inrichten met goede videoconference mogelijkheden.

Op lange termijn vervagen sociale contacten met werk en zoeken mensen sociaal contact bij de woonplaats.

3. Improvements

- Welke verbeteringen zouden er toegepast kunnen worden om het thuiswerken beter te maken?

Digitale systemen.

Zorgen dat mensen het goede communicatiekanaal. Wanneer je gewoon kan bellen doe je dat, niet altijd videobellen.

Leuke meetings zijn wel belangrijk. Ook fysiek, maar pas af en toe.

- Welke factoren zorgen ervoor dat u liever thuiswerkt, dan wel liever op kantoor werkt?

(Zie voordelen - DB)

4. Policies

- Welk beleid is er nodig van de overheid om thuiswerken beter te faciliteren?

Eerst kijken wat bedrijven gaan doen.

Juist overheidsbedrijven zijn het meest conservatief.

Sectoren met veel concurrentie, zien de voordelen. Als je ziet dat productiviteit hoger is en kosten van gebouwen etc. afneemt, dan gaat dat vanzelf.

Je moet scheiden welke mensen wel en niet thuis kunnen werken.

Overheid kan wel het voortouw nemen.

Dit is een trigger voor het vertrouwen dat digitalisering kan werken.

Mensen zijn gewoontedieren, we moesten uit onze gewoonte gehaald worden.

- Welke beleid kan er voor zorgen dat u liever thuis werkt dan op kantoor?

Ik heb geen behoefte aan meer faciliteiten thuis, ben zelf niet zo'n fan van veel schermen etc. Heb geen last van m'n rug.

Bedrijven moeten wel zorgen voor goede vergoeding.

Kan ertover nadenken om reisvergoeding om te zetten naar thuiswerkvergoeding.

- Welke rol spelen reistijd en reiskosten in de overweging om thuis te werken?

Mensen gaan helemaal niet graag naar kantoor, maar gaan vooral vanwege sociale druk. Kosten spelen daarin nauwelijks een rol.

Expert interview I

Questions:

1. Experiences

- Wat is uw ervaring met het thuiswerken voor en tijdens de coronacrisis?

Voor corona:

Had ik helemaal geen ervaring met thuiswerken. Het was gewoonte om op kantoor te werken.

Dat was ook een beetje zodat managers je in de gaten konden houden.

Tijdens corona:

Na de lockdown, moesten we meteen thuiswerken. In de zomer mochten we 1 dag in de week op kantoor werken.

- Welke voordelen van thuiswerken heeft u ervaren?

- Later je bed uit, niet in de file staan.
- Geen gezeur van collega's.
- Productiever want je kan je beter focussen. Ik werk harder thuis.
- Op het werk hebben we kantoortuinen, daar praat iedereen door elkaar heen.
- Geen reistijd (45 min).
- Ging eigenlijk meteen vanaf het begin goed. Wij kunnen alle taken overal ter wereld uitvoeren met thuiswerken.

- Welke nadelen van het thuiswerken heeft u ervaren?

- Geen pauzes nemen. Tijd nemen om te lunchen.
- Moeite om af te sluiten. Omdat je niet op een andere locatie bent.
- Sociaal contact met collega's. Bellen wel veel, maar dat ik toch anders.
- Niet zichtbaar voor manager. Je moet wel een persoonlijke band voor hebben voor beoordeling

- Is uw mening over thuiswerken veranderd door de coronacrisis en, zo ja, hoe?

Wilde dat ik het eerder had gedaan, het ging meteen goed. (*Positiever – DB*)

- Hoe heeft uw werkgever u gefaciliteerd in het thuiswerken?

We mochten alles meenemen, stoelen schermen etc.

Er is wel aangeboden om te praten met mensen over hoe het gaat, of iedereen zich nog goed voelde.

Ik voelde me wel betrokken bij het team.

Er was bijvoorbeeld ook een online kerstfeest.

- Hoe is uw reispatroon veranderd vanwege de coronacrisis en wat vind u daarvan?

Ging eerst altijd met auto of de trein. Ik rijdt nog maar een keer per maand auto.

Door coronaregels pak ik nu wel weer auto i.p.v. trein als ik ergens heen moet. Er is geen file nu, dus daardoor pak je ook eerder de auto.

2. Expectations

- Verwacht u in de toekomst ook volledig of gedeeltelijk thuis te blijven werken?

Ik wil wel thuis blijven werken.

2 dagen wil ik op kantoor werken.

- Wilt u meer flexibel werken dan voor de coronacrisis?

Op zich wel, maar niet bij deze werkgever.

Ik ben bang dat flexibel vooral meer werken betekent bij deze werkgever.

- Waarom wilt u wel/niet volledig thuis werken?

Dat zou ik niet willen.

