Master's Thesis

From explainability to trust: A conjoint analysis to explore governmental algorithm registers' positive and negative effects on citizens' trust in government decisions.

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From explainability to trust:
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Preface

Dear reader,

I present my thesis titled "From explainability to trust: A conjoint analysis to explore governmental algorithm registers' positive and negative effects on citizens' trust in government decisions." This research marks the finalization of my master's Engineering & Policy Analysis at Delft University of Technology. Next to the fact I thoroughly enjoyed my educational journey, I feel enriched by everything else student life had to offer.

However, without the help of others, the results would not have been the same. Therefore, I would like to express my gratitude towards my supervisors, Anneke Zuiderwijk- van Eijk and Maarten Kroesen, for their excellent guidance, but certainly also for ensuring a very pleasant graduation process. Furthermore, I would like to thank Jeroen Delfos, whose always available assistance and bright insights made that I could continue my work in the right direction. Moreover, I want to thank Jill van der Bijl and the digital transformation team; I wouldn't have liked this concluding part of my study as much without your enthusiasm and inspiration.

Finally, I would like to thank all my close ones for their indispensable support and help during this graduation process and the rest of my studies. Words can hardly describe how grateful I am for the family and friends surrounding me. Thank you all; you are amazing!

I hope you enjoy your reading,

Jip de Meijer
Den Haag, March 3, 2023

Summary

Algorithms are powerful tools for governments that must be appropriately managed. The use of algorithms can vigorously influence government functioning. The absence of transparency in algorithmic decision-making is thought to cause citizens to lose trust in government processes and institutions. In recent years, discussion erupted and controversies arose around algorithms as there are risks of unfair, advantaged, or discriminatory outcomes. Dutch governments are gradually becoming more open about their algorithm use with the help of algorithm registers. They indicate transparency as an important condition for protecting fundamental rights and public values.

However, the literature is not unilateral about the current course of governments in which they have invested in trust through transparency. They lack academic support for what effects on trust can be attributed to transparency. The literature is ambiguous about how best to explain algorithmic decisions. Some scholars strongly advocate transparency and state that it increases citizens' trust in the government, while others emphasize the negative effects of transparency. Their research shows that transparency can lower trust in government organizations. The problem statement of this research concerns the lack of knowledge about how governments can best explain their algorithmic decisions in algorithm registers. The main research question of this study is: *"What are the positive and negative effects of governmental algorithm registers on citizens' trust in government decisions?"* The research focuses specifically on citizens' trust in the context of governmental algorithm registers in the Netherlands. An exploratory, empirical, and mixed qualitative and quantitative approach is to answer the research question. It investigates the effects of transparency on citizens' trust in the algorithmic decision and how governments can best design these registers. Thereby, it attempts to align governmental policy on digital technology with citizens' expectations.

The main method used to answer the research question is conjoint analysis. This quantitative survey-based statistical research technique uses a decomposition approach to study the cognitive processes underlying decision-making. The conjoint analysis is used to examine the effects of characteristics of alternative registers variations on citizens' trust in government decisions. This way, insights are gained into which register characteristics are essential and how strongly the specific characteristics affect citizens' trust in governmental decisions. The ratings are analyzed using multiple (linear) regression. The conjoint variables are recoded into dummy variables. The regression provides insight into the explained variance of the used variables, the utilities of each attribute level, and the importance of an attribute. Each register variation is composed of a set of attribute levels that are the characteristics of the algorithm registers. A document study on grey literature is used to identify Dutch governmental algorithm registers' (intended) characteristics. This longlist of characteristics is used to make the final shortlist with attribute levels. For this selection, factors that influence citizens' trust in governments' decisions are identified in the literature. A division with *intention*, *operation*, and *technology* attributes is chosen. The first attribute includes the levels: *legal basis, impact*, and *proportionality*; the second: *human interference, risks*, and *detailed description*; and the last: *methods and models, source data*, and *source code*.

A survey was created and published in the online survey tool Qualtrics. The first part concerns the conjoint questions: nine conjoint questions with variations of the register, one holdout question, and a closing question about the clarity of the content and phrasing of the previous questions. The second part consists of demographic and additional qualitative questions about trust and algorithm prowess.

The survey is completed 131 times. Demographical characteristics of the respondents showed a clear over-representation of men and highly educated people and an underrepresentation of older-aged groups in the experiment. This should be considered when interpreting the results, as it causes limitations. The results show that the proportion of explained variance of the model is relatively low. Nonetheless, it is expected that citizens' trust depends on more than just such a small part as the

attributes of an algorithm register; for example, the expertise of the person who controls the algorithms. Further, the regression constant is around three (on a 5-point Likert scale), and the coefficient of *risks* has a negative value. Further, l*egal basis*, *methods and models*, and *source data* only have a small coefficient. However, the p-value of these variables is higher than the p-value of the other three conjoint variables. The other variables have some notable outcomes as well.

After analyzing the survey results, a focus group of digital transition consultants is consulted. After the panel was informed, the experts were asked to answer a statement and two open questions individually, after which they were treated centrally. The group emphasizes that governments must better understand what can be made understandable to citizens. They underline the use of clear and easy language and visualizations, uniformity across different registers, and omitting unnecessary information. Further, they indicate that citizens must be involved in the entire iterative process.

The experiment results show that the different attribute levels affect the trust rating of citizens. Although it needs further research, the negative effect of *risks* in this exploratory study provides evidence that more transparency does not always lead to a higher trust rating. Further, the results show that the general trust in governments influences the trust rating of the algorithm registers. Trust in the central government has a stronger effect than in the local. The results of the respondents from this study do not reflect the indicated low trust in national politics and higher trust in the municipal authorities. The respondent selection may have positively affected the estimate of the average trust rating as this influences the relationship between the dependent and the independent variable; for example, by the suspected missing group of cynics in this study. Further, it is emphasized that the algorithm register must be seen as part of the solution to solving the loss of citizens' trust in government decision-making. Finally, the results show that the understandability of the characteristics influences citizens' trust rating of the algorithm registers. The results show that some respondents found it challenging to understand the registers, and digital experts indicated that confusion and ambiguity have a negative effect. The experts pointed towards the limit of making content domains understandable and the danger of information overload, which is in agreement with the literature.

It can be concluded from this study that an appropriate design of governmental algorithm registers is crucial, as they have positive and negative effects on citizens' trust in government decisions. However, further research is required due to the explorative approach of this study. Research with a larger and more representative group of respondents is necessary as the relationships with strong evidence and those with little to no evidence require more research. In addition, more research can be done on other characteristics of algorithm registers, as this study only works with the shortlist. This also applies to including different example algorithms to provide insight into the impact and possible changes in the effects caused by the variation. Further, research with other analysis methods is recommended as linear regression is only one of many possibilities, and the data's potential might be higher.

This study recommends discussing the purpose of algorithm registers within governments, as full transparency does not result in the highest trust; is the goal full transparency, the highest amount of trust, or something else? In addition, governments must be aware of the information they provide and ensure it is of good quality and comprehensibility. They must make a realistic assessment of ordinary citizens' thinking and acting capacity to avoid crossing their border of comprehensibility and avoid confusion and opacity. The national government should, therefore, coordinate and create a national framework describing what governments must do and where they may deviate to ensure uniformity across different registers. Further, governments should not only focus on explaining their algorithms but also on having a conversation with citizens about the use of these algorithms and, thereby, listen and adapt. Lastly, governments must take other steps outside of creating algorithm registers. For example, this study shows that ensuring a higher general trust also benefits trust in algorithmic government decisions.