Je mist toch het sociaal contact en hoort minder.

Je bent niet zichtbaar, dus mensen zien je misschien over het hoofd.

- Als je volledig thuis zou werken, zou dat invloed hebben op je woonplaatskeuze?

Ja zeker. We willen wel groter wonen, maar Amsterdam is te duur.

Zou dan eerder verhuizen met langere reistijd als gevolg.

3. Improvements

- Welke verbeteringen zouden er toegepast kunnen worden om het thuiswerken beter te maken?

Betere scheiding tussen werk en privé.

Geen belletjes nog na 6 uur.

- Welke factoren zorgen ervoor dat u liever thuiswerkt, dan wel liever op kantoor werkt?

(Zie voordeelen – DB)

4. Policies

- Welke rol spelen reistijd en reiskosten in de overweging om thuis te werken?

Reiskosten worden nu gedekt. Als die worden afgeschaft, moet er wel een thuiswerkvergoeding komen.

- Welk beleid is er nodig van de overheid om thuiswerken beter te faciliteren?

Dat vind ik moeilijk te zeggen. Ik ben gewend dat je zelf alles moet afstemmen met de werkgever, ik weet niet zo goed wat de overheid zou kunnen doen.

Ik denk wel dat er een taak is voor de overheid.

ARBO omstandigheden moeten wel gewaarborgd worden, maar betwijfel of dat op ons kantoor wel gebeurd.

- Welke beleid kan er voor zorgen dat u liever thuis werkt dan op kantoor?

Cultuur van bedrijf moet dan anders zijn.

Thuiswerken moet dan meer geaccepteerd worden.

Denk dat veel mensen na coronacrisis weer op kantoor gaan werken.

Expert interview J

Questions:

1. Experiences

- Wat is uw ervaring met het thuiswerken voor en tijdens de coronacrisis?

Voor corona:

Toen werkte ik een dag in de week wel thuis gemiddeld. Dat vond ik prima. Kon me altijd goed concentreren. Altijd op vrijdag. Het was wel flexibel van de werkgever, maar het was gewoonte om 4 dagen op kantoor te werken. Ik spaarde dingen op waar ik niemand voor nodig had. Maar deed ook wel calls. Het is een internationaal bedrijf, dus veel contact met internationale klanten.

Tijdens corona:

Kreeg begin maart te horen dat we niet meer naar kantoor mochten. Sindsdien maar een keer naar kantoor geweest.

- Welke voordelen van thuiswerken heeft u ervaren?

- Meer vrije tijd. Omdat je geen reistijd meer hebt.
- Flexibiliteit. Even boodschappen doen. Dingen even er tussendoor doen.
- Taken waarbij je goed moet concentreren ben je productiever.

- Welke nadelen van het thuiswerken heeft u ervaren?

- Te veel digitale contacten.
- Weinig sociale contacten met je collega's.
- Op kantoor ben ik altijd wel productief. Als je snel even iemand nodig hebt, is dat lastiger. Omdat iedereen constant in calls zit.

- Is uw mening over thuiswerken veranderd door de coronacrisis en, zo ja, hoe?

Ben de nadelen (zie boven) meer gaan ervaren.

Maar ik had niet verwacht dat ik er zo goed in zou worden.

- Hoe heeft uw werkgever u gefaciliteerd in het thuiswerken?

Digitale infrastructuur was al aanwezig.

Laptop was wel geregeld, headset ook.

Bureaustoel en bureau niet, vervelend.

- Hoe is uw reispatroon veranderd vanwege de coronacrisis en wat vind u daarvan?

Juist meer andere dingen gaan doen. Omdat ik anders het huis niet uit kom. Je maakt bewuste keuze om de deur uit te gaan.

2. Expectations

- Verwacht u in de toekomst ook volledig of gedeeltelijk thuis te blijven werken?

Met mate. 2 a 3 dagen is top.

Vooral het internationaal reizen zal veel minder worden, de snoepreisjes naar Turkije etc.

Denk wel dat er nog steeds meer thuisgewerkt zal worden, sommigen misschien wel full-time.

Maar voor mij is dat niks.

Ligt ook erg aan de bedrijfscultuur hoe geaccepteerd het is om thuis te werken, hoeveel mensen het doen.

- Wilt u meer flexibel werken dan voor de coronacrisis?

Zou ik wel willen.

Deed ik vroeger ook wel, maar dan juist voor de file.

- Waarom wilt u wel/niet volledig thuis werken?

Sociale contacten met collega's.

Iemand aan kunnen schieten

Innovatievere ideeën.

Ook om zichtbaar te zijn voor het team.

- Als je volledig thuis zou werken, zou dat invloed hebben op je woonplaatskeuze?

Ja. Destijds een opdracht in Brussel niet geaccepteerd vanwege reistijd, maar als je maar 1 dag heen hoeft had ik het misschien wel gedaan.

3. Improvements

- Welke verbeteringen zouden er toegepast kunnen worden om het thuiswerken beter te maken?

Goede stoel is wel belangrijk.

Online activiteiten om binnen het team motivatie hoog te houden. Informele activiteiten met collega's. Ook mogelijkheden om bijvoorbeeld brainstormsessies digitaal beter te faciliteren. Online samenwerken verbeteren.

- Welke factoren zorgen ervoor dat u liever thuiswerkt, dan wel liever op kantoor werkt?

Zijn vooral dingen in privésituatie. Maar als je bijvoorbeeld een kind hebt, ga je liever op kantoor werken.

4. Policies

- Welke rol spelen reistijd en reiskosten in de overweging om thuis te werken?

De helft van m'n reiskosten moet ik zelf betalen. Dus ik ben wel gevoelig voor de prikkel van reiskosten.

Vond de autorit juist wel relaxed. Lekker muziekje op. Goed om de dag af te sluiten.

- Welk beleid is er nodig van de overheid om thuiswerken beter te faciliteren?

Reiskostenvergoeding wordt minder.

Thuis maak je ook kosten, voor bijvoorbeeld koffie, verwarming internet.

Subsidies voor ergonomische stoelen.

Als mensen veel thuis werken, dan moetenzelfde regels gelden als op kantoor.

- Welke beleid kan er voor zorgen dat u liever thuis werkt dan op kantoor?

Als reizen duurder wordt.

Ik word liever beloond.

Dus dan is een vaste vergoeding misschien een beter idee.

Dan word je gemotiveerd om niet te reizen.

Appendix D: Analysis of interviews

The first aspect addressed during the interviews were the possible causes of attitude changes. This was done by asking the respondent what they found the advantages and disadvantages of teleworking. Since most of the respondents did not have (or only limited) experience with teleworking before the pandemic, assumed is these factors contribute to their attitudes. The answers from the respondents were analyzed for arguments, which were divided between advantages and disadvantages and listed. The list was scanned on similar arguments, which were merged and counted.

Each of the (dis)advantage can be considered as a trigger on its own. The results are divided into the three types of triggers of the attitude change model, being personal triggers, social triggers and environmental triggers.

Ervaringen:

Tabel C.1. Ervaring dagen thuiswerken

Dagen thuiswerken voor corona	#
Helemaal niet	6
Alleen spitsmijden	1
Soms (<1 per week)	2
Regelmatig	1

Tabel C.2. Voordelen en nadelen thuiswerken

Voordeel	#	Nadeel	#
Geen reistijd	7	Sociale contacten met collega's	8
Flexibiliteit / zelf tijd indelen	5	Ritme aanhouden	2
Minder controle door werkgever	2	Scheiding werk / privé	3
Beter multi-tasken tijdens meetings	2	Weinig ondersteuning	1
Meetings zijn korter	2	Moeilijk concentreren / sociale controle	3
Tussendoor privédingen doen (boodschappen, pakketjes etc.)	5	Mis faciliteiten van kantoor	1
Productiever (zelfstandige taken)	6	Opgesloten / minder beweging	1
Minder snel afgeleid	4	Collega's minder goed bereikbaar	3
Minder ongeplande bezigheden	2	Samen werken lastiger	1
Minder sociale controle	1	Minder creativiteit / innovatief	1
Wegvallen hiërarchie werkvloer	1	Collega's / klanten / patiënten onhandig met videobellen	2
Minder stressbeleving	1	Geluidsoverlast	1
Meer vrije tijd	1	Omschakelen ander soort werk	1

	Hulp vragen aan collega's	1
	Passieve werkgever	1
	Minder productief	1
	Minder goed netwerk opbouwen	1
	Zichtbaarheid op werkvloer	2
	Te veel digitale vergaderingen	2

Veranderingen:

- Thuiswerken is sociaal meer geaccepteerd geworden. Norm veranderingen
- Reiskostenvergoeding stopgezet (1x)

Reisgedrag:

- (Lease)auto word niet/minder gebruikt (7x)
- Wel relatief meer autoritten ten koste van OV
- Sommigen gaan juist extra andere reisbewegingen maken (2x)

Tabel C.3. Mening over thuiswerken

Mening over thuiswerken	#
Positiever	8
Hetzelfde	1
Negatiever	1

Verwachtingen:

Tabel C.4. Dagen thuiswerken na corona

Wil na corona thuis werken	#
Soms (1 dag p/w of minder)	2
Gedeeltelijk (2-3)	6
Grotendeels (+/- 4)	1
Volledig	0
Wisselend (vanwege soort werk)	1

Als mensen langdurig meer thuis gaan werken, wat is dan het effect op baan/woonplaatskeuze?