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1. Introduction

1.1 Problem Indication

The digital transition is taking place at a rapid pace (*Werkagenda Waardengedreven Digitaliseren*, 2022). Dutch governments are also strongly committed to capitalizing on digital opportunities. National artificial intelligence (AI) strategies show that governments see algorithms as an essential source of future economic growth and a way to improve their services (Prins et al., 2021) and addressing of social challenges (*Toepassing*, n.d.). Governments use algorithms in various ways; for example, by looking at waste container levels and signaling the municipality when a container must be emptied or by helping predict which people with benefits may commit fraud (Overheid En Algoritmes, n.d.). However, in the past few years, social unrest and resistance towards the use of algorithms increased sharply (*Toekomstverkenning Digitalisering 2030*, 2021), specifically about the latter, more high-risk algorithms. A discussion erupted, and controversies arose around the use of algorithms ("Fraude Opsporen of Gevaar van Discriminatie? Gemeenten Gebruiken 'slimme' Algoritmes," 2021; "Overheid Valt in de Prijzen Als 'Grootste Privacyschender,'" 2019; "Privacywaakhond: Overheid Moet Transparanter Zijn over Algoritmes," 2019; "Rekenkamer: Meer Aandacht Nodig Voor Risico's Overheids-Algoritmes," 2021; *Toekomstverkenning Digitalisering 2030*, 2021). The use of algorithms can vigorously influence the functioning of government organizations, and it is envisioned that they will play an increasingly important role in the future (Vogl et al., 2020). In their research reports, the Dutch National Ombudsman (Govers et al., 2021), the Court of Audit (*Aandacht Voor Algoritmes-2021*, 2021), and the Council for Public Administration (*Sturen of Gestuurd Worden?*, 2021) state that data and algorithms are powerful tools for governments that must be appropriately managed. The Court of Audit indicates that the algorithms currently used by governments are often clearly transparent and executed with people's involvement, but also indicates that governments are increasingly using algorithms on an increasingly larger scale (Dingemans et al., 2021). The use of large or complex datasets can, however, make it more demanding to understand the internal logic of algorithms and can be at the expense of interpretability (Buijsman, 2022).

There are many different definitions of artificial intelligence and **algorithms**. This research uses the definition of Wieringa (2020) regarding algorithmic systems. It defines algorithmic systems as socio-technical collections comprising technical components, social practices, and (organizational) culture(s). This definition does not see algorithms exclusively from a technical perspective (algorithms are instructions fed to a computer) but rather as a socio-technical system embedded in a culture that can be viewed, used, and approached from different perspectives. It is mainly about the application and the impact this (can) entail. In addition, the term algorithm is chosen over artificial intelligence as it remains as broad as possible, and no new algorithms are excluded.

Koene et al. (2019) state that the absence of transparency in algorithmic decision-making can cause citizens to lose trust in government processes and institutions. Citizens are less likely to trust if they cannot see how and why decisions are made. Concerns about security, the collection of (unnecessarily) large amounts of data, algorithmic bias, and the loss of human autonomy result in governments being increasingly accused of malfunctioning digital systems (College voor de Rechten van de Mens, 2022). The Dutch government indicates transparency as an important condition for protecting fundamental rights and public values (van Huffelen, 2022a). Van Ettekoven (chairman of the Administrative Jurisdiction Division of the Council of State) states that the government fails to provide clarity and indicates that transparency, explainability, reproducibility, accountability, and open standards are the keys to trust.

Tennison et al. (2016) define **transparency** as a characteristic of government, companies, organizations, and individuals open to the clear disclosure of information, rules, plans, processes, and actions. Consequently, transparent algorithmic systems can be properly explained and communicated (*Transparency and Responsibility in Artificial Intelligence*, n.d.). Government transparency often refers to the extent to which a government discloses relevant information about its functioning, decision-making processes, procedures, and performance.

Trust is a much-discussed topic in the media, politics, and science (den Ridder et al., 2022). Bhattacharya et al. (1998) indicated that there are several approaches, methods, and opinions in research related to trust due to the extensive studies from different disciplinary perspectives. For the definition alone, several elaborations can be found. This study uses the cross-disciplinary definition of trust developed by Rousseau et al. (1998, p. 395): "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another." However, trust cannot be seen as a clearly defined attribute of an individual's behavior, as it also depends on outcomes and consequences. Furthermore, Bhattacharya et al. (1998) also indicate that trust cannot exist in an environment of certainty, reflects an aspect of predictability, and exists in an environment of mutuality.

Dutch governments are gradually becoming more open about their algorithm use with the help of algorithm registers. The municipality of Amsterdam was the first (September 2020) to have an algorithm register and states that it has been implemented to get a grip on the municipal algorithms and make them fairer and more transparent for citizens and businesses ("Algoritmenonderzoeksopzet," 2022). Subsequently, the G4[1], the 12 Provinces, the Police, and Rijkswaterstaat jointly developed a national Algorithm Register Standard. This is an open standard for algorithmic application inventory, registration, and publication (*Algoritmeregister - Standaard Voor Algoritmische Transparantie*, n.d.).

An **algorithm register** is an overview of the used algorithms and provides general information about the intention and operation but also more detailed technical information (*Meer Informatie – Amsterdam Algoritmeregister*, n.d.).

Algorithm registers also started to play a role in the Dutch political debate for a few years. The motion to make algorithm registers mandatory for governments was adopted on October 28, 2021 (Dassen, 2021). It states that the government needs to provide meaningful information and logic about decision-making through transparency about the use of algorithms. In addition, the coalition agreement (Rijksoverheid, 2021) announced that it would be regulated by law that algorithms are checked for transparency, discrimination, and arbitrariness. Furthermore, after it had already been announced in the Work Agenda for value-driven digitization (van Huffelen, 2022a) on November 4, 2022, the central part of the public algorithm register was published on December 21, 2022. The State Secretary emphasizes in the letter about the state of affairs of the algorithm register that this register is the first version intended to show how it can work and that further development is necessary (van Huffelen, 2022b). She indicates that it is essential to determine the registers' scope and the algorithms to be included in them before making the register mandatory for governments. In addition, she indicates that those choices partly depend on the proposed, but not yet adopted, European artificial intelligence regulation. The many recent developments regarding algorithm registers emphasize this

[1] The G4 is the partnership between the four largest cities in the Netherlands: Amsterdam, Rotterdam, The Hague, and Utrecht.

subject's relevance, as the existing versions of the registers at the beginning of this study (September 2022) only included a few algorithms and were still alpha versions.

1.2 Scientific Relevance

The literature is not unilateral about the current course of governments in which they have decided to invest in trust through transparency. This current course lacks academic support, as the effects of transparency on the trust level are uncertain. There is ambiguity in the literature about how best to explain algorithmic decisions (S. Grimmelikhuijsen, 2012a, 2012b; Kizilcec, 2016; Lepri et al., 2018; Rader, 2018). Grimmelikhuijsen et al. (2013) distinguish optimists and pessimists in the debate on transparency and trust. The optimists emphasize that transparency stimulates a culture of openness and that one cause for the lack of trust in governments is that citizens are not often provided with factual documentation about government processes and performance. The pessimists argue that transparency is overrated and may lead to the delegitimization of governments and further emphasize the limits to people's ability to process information.

Some scholars strongly advocate for transparency and state that it increases citizens' trust in the government (S. Grimmelikhuijsen, 2012a). Lepri et al. (2016) consider algorithmic transparency and accountability paramount to enabling positive disruption of data-driven policy-making. Kim and Lee (2012) state that transparency is an essential democratic value that is often seen as a foundation for social order. Grimmelikhuijsen (2012b) notes that transparency positively affects trust in government because citizens then know how a decision has been made. Several other studies (Barredo Arrieta et al., 2020; Gunning, 2017; Kizilcec, 2016; Nothdurft et al., 2014; Rader, 2018; Wang & Benbasat, 2007) also show a positive effect. The form of the explanation differs per study.

There are different degrees of pessimists; some scholars emphasize that there should not be complete transparency and that there are circumstances in which it is better to avoid transparency (Bannister & Connolly, 2011; K. de Fine Licht & de Fine Licht, 2020). Margetts (2006) indicates different parts that can all pose problems for transparency and states that the quality of transparency is also essential, as opaque or fuzzy transparency can have negative consequences. Breton et al. (2007) call the widespread view that more transparency in institutions leads to better results too enthusiastic. Grimmelikhuijsen (2012b) emphasizes that extra attention is needed for citizens' trust in algorithmic decisions.