Tabel C.4. Afwegingen reistijd en woonplaatskeuze / baankeuze

Reistijd - baan/woonplaatskeuze	#
Zou verder van werk gaan wonen	5 (waarvan 2 de stad ontvluchten)
Zou werk verder van huis accepteren	3
Is reistijd juist vervelender gaan vinden	1
Geen invloed	1

Opmerkingen:

- Werk(/snoep)reizen zal minder worden
- Wat wordt de sociale norm? Als norm weer wordt 9-5 iedereen op kantoor, word je gedwongen
- Samenwerken tussen mensen thuis en op kantoor kan uitdaging worden
- Sommigen mogen naar kantoor als thuiswerken niet kan (1x)

Verbeteringen

Tabel C.6. Mogelijke verbeteringen

Verbetering	#
Vergoeding voor thuiswerken	1
Reiskostenvergoeding omvormen	1
Stoel, bureau, beeldscherm	3
Snel internet vergoeden	1
Persoonlijke/psychologische ondersteuning	1
Oplossing voor werknemers die niet thuis kunnen werken (kinderen)	1
Regels hoe je thuis hoort te werken (protocol)	2
Coaching / Scholing	2
Digitale systemen	5
Werk leuker maken	1
Sociale activiteiten	3
Afspraken wanneer je bereikbaar bent en wanneer niet	1
Sociale normen, geaccepteerd dat je thuiswerk	5
Digitale mogelijkheden voor brainstormsessies	1
Online samenwerktools	1

Beleid:

Tabel C.7. Mogelijke beleidsmaatregelen

Maatregel	#
Thuiswerkvergoeding	7
Thuiswerken belonen	3
Reiskostenvergoeding omzetten in algemene vergoeding	3
Ontmoedigen reizen kantoorpersoneel / heffing reizen kantoor	2
Stijging reiskosten	1
Fiscale maatregelen spitsreizen	1
Leaseauto beperken	1
Verplichten dat thuiswerken mag van werkgever	2
Goede faciliteiten verplichten (bureau, stoel etc)	2
ARBO regels hanteren op thuiswerkplek (ergonomie)	2
Overheid moet voortouw nemen met thuiswerken	1
Subsidies ergonomische stoelen	1
Ik vind dat overheid geen rol moet spelen	1

Opmerkingen:

- Reiskosten worden meestal vergoed, worden niet 'gevoeld'
- Sommigen krijgen alleen nog reiskosten vergoed als daadwerkelijk wordt gereisd (3x)
- Hogere reiskosten zorgen vooral voor frustratie, niet voor minder reizen
- Sommigen dachten dat thuiswerken helemaal niet mogelijk was voor hun werk, maar bleek toch goed te kunnen
- Mensen worden liever beloond dan bestraft (2x)
- Verlies van sociale contacten op werk zou van korte termijn kunnen zijn, op lange termijn zoeken mensen meer sociaal contact rondom hun woonplaats (1x)
- Scheiden wie wel en wie niet thuis kan werken
- Mensen moeten uit hun gewoonte gehaald worden (1x)

Eigen opmerkingen:

- Haalbaarheid scheiden kantoorpersoneel – praktisch personeel bij maatregelen
- Administratie al het woon-werkverkeer
- Haalbaarheid ARBO-regels handhaven achter de voordeur
- Fiscale en politieke haalbaarheid

Appendix E: Focus Group Meeting

Focus Group Meeting: Thuiswerken

Thesis Dennis Begheijn – Transport, Infrastructure & Logistics (TU Delft)

Deze focus group meeting is onderdeel van een onderzoek naar de langetermijnverwachtingen van thuiswerken na de coronacrisis. Centraal hierbij staan de attitudes t.o.v. thuiswerken, hoe deze veranderd zijn tijdens de coronacrisis, of dit een blijvende verandering is en hoe deze beïnvloed zouden kunnen worden.

Tijdens de focus group meeting wordt via een aantal rondes toegewerkt naar het creëren van een beleidsontwerp om thuiswerken te stimuleren.

Hierbij zal de opgedane kennis uit interviews als input worden gebruikt. Bij deze interviews zijn werknehmers gevraagd naar hun ervaringen met thuiswerken en hun verwachtingen voor de toekomst. Verder zijn er vragen gesteld over mogelijk beleid dat hun zou kunnen beïnvloeden om thuis te blijven werken in de toekomst.

Agenda

Kennismaking	Introductie en eigen ervaringen	5 min
Ronde 1	Geleerde lessen	10 min
Ronde 2	Verwachtingen voor de toekomst	15 min
Ronde 3	Gewenste situatie	10 min
Ronde 4	Beleidsopties	20 min

Kennismaking:

Voordat we beginnen met de rondes, zal iedereen zich eerst kort voorstellen, waarbij de eigen ervaringen met het thuiswerken worden gedeeld en het eventueel uitgevoerde onderzoek waaraan is meegewerkt kan worden toegelicht.

KIM: Veel metingen gedaan over thuiswerken.

Min: Ik werk nu 2 jaar bij het ministerie. Ondersteuning bij het ministerie. M&E team. Vooral voor werkgevers corona onderzoek.

ANWB: Actief bij de FIA. De Mobiliteitsalliantie is ook geïnteresseerd in het onderwerp.

MuConsult: Beleidsevaluater bij MuConsult

NS: Coronaonderzoek van NS samen met TU Delft gedaan.

Ronde 1: Geleerde lessen

In de eerste ronde zullen de geleerde lessen op het gebied van thuiswerken worden behandeld. Hoe is de mening van thuiswerskers veranderd tijdens de coronacrisis en wat zijn de genoemde voor- en nadelen?

Input uit onderzoek en interviews:

Er is gebleken dat thuiswerken voor veel meer mensen mogelijk is dan in het verleden gedacht werd. Een grote meerderheid van de mensen is positiever gaan denken over thuiswerken.

Als voordelen van thuiswerken worden voornamelijk genoemd: gebrek aan reistijd, meer flexibiliteit, meer ruimte voor privétaken tussendoor, minder snel afgeleid en productiever tijdens zelfstandige taken.

Als nadelen worden voornamelijk genoemd: het gemis van sociale contacten, werk-privébalans, het afsluiten van de dag door reistijd, moeilijker concentreren, moeilijk bereikbare collega's.

Het reisgedrag van mensen is in meer opzichten veranderd dan alleen het wegvalen van woon-werkverkeer. De meeste mensen pakken de auto minder snel. Wel worden er relatief meer autoritten gedaan ten koste van het openbaar vervoer. Een enkeling maakt juist extra reisbewegingen vanwege wegvalen van het woon-werkverkeer. Onduidelijk is in hoeverre dit komt door het thuiswerken zelf of vanwege de coronacrisis.

Centrale vragen:

- Hoe komt het dat thuiswerken nu positiever wordt ervaren dan voorheen?
- Welke gevolgen heeft thuiswerken op reisgedrag, als je het corona-effect niet meeneemt?

Verslag:

Min: Meer besef over hun eigen tijd. Geen vaste overlegvergaderingen. Mensen zijn meer de baas over hun eigen tijd. Dat vinden veel mensen positief.

MuConsult: Bij metingen zie je gewenning optreden. Dat maakt dat mensen het ook positiever ervaren. Mensen richten hun omgeving er op in, zodat ze goed kunnen werken.

NS: Ik ben fan. Op kantoor veel kakofonie, daar kan ik me moeilijk concentreren. Het is veel rustiger zo. Functioneel gaat het goed.

KIM: Positieve effecten waren er al, maar worden nu meer ontdekt. Het effect dat je dingen mist die op kantoor gebeuren, is nu weg omdat iedereen het doet.

ANWB: Reistijd is verloren tijd, je hebt nu meer tijd om vrij te besteden.

NS: Verkeer zit nu weer op het niveau van juni terwijl we toen met versoepelingen zitten, terwijl we nu lockdown hebben. Mensen hebben er lach aan. Als mensen al naar werk gaan, gaan ze meer drukte mijden. Opletten dat niet iedereen woensdag en vrijdag thuiswerken.

ANWB: Spreiding over dag is groter, aantal verplaatsingen niet minder. Spits wordt gemeden. Er wordt meer vanuit sociaal maatschappelijk motief gereisd.

NS: Wat zou het betekenen als bepaald niveau wordt gehandhaafd, dat is gunstig voor CO₂-reductie? E-bike gebruik zal toenemen, deels van auto deels OV.

MuConsult: Ook wandelen en fietsen neemt toe.

Ronde 2: Verwachtingen voor de toekomst

In de tweede ronde zal behandeld worden wat de verwachtingen zijn voor thuiswerken in de toekomst, na de coronacrisis.

Input uit onderzoek en interviews:

Een grote meerderheid wil gedeeltelijk (2-4 dagen) thuis blijven werken. Vrijwel niemand wil volledig thuis werken, voornamelijk vanwege de grote sociale gevolgen.

Wat wordt de sociale norm? Als er van werknemers verwacht wordt dat ze van 9-5 aanwezig zijn, wordt dat gedaan. Als collega's naar kantoor komen voor een vergadering, wordt er dan verwacht dat je ook komt of kan je thuis deelnemen?

Het gemis van sociale contacten zou een kortetermijneffect kunnen zijn, dit zou lange termijn gecompenseerd kunnen worden door meer sociale activiteit rond woonplaats.