Other scholars emphasize the negative effects of transparency. Their research shows that transparency can lower trust in government organizations (S. Grimmelikhuijsen, 2012a) and that more information removes the attention from the procedural fairness of the decision-making process (Kizilcec, 2016). Additionally, Han (2015) indicates that complete transparency will make long-term planning impossible and choke politics.

Furthermore, some scholars indicate adverse effects due to information overload or affecting decision objectiveness (Hosseini et al., 2018). There are limits to people's ability to process information (Etzioni, 2010; Kahneman et al., 1991); Florini (2007) indicates the need to be able to properly process and use the information to arrive at a reasonable action. Etzioni (2010) suggests that information overload can result in confusion, cognitive strain, and poorer decision-making.

Etzioni (2010) states that there continues to be a dearth of studies empirically testing the theoretical claims of transparency. Kemper and Kolkman (2019) state that there is an urgent need for more empirical studies, especially to assess the conditions in which transparency measures actually yield positive effects. There is no clarity about the link between explainability and trust in algorithmic decisions, and there is also little research about this explanation of algorithmic decisions in the public sector. Lepri et al. (2018) emphasize this need to ensure trust in public decisions, and De Laat (2018)

considers it essential to continue using algorithms responsibly. Hind (2019) points out that there is not yet a clear definition of "meaningful information," and thus a challenge to develop a better understanding of the explanation of algorithms.

This research investigates the effects of transparency on citizens' trust in algorithmic decisions and how governments can best design these registers. In doing so, it responds to the lack of scientific knowledge about the effects of transparency on trust.

1.3 Social Relevance

Various polls and studies show that trust in Dutch national politics is low (for instance: (EenVandaag Opiniepanel, 2022; I&O Research Panel, 2022)). As part of this, the social unrest and resistance against algorithm use have increased sharply in the past few years (*Toekomstverkenning Digitalisering 2030*, 2021), as already described in section 1.1. Discussion erupted and controversies arose around the use of algorithms ("Fraude Opsporen of Gevaar van Discriminatie? Gemeenten Gebruiken 'slimme' Algoritmes," 2021; "Overheid Valt in de Prijzen Als 'Grootste Privacyschender,'" 2019; "Privacywaakhond: Overheid Moet Transparanter Zijn over Algoritmes," 2019; "Rekenkamer: Meer Aandacht Nodig Voor Risico's Overheids-Algoritmes," 2021; *Toekomstverkenning Digitalisering 2030*, 2021) as there are risks of unfair, advantaged, or discriminatory outcomes (Meijer & Grimmelikhuijsen, 2020). The State Secretary recognizes that the social consequences of the unlawful use of algorithms can be substantial and that the negative effects can affect a wide range of citizens, companies, and organizations (van Huffelen, 2022c). She also indicates that the lack of transparency hinders the legal protection of individuals. This has become visible in the Dutch childcare benefits scandal. The studies of Amnesty International (*Algoritmes, Big Data En de Overheid*, 2021) and the Dutch Institute for Human Rights (*Vooronderzoek Naar de Vermeende Discriminerende Effecten van de Werkwijzen van de Belastingdienst/Toeslagen*, 2022) conclude that there are sufficient facts that suggest that, partly due to the algorithms used, there was ethnic profiling and discrimination based on social class by the Tax and Customs Administration of the Netherlands. Further, the Parliamentary Interrogation Committee on Childcare Allowance indicated that, among other things, the information management and the provision of information to citizens were insufficient and gave transparency and openness as a point of attention (van Dam et al., 2020).

The State Secretary indicates that citizens must be able to trust that algorithms comply with public values and that their working needs to be explained (van Huffelen, 2022b). Miller and Listhaug (1990) state that trust reflects evaluations of whether political institutions perform under normative public expectations. It is essential for the legitimacy and stability of the political system (Tolbert & Mossberger, 2006). Research by Marien and Hooghe (2011) suggests that people with little political trust will be more inclined not to comply with laws and regulations. Trust in democratic institutions seems to be a relevant factor for the survival of democracy (Kersting, 2012). Van der Meer and Zmerli (2016, p. 1) state that political trust "functions as the glue that keeps the system together and as the oil that lubricates the policy machine."

The use of algorithms sometimes conflicts with the democratic values that form the core of the Dutch constitutional state. The State Secretary indicates that the algorithm registers can make an important contribution to making the application and outcome of algorithms more understandable (van Huffelen, 2022b). Despite its limited scope, this research attempts to better align citizens, technology, and policy by examining the effects of algorithm registry or citizens' trust in government decisions.

1.4 Problem Statement and Research Questions

The problem statement of this research concerns the lack of knowledge about how governments can best explain their algorithmic decisions in algorithm registers. Little research has been done into the explainability of algorithmic decisions (in combination with the register) and their effect on citizens'

trust. Some studies have been performed on the relationship between explainability and trust in algorithmic decisions. However, the literature is inconclusive about the relationship and, in addition, does not concern the use in the public sector. Grimmelikhuijsen and Meijer (2014) called the relationship's theoretical and empirical understanding limited. Although research has been performed since, the literature review still shows knowledge gaps (see section 1.2). Nevertheless, governments are implementing algoritme registers intending to increase citizens' trust. This culminates in the following main research question:

"What are the positive and negative effects of governmental algorithm registers on citizens' trust in government decisions?"

The research focuses specifically on citizens' trust in the context of governmental algorithm registers in the Netherlands. It aims to explore the possible explanation variations of the register to see if it affects citizens' trust and advise governments on how to use an algorithm registry best. The research question contains multiple concepts that can be divided into sub-questions. Answering all will result in a complete answer to the research question. The sub-questions are:

1. *What are the (intended) characteristics of Dutch governmental algorithm registers?*
2. *What factors influence citizens' trust in governments' decisions?*
3. *What positive and negative effects do different characteristics of algorithm registers have on citizens' trust in government decisions?*

The first two sub-questions define the current approach for algorithm registers of governments in the Netherlands and the relation between trust and explanation. The third sub-question is devoted to the experiment itself and analyses the effect of different characteristics of governmental algorithm registers on citizens' trust in government decisions. The output of these sub-questions will be combined to provide a translation into implementable advice for policymakers in governments.

1.5 EPA Relevance

This research relates to the Engineering and Policy Analysis master's program in several ways: it is analytical in character, exhibits both a system and a multi-actor perspective, and uses the master programs methods and techniques for problem analysis and exploration. Further, it informs decision-makers and is relevant in the public (policy) domain.

The research considers the impact of governmental algorithm use on society. This fits well within the program's scope, which looks at the interaction between society and technology. The research aligns with the master programs idea that complex problems require solutions that not only solve the technological aspect but also address the societal and political aspects (*MSc Engineering and Policy Analysis*, n.d.). It requires more than an understanding of the technology; it also requires how actors use and decide about technology. There are also other important aspects, such as regulations, cultural aspects, and human behavior. For example, in addition to the technical aspects of algorithms, regulations such as the artificial intelligence Act and psychological components such as the choice behavior of the respondent group have also been examined in this study. Further, examples such as the Dutch childcare benefits scandal illustrate the politically relevant component. In addition, this research, which looks at governmental algorithm registers' positive and negative effects on citizens' trust in government decisions, can be related to the sixteenth sustainable development goal of the United Nations: peace, justice, and strong institutions (*Goal 16: PEACE, JUSTICE AND STRONG INSTITUTIONS*, n.d.). It is about strengthening and creating transparent governmental institutions, thus ensuring fair and just decision-making.

The Master's program helped to gain insight into the relationship between technology and society, and understand large-scale systems. Thereby learning how to address complex issues and make judgments about data systematically and creatively. Where the first learning line puts students in the analyst position, the second explains decision-making as a dynamic process. In addition, the soft skill courses taught communicating clearly to specialist and non-specialist audiences. This was used in presenting for this first group during the focus group and will eventually also be used during the defense.

1.6 Thesis Outline

This thesis is structured as follows. This first chapter gave the problem indication, research relevance, problem statement, and research questions. The second chapter gives the research approach and methodology. The third chapter presents the grey literature review used to answer the first and the literature study used to answer the second sub-question. Chapter 4 presents the operationalization, survey design, distribution, focus group design, and validity and reliability. Chapter 5 gives the descriptive statistics and survey results. Chapter 6 gives the focus group results. Chapter 7 discusses the results and gives recommendations for policymakers. Finally, chapter 8 states the conclusion, scientific contribution, and recommendations for future research.

2. Research Approach & Methodology

This chapter gives an oversight of this research approach and methodology. For the latter, it will indicate which sub-question the methods help to answer and how the different methods are connected.

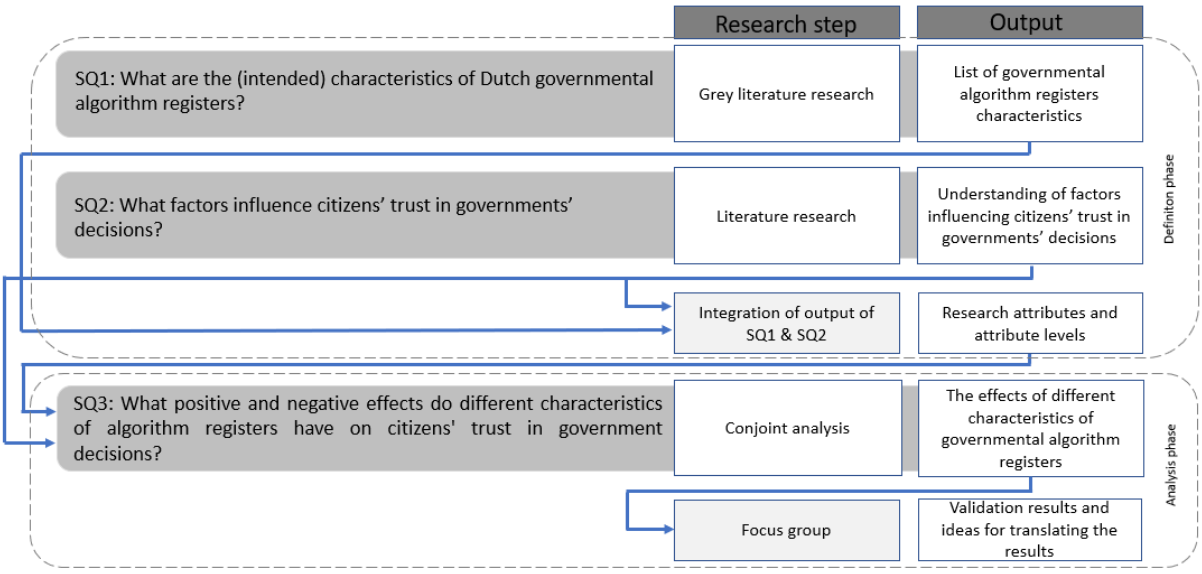
2.1 Research Approach

An exploratory, empirical, and mixed qualitative and quantitative approach is used to answer the research question for this research project. The quantitative approach allows for the systematic measurement of variables to be supplemented with additional qualitative components. For example, qualitative questions and a focus group are used to explore concepts and experiences in more detail. This way, an attempt is made to investigate and explain specific relationships between variables. The existing gap in knowledge results in the choice of an exploratory approach.

2.2 Research Methods

This research uses multiple research methods to answer each sub-question and eventually answer the main research question. First, literature research is conducted to answer the first two sub-questions. Sub-question 1 is answered with a review of grey literature, and sub-question 2 with academic literature. Second, conjoint analysis is performed to answer sub-question 3. The output of the first two sub-questions is used as input. Third, focus group research is used for extra data collection (ideas for translating the results into practice) and validation. Figure 2.1 gives a visual overview of how the methods are connected and how they succeed each other in the research process.

Figure 2.1: Overview of the used research methods



2.2.1 Literature Review

The rationale for conducting literature research is two folded. First, it helps focus the scope of this research by identifying the knowledge gap. Second, it provides input for the final research attributes and attribute levels used in the experiment.

A grey literature review is conducted to answer the first sub-question: *"What are the (intended) characteristics of Dutch governmental algorithm registers?"* The goal is to produce a list of characteristics that governments use or intend to use in their algorithm registers. These characteristics are called attributes and are filled using certain attribute levels. Each register variation is thus composed of a set of attribute levels. The grey literature review uses information from news articles,

government websites, and reports from governments themselves or external agencies. This search is primarily conducted in Dutch. All the consulted sources are displayed in the Bibliography using the online reference manager Mendeley. Further, snowballing is mainly used to find similar relevant information sources. The qualitative data from grey literature will give a more cohesive understanding of governments' current implementation and thoughts behind the registers. It will result in a list of an algorithm register's possible features and functionalities (characteristics).

A hermeneutic literature study is conducted to answer the second sub-question: *"What factors influence citizens' trust in governments' decisions?"* This search is primarily conducted in English and without any geographical limitations. The reviewed scientific journal articles were searched in multiple large literature reference databases: Google Scholar, ResearchGate, ScienceDirect, and SpringerLink. To identify sources for the literature research, the following search strings are used:

- Transparency AND Governments AND Algorithms AND Trust
- Transparency AND Governments
- Transparency AND Algorithms
- Transparency AND Trust
- Explainability AND Trust
- Governments AND Trust AND Algorithms OR Transparency
- E-government AND Trust

The goal is to identify reference points to these attributes and attribute levels in the literature such that a selection for the experiment can be made. A hermeneutic approach is iterative, begins the exploration more generally, and develops understanding gradually (Boell & Cecez-Kecmanovic, 2014). This is performed using the framework's two hermeneutic circles. In this study, Forward and Backward Reference Searching is also used. Qualitative data from peer-reviewed literature gives a better understanding of both concepts of trust, explainability, and transparency and their relations. General trust, citizens' trust in governments, and trust in an algorithmic context are examined. The literature study will ultimately zoom in on the influence of explainability and transparency factors.

2.2.2 Conjoint Analysis

A survey experiment with conjoint elements is conducted to answer the third sub-question: *"What positive and negative effects do different characteristics of algorithm registers have on citizens' trust in government decisions?"* The insights of sub-questions one and two are input for the conjoint analysis (conjoint analysis will be further discussed in chapter 4). A combination of the list of characteristics that governments (intend to) use and the reference points in literature will form the definitive list of attributes and attribute levels.

Conjoint analysis is the main method used to answer the main research question: *"What are the positive and negative effects of governmental algorithm registers on citizens' trust in government decisions?"* This quantitative survey-based statistical research technique uses a decomposition approach to study the cognitive processes underlying decision-making. It combines real-life scenarios and statistical techniques with the modeling of decisions. The term conjoint analysis is a portmanteau of the words considered and jointly, illustrating its fundamental idea (McCullough, 2002). This method captures the participant's utilities, perceptions, or beliefs and ultimately identifies the relative contributions of attributes and their levels (Lyon et al., 2012). It provides the underlying cognitive processes that drive the decisions by asking them to make decisions (Lyon et al., 2012). Lyon et al. (2012) state that conjoint analysis has the potential for examining trustors' decision processes, and De La Cuesta et al. (2022) state that conjoint analysis has quickly gained popularity in political science due to its broad applicability and relative simplicity.

The conjoint analysis is used to examine the characteristics of alternative variations of registers. Using a Likert scale, an overall rating is measured for the registers that vary systematically. Rating-based

experiments are best used when measuring respondents' attitudes as they are a relatively low effort to complete, do not require the respondent to express themselves in words, give respondents the possibility to assign the same score more than once, and are commonly used in surveys where respondents are asked to indicate their personal levels. It further lends well to online research and produces consistent and easy-to-process data.