Er wordt aangegeven dat op de lange termijn meer thuiswerken kan leiden tot een keuze om verder van het werk te gaan wonen of een baan verder van huis te accepteren.

Uit onderzoek is gebleken dat de meeste eerdere crises alleen een tijdelijk effect hadden op reisgedrag, zal dat deze keer anders zijn en waarom?

Centrale vragen:

- Zal het thuiswerken in de toekomst doorgezet worden of gaan we straks weer massaal naar kantoor?
- Wat wordt de sociale norm t.o.v. thuiswerken en hoe kan deze worden beïnvloed?
- Zijn de attitudes van werknemers blijvend veranderd of zullen deze terugvallen, als het mogelijk is naar kantoor te gaan?
- Wat zijn de effecten op de gebouwde omgeving en reisgedrag op de lange termijn?

Verslag:

ANWB: Veel werkgevers hebben ontdekt dat er ook voordelen aan zitten. Die werkgever moet je ondersteunen. Private belangen als minder reistijd minder kantooroppervlak gaan nu doortellen. ANWB gaat ook verhuizen, hier wordt ook op gestuurd. Dat moet je nu vasthouden. Thuiswerken zal niet zo populair zijn als nu, creatieve sessies wil je bij elkaar doen.

KiM: Verwachting dat je vaste dagen hebt waarop iedereen thuiswerkt, daardoor valt deel voordelen weg.

NS: Bedrijven moeten beleid gaan maken. We moeten hopen dat ze een soort weekspreiding gaan maken. Sociale norm / druk is ook heel belangrijk, mensen zijn kopieermachines. Je voelt de druk ook naar kantoor te gaan als anderen ook gaan.

Min: Meting net na intelligente lockdown gaf aan dat mensen wel wilden thuiswerken, maar er moet er wel cultuuromslag komen. Nu merk je veel meer dan eerst dat werkgevers zich er ook mee bezig houden. Wel het gevoel dat er nu echt wat gaat gebeuren.

MuConsult: Onderzoek in Limburg kwam uit 2-3 dagen gemiddeld thuiswerken.

KiM: Ook 2-3 dagen. Met dat risico van druk moet echt wat gebeuren.

Moderator: Dus vooral werkgevers attitudes zijn belangrijk, i.p.v. werknemer

Min: Ja heel belangrijk. Attitude van werkgever is belangrijk.

ANWB: Als je dit wil vasthouden moet je een goede strategie ontwikkelen met werkgevers vakbonden etc. Enorme koppeling tussen mobiliteit en verdichting etc. Nu koppen bij elkaar laten komen.

NS: Attitude neemt nu weer wat af door lockdown, context is belangrijk. Kwart van verhuizingen komt door thuiswerken. Reistijd wordt langer maar minder. Effect op tijdstip van reizen etc.

ANWB: Vanuit makelaars zijn er al signalen dat er nu al druk is op het rurale gebied.

Min: Niet duidelijk wat er gebeurd in stationsgebieden als kantoren leeg komen te staan.

NS: Dat zijn A-locaties, dus het is prima als dat open komt te staan.

KiM: Hoe gaat dat als twee drie dagen kantoor vol bezet is, hoe ga je dan met ruimte om.

ANWB: Reallocatie van kantoorpanden wordt een ding. A-locaties komt wel goed, maar hoe gaat het met B-locaties. Echte kantooromgevingen, dat heeft grote impact. Niet alles kan naar woonlocaties.

Ronde 3: Gewenste situatie

In de derde ronde zal worden bediscussieerd wat de gewenste situatie op het gebied van thuiswerken.

Input uit onderzoek en interviews:

Mensen willen niet volledig thuis werken, daarvoor is het gemis aan sociaal contact te groot. Om thuiswerken prettiger te maken komen de meeste respondenten met praktische verbeteringen, zoals betere digitale mogelijkheden, en meer coaching en ondersteuning vanuit de werkgever. Maar is thuiswerken überhaupt wel gewenst met het oog op de sociale en maatschappelijke effecten? Hoe wegen de positieve en negatieve aspecten tegen elkaar op?

Centrale vragen:

- Is het gewenst dat thuiswerken de norm wordt en alleen in bepaalde gevallen werknemers nog op kantoor werken?
- Is werken op een centrale plek nodig om goed te presteren als team of kan dit ook met digitale mogelijkheden worden opgelost?
- Waar zit de balans tussen de behoefte aan sociaal contact aan de ene kant en negatieve effecten als reistijd, congestie en emissies aan de andere kant?

Verslag:

MuConsult: Denk dat het wel gewenst is dat er meer thuisgewerkt wordt. Voordelen van het thuiswerken moeten we benutten, maar de voordelen van werken op kantoor hebben we ook nodig. Er moet afwisseling zijn. Dat maakt het totaal voordeliger.