The method examines the effect of the registry's different potential characteristics. This way, insights are gained into which register characteristics are essential and how strongly the specific characteristics affect citizens' trust in governmental decisions. By asking respondents to rate attribute sets representing different combinations of attribute levels, an interval-scaled dependent variable is produced that is more amenable to inferential statistical tests. This metric approach offers advantages when analyzing decisions such as the decision to trust (Lyon et al., 2012). In practice, several profiles (with variations in the explanation) are presented to the respondents.

The ratings measured on a Likert scale are analyzed using multiple (linear) regression using the SPSS software. The conjoint variables are recoded into dummy variables (more in section 5.1.2), so the model treats the values for these variables as a series of specific discrete options. The measured ratings form the dependent, and the attributes form the independent variables in the regression analysis. The latter is, therefore, the value that can be manipulated.

The regression provides insight into the explained variance of the used variables, the utilities of each attribute level, and the importance of an attribute. The explained variance indicates how much the independent variables explain the variation of a dependent variable. The regression coefficients represent the utilities and give insight into the strength of respondents' opinions. The importance of an attribute is the impact of the variation in levels of an attribute on trust.

2.2.3 Focus Group

After the analysis, a focus group consisting of digital transition consultants is consulted. A focus group is a qualitative research method in which several respondents participate simultaneously. It aims to generate discussion, in this case, the analysis results, emphasizing participant interaction (Avis et al., 2005). Focus groups are often used to explore thoughts or experiences about an issue from various practical or theoretical perspectives and can also be combined with questionnaires (Avis et al., 2005). The answers to the questionnaire can provide basic background information which can be used in the discussion (Aviset al., 2005).

Avis et al. (2005) also indicate that focus groups offer a precious supplement to other data collection techniques. The aim is to collect data on how to translate the results obtained by the survey and validate the obtained results. Thereby it helps with the interpretation of the survey. The method allows participants to generate their own frames and concepts and helps researchers tap into many forms of day-to-day interaction. Where the survey aims for representativeness and breadth, qualitative work aims for depth.

The focus group consists of a homogeneous group in which the respondents had comparable expertise. This type of focus group could also be called an 'expert panel,' as it brings together acknowledged experts (Avis et al., 2005). It makes mutual communication pleasant but can cause groupthink. This can be counteracted by explicitly asking the respondents questions (Avis et al., 2005).

3. Algoritme Register Characteristics

This chapter identifies possible attributes and attribute levels by looking at the currently used characteristics of Dutch governmental algorithm registers. Subsequently, factors that influence citizens' trust in governments' decisions are identified.

3.1 Current Registers

This part investigates the current characteristics of Dutch governmental algorithm registers and, thereby, answers the first sub-question:

"What are the (intended) characteristics of Dutch governmental algorithm registers?"

As indicated before, each register variation is composed of a set of attribute levels that are the characteristics of the algorithm registers. A document study with grey literature gave a more cohesive understanding of governments' current implementation and thoughts behind the algorithm registers. The longlist of characteristics (see table 3.1) is used to make the final shortlist with attribute levels. The longlist is compiled based on the standard algorithm register of the Consortium (*Algoritmeregister - Standaard Voor Algoritmische Transparantie*, n.d.), the registers of the municipalities of Amsterdam (*Meer Informatie – Amsterdam Algoritmeregister*, n.d.), Rotterdam (*Algoritmeregister*, n.d.), and The Hague (*Algoritmeregister Den Haag*, n.d.), Dassen's motion (Dassen, 2021), Opgave AI of the Netherlands Scientific Council for Government Policy (Prins et al., 2021), the coalition agreement (Rijksoverheid, 2021), and the proposal for the European artificial intelligence act (*Artificial Intelligence Act*, 2021). In addition to the name of the characteristic, the first column of the table also indicates (between brackets) in which registers it can currently be found: 1 consortium standard, 2 Amsterdam, 3 Rotterdam, or 4 The Hague. The latter is important because it makes the transparency of certain characteristics mandatory (see table 3.2)[2]. For that reason, this information is always available and not tested in this study.

Table 3.1: Results of grey literature research (longlist)

Characteristic name	Description	Theme
Name algorithm (1,2,3,4)	The name used to indicate this algorithm	Mandatory
Name organization (1,4)	The full name of the organization responsible for deploying the algorithm	Mandatory
Name responsible department (1,2,3,4)	The full name of the department responsible for deploying the algorithm	General
Short description (1,2,3,4)	A short description of a maximum of 150 characters in which the role of the algorithm is described at a high level	Mandatory
Algorithm type (1,4)	Descriptive, diagnostic, predictive, or prescriptive	Technical
URL website with more information about algorithm and its use (1,4)	More information about the algorithm and its use	Operation
Status (1,4)	Is the algorithm under development, in use, or out of use?	Mandatory
Goal development algorithm and it contribute to the goal (1,4)	Description of the goal of the development of the algorithm and how it contributes to the goal	Intention
Impact on citizens (1,4)	The impact of the effect of the algorithm on citizens, under what circumstances this occurs, and what the expected consequences are	Intention

[2] In the artificial intelligence act (proposal), the European Commission sets more rules for higher risks algorithms. A distinction is made between four categories: minimal, limited, high, and unacceptable risk. With minimal risk, no additional rules are needed, with limited risk, transparency is required and with high risk, strict rules must be met. Algorithms with an unacceptable risk are completely prohibited.

Proportionality (1,4)	A consideration of the pros and cons of using the algorithm and why this is reasonably justified	Intention
Decision-making process (1,4)	Link to concrete legislation, regulations or policies	Intention
Documentation (1,4)	URL to additional documentation	Technical
Long description about how the algorithm works (1,2,3,4)	An extensive explanation between 500 and 10000 characters of how the algorithm works	Operation
URL of application or source code (1,4)	Gives the URL of the algorithmic application or source code	Technical
URL of publiccode.yml (1)	Contains software developed or acquired by the public administration	Technical
Link with basic registration (1,4)	Tells if there is a link with basic registration	Operation
Overview of source data used by the algorithm (1,2,3,4)	An overview of the data sources used by or when creating or training the algorithm	Technical
Methods and models (1,4)	Standard methods or modes that the algorithm uses	Technical
Monitoring (1,4)	An overview of how algorithm use is monitored	Operation
Human intervention (checking and adjusting outcomes) (1,2,3,4)	A description of how the results of the algorithm can be checked and adjusted by a human	Operation
Overview of anticipated risks (1,2,3,4)	An overview of the foreseen risks	Operation
Performance standards (1,4)	Expected performance	Operation
Competent authority (1,4)	Indicates who is responsible for the processing and technical maintenance of the algorithm.	Intention
Legal basis (1,2,4)	A description of the legal basis for the use of the algorithm, or URL of the formal decision	Intention
Data protection impact assessment (DPIA) (performed or not) (1)	Tells if a DPIA is performed	Operation
Description DPIA (1)	A description of the performed DPIA	Operation
Description of the objection procedure (1,2,4)	Explanation how to object to the algorithm	General
Contact e-mail address and phone number (1,2,3,4)	E-mail address and phonenumber of organization or contact person for this registration	Mandatory
Geographical area (1,4)	Location of use algorithm	General
Registration Revision Date (1,4)	Date of revision of algorithm in this register	General
Non-discrimination (2,3)	Indicates whether there is a risk of discrimination	Operation
Language (4)	The language of the description	General
Algorithm version (4)	Release date of algorithm	General

Table 3.2: Information that is available in all studied algorithm register variations

Characteristic name	Description
Name algorithm	The name used to indicate this algorithm.
Name organization	The full name of the organization responsible for deploying the algorithm.
Short description	A short description of a maximum of 150 characters in which the role of the algorithm is described at a high level.
Status	Is the algorithm under development, in use, or out of use?
Contact e-mail address and phone number	The e-mail address and phone number of the organization or contact person for this registration.

Klaver's motion called for establishing an algorithm register describing which algorithms the government uses, for what purpose, and based on which data sets (Klaver, 2021). Dassen's motion supplements this by calling for transparency concerning the government's use of algorithmic decision-making (Dassen, 2021). Citizens must be enabled to access meaningful information about decision-making and the logic of government decision-making. The municipalities of Amsterdam and Rotterdam indicate that an algorithm register is an overview of the used algorithms and provides general information about the intention and operation but also more detailed technical information (*Meer*

Informatie – Amsterdam Algoritmeregister, n.d.), (*Algoritmeregister*, n.d.; Prinsen, n.d.). Additionally, the Association of Netherlands Municipalities indicates that it is necessary to provide insight into the presence and operation of an algorithm to enable public scrutiny, research, and discussion (*Gemeenten Starten Met Een Algoritme- En Sensorenregister*, 2022). The registers show that governments use algorithms responsibly, ensuring citizens' trust. The approach of these governments is broader than the scope of this study. In addition to the availability of information about the algorithms used by the government for citizens, governments also look at representatives, the media, and regulators.

So, the longlist of characteristics (see table 3.1), which is composited with the help of the grey literature, answers sub-questions 1, as it gives an overview of *the (intended) characteristics of Dutch governmental algorithm registers*. In addition, a quick scan is also performed based on the thoughts behind the algorithm registers. In these thoughts, it is noticed that a registry should give an overview of the used algorithms and give information about the intention, operation, and technical details. These themes are displayed in the last column of table 3.1. The purpose of using the algorithm, the (logic of government) decision-making, and the information on which dataset the algorithm is based should be transparent.

3.2 Factors Infuencing Citizens' Trust

To come to the final research attributes and attribute levels from the list retrieved in the previous part, factors that are found to influence citizens' trust in governments' decisions are needed. This part will, thereby, answer the second sub-question:

"What factors influence citizens' trust in governments' decisions?"

The following sections address the various factors influencing citizens' trust in governments that can be found in the literature. For example, studies have been conducted on the impact of citizens' background variables and information needs. Furthermore, these citizens are divided into different groups regarding their attitudes toward governments. In addition, different types of transparency are also considered, given the previously stated importance of the form of the explanation. Finally, e-government is also examined as the core of algorithm registers largely touches this.

3.2.1 Background Variables

Prior studies show that sex, political preference, education, income, and age are important background variables that might affect trust in government (de Voogd & Cuperus, 2021; S. Grimmelikhuijsen et al., 2013). High-educated young people with an above-average income have much more trust in government and parliament than the elderly and the lower educated. Nevertheless, the continuous survey of citizen perspectives (COB) figures show that the influence of gender and age is limited (den Ridder et al., 2022). The influence of education level does seem considerable, although its impact cannot be attributed to a single factor. For example, a higher educational level of parents could contribute to early political socialization. Tolbert and Mossberger (2006) also emphasize this complexity and interrelatedness of possible causes of decreased trust in government.

3.2.2 Citizens' Attitude Toward Governments

Norris (2022) distinguishes three citizen attitudes: the credulous, the cynics, and the skeptics. The credulous lack the desired critical attitude, making them easy prey for disinformation or simply too lax in providing enough external incentives to governments to stay within the framework of the law. The cynics have little or no trust in the government at all times. The more skeptical citizen are desired since the trust of this group rests on the continuous evaluation of governments. An (active) critical attitude is desirable from a democratic point of view. A lack of trust in itself is not a problem (den Ridder et al., 2022). This group contributes to the system of checks and balances by critically monitoring and assessing government actions (Bertsou, 2019). Further, Kemper and Kolkman (2019) demonstrated

that transparency of algorithms can only be achieved with an engaged critical audience. They state that the value of transparency fundamentally relies on critical and informed audiences. A passive critical attitude contributes less but is not problematic (Bertsou, 2019). There is always criticism and commentary on politics, both in periods with more and periods with less trust. Since 2008, this can be seen repeatedly in the continuous survey of citizen perspectives (I&O Research Panel, 2022).

Distrust and cynicism are less desirable from a democratic point of view as they can lead people to drop out or actively oppose the government (van de Walle & Six, 2014). Deep distrust is more likely to result in firm negative judgments about the intentions and competencies of politicians (van de Walle & Six, 2014). This leads to distrust being a danger to representative democracy and the rule of law (Zmerli & Meer, 2016). However, distrust is not the antonym of high trust (van de Walle & Six, 2014). For that reason, it is not only essential to know whether citizens lack trust but also what the underlying nature is. Bouckaert and Van de Walle (2003) indicate that trust in governments means that governments are (perceived to be) functioning in the way citizens prefer. Perceived trustworthiness, therefore, cannot be seen as an objective quality of government but often coincides with good governance.

3.2.3 Information Needs of Citizens

Research institute PON & Telos has conducted research into the information needs of citizens about the use of algorithms by governments (Dingemans et al., 2021). This research shows that more than three-quarters of citizens have a need for information about algorithms. 61% want information about the information sources that are used, the handling of privacy, and the inclusion of human control in the process. In addition, 60% want to know why the algorithm is used, and 40% believe that citizens should be able to view information about the algorithms governments use. It also shows that it does not really matter for the information need how complex the algorithm is and whether it only brings information together or whether predictions are also made with it. Furthermore, the continuous survey of citizen perspectives shows that responsiveness, especially the lack of it, is vital for citizens' feeling represented or not (den Ridder et al., 2022). It uses the three-aspect distinction of Esaiasson et al. (2015): listening, adapting, and explaining. The latter aspect fits within the scope of this study; the first two can and will, as it is one of the mandatory characteristics (see table 3.2), also be touched upon by displaying contact information in the register. It fits in well with the hope that a more open and transparent government could help restore trust (Tolbert & Mossberger, 2006).

3.2.4 Governmental Transparency

Grimmelikhuijsen et al. (2013) distinguish transparency of decision-making processes, policy content, and policy outcomes. The first focuses on information completeness and is associated with political influence. The second focuses on coloring and is associated with media attention and external group pressure. The last focuses on the timeliness and comprehensibility of information and is associated with external group pressure and organizational capacity (Alzahrani et al., 2017).

Regular government decisions are often subdivided into transparency in process and transparency in rationale (J. de Fine Licht et al., 2012). The latter refers to information about the content of the decision and the facts and reasons on which it was based. This dichotomy is also relevant when explaining algorithmic government decisions (K. de Fine Licht & de Fine Licht, 2020). Research by Statistics Netherlands into the use of algorithms within government organizations shows that the choice to use a specific algorithm depends on how well it can be explained (Doove & Otten, 2018). Governmental organizations indicate that an algorithm can best be explained by verbally describing what it does. Some suggest that this is best done using practical (simplified) examples and visual material. Most, however, do have a detailed description.

Lepri et al. (2018) indicate that more than the openness of the algorithm's source code and in- and outputs alone is needed, as it is often necessary to keep certain elements of an algorithmic decision policy secret to help prevent strategic gaming of the system. Therefore, they provide another approach that provides explanations regarding the processes that lead to the decisions such that they are interpretable by humans. They explain the concept of interpretability as, firstly, the explanation of how the model works and, secondly, what else the model can tell.

Kemper and Kolkman (2019) mention the possibility that sharing all available documentation, procedures, and code by organizations will not constitute transparency, as the relevant audience needs to be able to understand the information. Additionally, behavioral sciences show that people's ability to weigh information and make rational choices is limited (*Samenvatting WRR-Rapport 97 Weten Is Nog Geen Doen. Een Realistisch Perspectief Op Redzaamheid*, 2017). There is a considerable difference between what is expected of citizens and what they can handle. The group for whom the demands are sometimes too ambitious is more comprehensive than a small group of 'vulnerable.' People with a good education and an excellent social position can also end up in situations where their self-reliance is insufficient, especially when life is not going well (*Samenvatting WRR-Rapport 97 Weten Is Nog Geen Doen. Een Realistisch Perspectief Op Redzaamheid*, 2017).