NS: Thuiswerken zorgt voor minder uitstoot en minder verkeersbewegingen. Verder is er een kans dat er meer 15-minuten maatschappij ontstaat. In de pauze kan je bijvoorbeeld even boodschappen doen etc. Er moet een hybride systeem zijn, je werk op kantoor als het nodig is. Combineer het goede van beide werelden. Omstandigheden tellen mee. Kantoortuinen werken niet. Het ligt ook aan het soort en type werk. ZZP'er zijn is anders dan werken bij een bank. Veel situationele dingen, daar moet je ook oog voor hebben.

ANWB: Eerste plaats door eeuwen heen vast aantal minuten reistijd. Behoefte om te verplaatsen blijft. Mensen die niet thuis kunnen werken worden aan de kant gezet. Veel mensen kunnen niet thuis werken. Opleidingsinstituten grote taak zij moeten goed kijken naar de balans tussen thuiswerken en op locatie.

KiM: 2/3 ervaart het goed, 1/3 niet goed best groot. Hybride vorm kijken. Uit onderzoek vaag wat ze vinden van paar dagen vol op kantoor werken.

Min: Kosten-baten zijn belangrijk. Er komen ook veel coronakilo's bij, meer mensen gaan naar fysiotherapeuten. Er zijn ook kanttekeningen te plaatsen.

ANWB: Veel vergaderingen achter elkaar. Weinig tijd te resetten. Sommigen hebben daar veel moeite mee. Er moet tijd tussen vergaderingen zitten.

Ronde 4: Verkennen van beleidsopties

In de vierde en laatste ronde zullen beleidsopties worden verkend om de gewenste situatie te bereiken. Hierbij wordt gefocust op mogelijkheden om de attitudes van werknemers blijvend te veranderen, maar ook andere opties zoals kunnen worden besproken.

Input uit interviews:

Als gevraagd wordt naar maatregelen om thuiswerken te bevorderen, komen respondenten vaak met maatregelen die thuiswerken belonen of reiskosten verhogen. Maar als daarna gevraagd wordt in hoeverre hun keuze voor thuiswerken door reiskosten wordt beïnvloed, wordt aangegeven dat dit niet tot nauwelijks meespeelt.

Reiskosten worden nu vaak niet 'gevoeld' vanwege de vergoeding. Wel hoor je dat sommige werkgevers alleen nog de daadwerkelijk gemaakte reiskosten vergoeden, terwijl bij anderen de vergoeding doorloopt. Verder is er nu vaak nog de beschikking tot een leaseauto, onduidelijk is of dit in de toekomst zo zal blijven, als thuiswerken gebruikelijker wordt.

Meest genoemde maatregelen:

Thuiswerkvergoeding, thuiswerkbeloning, reiskostenvergoeding omzetten in algemene vergoeding, ontmoedigen reizen voor kantoorpersoneel, werkgever verplichten tot keuze voor thuiswerken, werkgever verantwoordelijk maken voor goede werkfaciliteiten thuis.

Centrale vragen:

- Wat is de rol van de overheid om thuiswerken te stimuleren?
- Welke beleidsmaatregelen kunnen worden geïntroduceerd, zodat thuiswerken wordt aangemoedigd?
- Welke maatregelen zijn haalbaar, in administratieve, politieke en fiscale zin?
- Hoe worden negatieve maatschappelijke effecten onder controle gehouden?

Verslag:

NS: Wel rol voor overheid. Kans om dingen vast te houden, zoals spreiding over de dag en over de week. Mitigerende rol. Helpen en bewustwording. Zorgt voor voordelen, zoals besparing van infrastructuurkosten, exploitatiekosten, milieu.

ANWB: Wel rol voor de overheid, maar hoe ver moet deze strekken? Misschien bereik je wel het tegenovergestelde. Misschien vooral voorwaarden schappen en niet harde maatregelen treffen.

Min: Dat is wel de rol die de overheid nu probeert te doen. Kennis en informatie bij elkaar brengen. Positieve effecten benadrukken. Wat moet de overheid met alle regelingen doen? Doelstellingen van klimaat kunnen zo behaald worden.

KiM: Veel maatschappelijke voordelen door de overheid.

MuConsult: Eens met de anderen.

NS: Gaan meer bewust met bewegingen om. Meer fietsen, minder vliegen, vliegtaks. Bewustzijn voor het klimaat. Heeft nu grote rol, die moet je vasthouden.

KiM: De moeilijkheid is om het nu vast te houden. Niet te veel beleidsmaatregelen, maar wel genoeg om vast te houden. Faciliterende rol. Daarin ver gaan. Wat heb je zelf in controle, ambtenaren en studenten.

Moderator: Wat zijn de don'ts?