3.2.5 E-government

Tolbert and Mossberger (2006) describe e-government as the delivery of government information and services via digital means. This seems interesting as the core of algorithm registers largely touches on this. They use the by Thomas (1998) identified modes for the creation of trust that are significant for e-government: process-based trust and institutional-based trust. Process-based trust is rooted in repeated interactions with the government, and institutional-based trust is rooted in the image held by respondents (Thomas, 1998). Tolbert and Mossberger (2006) indicate that the trust of process-based trust citizens may improve through improved communication and interactions with citizens in accessible searchable databases and layouts. Institutional-based trust may increase by increasing transparency by posting information such as data, policies, laws, or contact information or showing responsibility by posting privacy and security statements and policies for handling personal information submitted online. Process- and institutional-based trust may increase if they can better find the information they want, or in general, because of the used information technology. The same applies to creating more engagement because some may also observe it as an opportunity for participation.

Alzahrani et al. (2017) identified four factors influencing citizens to trust e-government: technical factors, government agencies factors, citizens' aspects, and risk factors. Each of these four dimensions may affect e-government adoption as they influence citizens' beliefs in using and adopting e-government services. Three technological factors influencing citizens' beliefs are identified: system quality, service quality, and information quality. Two government agencies factors influencing citizens' beliefs are identified: the reputation of an agency and experience. Three characteristics of an individual influencing citizens' beliefs are identified: the disposition to trust, internet experience, and education. Four Risk factors influencing citizens' beliefs are identified: performance risk, time risk, and security and privacy.

Concluding, the found literature on the factors that influence citizens' trust in governments' decisions (see section 3.2) answers sub-question 2 and can be used to transform the longlist to the final selection of attributes and attribute levels. In these findings, it is noticed that a registry should describe information about laws, the process, why the algorithm is used, the inclusion of human control in the process, and risk factors. Further, it should include a detailed description and describe information about the handling of privacy, the content and reasoning behind the decision, the technological factors, and the used information sources. The mandatory parts (as shown in table 3.2) are excluded.

4. Experimental Design

The first part of this chapter provides the operationalization of the final attributes and attribute levels. Subsequently, the survey design is discussed, and thirdly, the survey distribution strategy is given. Fourthly, the data preparation, and finally, validity and reliability are discussed.

4.1 Operationalization

The operationalization combines the results of the first and second sub-questions into the final list of attributes and attribute levels. Additional literature from Timmermans and Molin (2009) and McCullough (2002) is used. Timmermans and Molin (2009) indicate that increased complexity relates to the desire to include more attributes in the models and often leads to increased respondent burden in the experiment. They state that with high numbers of attributes, levels, or both, the number of profiles becomes too demanding for the respondents, which could result in an information overload. Larger numbers further imply an increased time to complete the experimental task, possibly resulting in tiredness or loss of concentration. Accommodating many attributes may cause attribute additivity: many less essential attributes may overwhelm one or two important ones (McCullough, 2002). Besides, the extra information respondents have to process may result in simplifying strategies, possibly resulting in invalid results (Timmermans & Molin, 2009). Nonetheless, arbitrarily limiting the number of attributes could lead to confounding effects and, therefore, to misleading conclusions, as the effect of particular attributes could appear more significant than they are. Timmermans and Molin (2009) suggest avoiding more than four levels or combinate levels with a high common denominator. Therefore, this study will be vigilant for too many attributes in its final selection and only use up to a maximum of four attribute levels. In addition, matching levels in the longlist (see table 3.1) are combined.

With the information of chapter 3 in mind, an attempt is made to determine distinguishable attributes. A division with intention, operation, and technology attributes is chosen. These are easy to distinguish for the respondents, investigate different areas of explanation, and can be laid over the information components to be included.

The intention attribute includes the levels: *legal basis*, *impact*, and *proportionality*. The first level answers the need for information about laws, the second give information about the impact (for example consequences for privacy), and the last answers the need for information about why the algorithm is used. The operation attribute includes the levels: *human interference*, *risks*, and *detailed description*. The first level answers the need for information about the inclusion of human control in the process, the second answers the need for information about the risks, and the last response to the need for a detailed description. The technology attribute includes the levels: *methods and models*, *source data*, and *source code*. The first level responds to the need for information about the technological factors and the second answers to the need for information about the sources that are used. The last level tests the statements about the need for more than the openness of the algorithm's source code (Lepri et al., 2018) and the lack of constitution to transparency by sharing code by organizations (Kemper & Kolkman, 2019). In addition, it also offers the opportunity to examine the argumentation of the pessimists described by Grimmelikhuijsen et al. (2013), who stated that transparency can lead to the delegitimization of governments and further emphasized the limits of people's ability to process information. Especially considering many other scholars also indicated these adverse effects due to information overload and the limits to people's ability to process information (Etzioni, 2010; Florini, 2007; Hosseini et al., 2018; Kahneman et al., 1991).

Table 4.1 shows the final selection of attributes and attribute levels used in the conjoint experiment. This is the desired input that will help to answer the third sub-question. The attribute levels described in the table are partly derived from the existing algorithm registers. However, it has often been supplemented to provide clearly understandable information for the respondent.

Table 4.1: Final research attributes and attribute levels

Attributes	Attribute levels
Intention	Legal basis *A description of the legal basis for the use of the algorithm, or URL of the formal decision.*
	Impact *(1) The impact of the effects of the algorithm on citizens, (2) under what circumstances this occurs, and (3) what the expected consequences are for the individual and/or society.*
	Proportionality *A consideration of the pros and cons of using the algorithm and why this is reasonably justified.*
Operation	Human Interference *A description of how the results of the algorithm can be checked and adjusted by a human.*
	Risks *An overview of the foreseen risks.*
	Detailed description *An extensive explanation between 500 and 10000 characters of how the algorithm works.*
Technical	Methods and models *Standard methods or models that the algorithm uses.*
	Source data *An overview of the data sources used by or when creating or training the algorithm.*
	Source code *Gives the URL of the algorithmic application or source code. The actual code of the algorithm is visible via this link.*

4.2 Survey Design

The survey is created and published in the online survey tool Qualtrics and consists of the ellements shown in table 4.2. The entire survey, with all the mentioned components, can be found in appendix A.

Table 4.2: Elements of the survey

Survey elements	Sub-elements	Explanation
Opening statement		Provides general information about the research
Introduction	Instruction parts	Prepares the respondents for the content and question
	Warm-up question	Educates and familiarizes the respondent
Conjoint Design	Conjoint cuestions	Nine conjoint questions with variations of the register
	Holdout question	Used in analysis to test the model's predictive ability
	Closing question	Closing question about the clarity of the content and phrasing of the previous questions
Additional (Demographical) Questions	Demographical questions	Used to gain insight into personal characteristics and check the representativeness
	Additional qualitative questions	Used to gain insight into general trust and algorithm prowess of respondents
Closing statement		Thank the respondents for their participation

An effort is made to keep the design clean and simple, consistent with repeated elements, and textually clear and correct. The latter is tried explicitly by aiming to avoid misinterpretations, unclear meanings, and ambiguities, by not adding unnecessary text elements, and by having short, simple, and clear sentence structure with simple words, terms, and formulations (adequate for the target group). It uses the European Values Study 2017 methodological guidelines as an example (*European Values Study (EVS) 2017: Methodological Guidelines.*, 2020). It is possible to complete the survey on a phone or tablet. In the web variant, an attempt is made to avoid the need to scroll as much as possible. This

is not possible for the mobile variant. Also, the survey gives a reminder if a respondent does not answer a question (except for the warm-up question). Further, in addition to the (tested) completion time in the opening statement, it will be apparent to the respondent where they are because the survey indicates in which part the respondent is, and a progress bar is visible.

4.2.1 Opening Statement

The opening statement provides general information about the research (design) and the obligatory ethical statement regarding the privacy of the respondents. It is created using the template of the Delft University of Technology ethics committee and in collaboration with a data steward.