Min: Niet verplichten. Daar houden Nederlanders niet van. Wel voorwaarden scheppen en communicatie. Hoe doen we financiële regelingen met reiskosten.

ANWB: We zien in corona ook dat mensen adviezen niet opvolgen dus misschien juist wel verplichten. Samenspraak met marktpartijen moet op gang gebracht worden. Ik denk dat overheid initiatief moet nemen om te kijken wat organisaties nodig hebben. Niet lang mee wachten want dan is het momentum weg.

NS: Niet te betuttelend. Faciliteren. We houden van marktwerking, dus ook dingen duurder maken. Maatschappelijke rol pakken.

MuConsult: Hoe doen we het met de negatieve effecten van thuiswerken. Thuis verwarming stoken levert ook emissies op. Wat is de balans?

Min: Lastig dat alle ministeries er wat van vinden. Daarom is het lastig om beleid op te maken.

Moderator: Hoe maak je faciliteren concreet?

ANWB: Belastingwetgeving, reiskostenvergoeding. (Nieuwe balans) woon-werkvergoeding herzien, vaste vergoeding. Tuinkantoren kan een oplossing zijn, daar fiscale ruimte voor scheppen. Nieuwe blik van overheid.

NS: In buitenland heb je geen reiskostenvergoeding. Dus dat wil je misschien ook Europees gelijk trekken. Overheid losser zijn met tarieven (voor passagiers). Daardoor meer mogelijkheden tot spreiding. Helpt om minder mensen in de spits te laten rijden.

ANWB: Dan tref je ook mensen die niet thuis kunnen werken.

NS: Doen we nu al beetje. Compensatie vrijstelling zoals nu al deels ook wordt geprobeerd.

Moderator: Dus een vergoeding om het thuis beter in te richten?

MuConsult: Thuiswerkvergoeding voor variabele kosten die je thuis maakt.

Min: Wat nu ook gebeurt. Zowerkthet.nl Communicatieve ondersteuning. Vasthouden en verder uitwerken.

Moderator: Dus de overheid moet een regisserende rol pakken?

ANWB: Verplichting moet je wel in gedachte houden, mensen zijn niet zo gevoelig voor aanbevelingen.

KiM: Denk dat het voor een groep ook gewoon wel aantrekkelijk is. Verplichting is misschien niet uitvoerbaar, moet je denk ik ook niet willen.

ANWB: Opleidingsinstituten en ambtenaren. Je begint gewoon niet voor half 11 op kantoor zonder goede reden. Overheid heeft daar zelf regie over.

KiM: Universiteit kan natuurlijk wel bijvoorbeeld ver gaan.

Moderator: Dus dan moet je colleges pas om half 11 laten beginnen?

NS: Of alleen bepaalde dagen

Min: Dat is best wel een idee ja. Die spreiding meer verplichten.

NS: Nu is een kans. Straks zitten we weer in gewoontegedrag. Dan gaan we met zijn allen opzelfde moment.

Moderator: Moeten we steviger zijn naar de werkgever toe?

NS: Er moet een onderscheiding zijn van reiskosten naar tijdstip. Kan tegenwoordig met big data.

KiM: Of je voert gewoon een vaste vergoeding in.

NS: Het kan eventueel ook met punten ofzo. Of door gezondheid te benadrukken. Fietspaden etc. moeten ook aanwezig zijn.

Moderator: Samenvattend, we moeten dus leren van elkaar door mensen bij elkaar te brengen. Maar er moeten ook prijsprikkels komen. We moeten kijken naar verplichtingen, maar geen dictator worden.

Dennis Begheijn: Zijn mensen überhaupt gevoelig voor prijsprikkels?

NS: Ja, want het zijn gewoontekosten. Mensen zijn eraan gewend. Thuiswerkvergoeding moet royaler en reiskostenvergoeding minder. Puntenbeloningen werkt misschien ook wel.

Min: Sinds dit jaar mogen wij €2 extra declareren als we thuis werken. Zorgt ook voor inzichtelijkheid.

NS: De beloning moet niet verdwijnen in de grote hoop.

ANWB: Er is veel geleerd de afgelopen decennia. ANWB heeft een proef gedaan met verhandelbare parkeerrechten. Kansrijke kanten in initiatieven. We gebruiken nog niet alle prikkels rondom prijsbeleid denk ik. Je moet nu zo breed mogelijk scala aan onderzoeksinzichten gebruiken. Ik weet niet precies wat alle effecten zijn, dit moeten we ontdekken met experimenten.

NS: Overheid moet rekening houden met zowel bovenstroom en onderstroom. Veel gebeurt onbewust. Daar meer grip op krijgen en begrijpen hoe dat werkt.

MuConsult: Voor draagvlak ook belangrijk dat we mensen die niet thuis kunnen werken niet vergeten.