4.2.2 Introduction

Prior to the nine conjoint questions, an attempt is made to prepare the respondents as good as possible for the content and question. For this reason, instruction parts and a warm-up question are used. Careful consideration is given to the advance-provided information to minimize the chance of participants filling in any ambiguities as much as possible. The inclusion of context effects tends to increase the experimental designs' size and complexity and the respondents' burden (Timmermans & Molin, 2009). Therefore, all register variations are tested in the same context. Background variables affecting the utility of the variations are specified in the instructions and never vary. Only one algorithm is presented as part of the register in this study to avoid confusion and the effects of different algorithms on the values entered by participants. Further, the introduction indicates that no prior knowledge of algorithms is needed and that it is possible to go back to previous questions in the survey. The latter attempts to counteract the learning effect, which causes respondents to fill in the survey differently as they gain more experience. Lastly, the experiment also includes a warm-up question, as the literature indicates this is important (McCullough, 2002). The question has the same approach as the other conjoint questions but uses a different attribute level variation. The warm-up tasks will educate and familiarize the respondent.

4.2.3 Conjoint Design

The survey starts with the conjoint questions, so respondents are sharp. Given further intended statistical treatment, the rating is queried using a symmetric 5-point Likert scale. A scale with more points in which adjacent options are less radically different might better capture the motif of the participants (Joshi et al., 2015). However, processing the extra points on the scale needs extra judgment time and memory span, which seems unwise, given the current size of the study (Joshi et al., 2015). Further, this research works with a balanced orthogonal fractional factorial design (see table 4.3), as a full-factorial design provides too many profiles to present to participants. It is a method to balance subject fatigue and the number of variables but should be decided on theoretical grounds (Lyon et al., 2012). Therefore, it is not a random selection but chosen such that all combinations of levels are made and occur equally often (basic plan 2). As a result, all correlations are zero. A disadvantage is that it only gives main effects and no interaction effects. A balanced design, in which each attribute's levels appear equally often in the set of profiles, is used so the coefficients within an attribute can all be estimated equally accurately. The orthogonal profiles lead to the smallest standard errors and ensure no correlations between the predictors. It provides the most efficient model estimation, requiring few observations.

While verbal descriptions of stimuli have been traditional, pictures are now being used to a greater degree, offering more realism and flexibility in presenting information (Rao, 2014). Therefore, a combination of textual and visual explanations is used. Regardless, it is important to understand that the way attribute combinations are presented may also bias individual responses and cause some attributes to be over-valued (Rao, 2014).

Table 4.3: Factorial design

Attribute / Variation id	Intention	Operation	Technical
1	1	1	1
2	2	1	2
3	3	2	1
4	1	2	2
5	3	1	3
6	1	3	3
7	3	3	2
8	2	2	3
9	2	3	1

The experiment also includes a holdout question (McCullough, 2002). This tests the model's predictive ability by comparing the results of the holdout question with a naive model. Therefore, the question is rated by the respondents but is not used to estimate utilities. This validation helps to expose errors and gives additional confidence in the experiment. The holdout question has the same approach as the other conjoint questions but uses a different attribute level variation. This variation is not generated by the orthogonal plan and involves the component's *impact, human interference,* and *source code.* Further, the experiment includes a closing question. This question asks the respondents whether they understood the information from the shown algorithm registers and whether they were able to make a choice about their trust in government decisions. The purpose of this is to test the understanding of the respondents.

4.2.4 Additional (Demographical) Questions

The second part of the survey includes questions about the demographics of the respondents, the general trust in the central and local government, and algorithm prowess. The first questions are asked to gain insight into personal characteristics. This is primarily to check the sample's representativeness but also to create the possibility of forming clusters. All questions are closed-form multiple-choice except for the "other" option for the education-level question. They are posed at the end to prevent the respondents from stopping when they see them.

As indicated in section 3.2, prior studies show that sex, political preference, education, and age are the most important background variables that can influence trust in government (de Voogd & Cuperus, 2021; den Ridder et al., 2022; S. Grimmelikhuijsen et al., 2013). In addition, Alzahrani et al. (2017) give citizens' aspects as one of the factors influencing citizens to trust e-government, including education. Given the possible sensitivity of asking for political preference and the possible consequences for the willingness to fill in the survey, it was decided not to ask for this variable. Furthermore, the difference in the influence of these variables found in the literature is another reason for the inclusion in this research.

The participants are also asked whether they have experience with algorithms and what their general trust in governments is. This makes it possible to investigate afterward whether the group is homogeneous or whether clusters can be formed. Further, the analysis of S. Grimmelikhuijsen (2012b) shows that general trust in governments is a powerful determinant of trust in a specific government organization. It might be interesting whether this is also the case for algorithm registers.

As indicated in section 3.2, the literature describes cynics, skeptics, and credulous attitudes among citizens. This experiment asks about general trust, as an active critical attitude is desirable and a cynical one is undesired. Trust in central and local has been split as various polls and studies show that trust in the municipal authorities has been higher than that of national and European for many years (den

Ridder et al., 2022). With the split between central and local, an attempt is made to form a better image of respondents' opinions of governments. Researchers define generalized trust as a default expectation of other people's goodwill. Some literature indicates that studies of trust should use multiple indicators as these can reveal the antecedents and effects of trust more precisely. Miller and Mitamura 's (2003) research suggests that trust levels can be generalized. Their research shows consistent patterns for various questions on many types of trust. Given the already reasonably high respondent burden, it is decided not to work with multiple indicators. The general trust questions are asked with the same options as the trust questions in the first part of the survey.

Alzahrani et al. (2017) also identify government agencies as a factor influencing citizens' trust. This is subdivided into the reputation of an agency and experience. Furthermore, they also indicate internet experience as one of the factors influencing citizens to trust e-government in citizens' aspects. For this reason, the algorithm prowess of respondents is also asked.

4.3 Survey Distribution

The survey was actively distributed for 22 days in December 2022 after first testing it with a small control group. The survey is distributed online via the researcher's personal circle (e-mail and WhatsApp) and public channel (LinkedIn) since no funds were available for hiring an external survey company. Part of the approached subjects also used their network to reach certain subgroups. Lower-educated is an example of these more actively recruited subgroups. Furthermore, by utilizing tags (for example, a Berenschot[3] tag) and reposting the message on LinkedIn, an attempt is made to extend the (demographically) concentrated personal circle of the researcher.

Literature suggests that models can be reliably estimated with samples as low as 75 (McCullough, 2002). These participants must be a good reflection of adult Dutch society. This representativity of the group will be checked with the help of the demographical questions (gender, age, and education level) and is discussed in section 5.1.1.

4.4 Data Preparation

As a first step in the analysis, the incomplete responses are removed from the data file after the entire raw data file (see appendix B) is loaded from Qualtrics into SPSS. This left 131 rows of data, with each row representing one complete response. These are then restructured into a file with nine rows for each response, treating a different conjoint profile in each row. This is then merged with a separate SPSS file describing the nine profiles.

Subsequently, all conjoint variables and the variable from question 11 and gender were recoded into dummy variables (see table 4.4). Here, a coefficient indicates a difference in the constant between the 1-coded group and the reference group. Further, there is a discrete difference since there are no intermediate values. Using a dummy coding scheme, these nominal variables can be analyzed by linear regression. Trust rating (interval level of measurement) will be used as the dependent variable in this analysis.

[3] https://www.berenschot.nl/

Table 4.4: Definitions of dummy variables

Variable group	Variable name	Definition
Understanding of survey and register (Q11)	URGC	Respondents understood what was shown in the algorithm registers and were able to make good choices about how much trust they had in government decisions.
	URDC	Respondents understood what was shown in the algorithm registers, but found it difficult to make choices about their trust in government decisions.
	DURDC	Respondents did not really understand what was shown in the algorithm registers and therefore found it difficult to make choices about their trust in government decisions.
	Reference category	Other, namely...
Gender (Q13)	Men	The respondent describes himself as a male.
	Reference category	The respondent describes herself as a female.

4.5 Focus Group Design

After analyzing the experiment's results, a focus group consisting of eight digital transition consultants is consulted in a structured way. Avis et al. (2005) indicate that a group between four and eight is usually ideal, as the downside of smaller or larger groups is that it offers minimal opportunities for lively group interaction or leaves very little time for individuals to contribute. The focus group uses a homogeneous group in which the respondents had comparable expertise, as most researchers recommend it to capitalize on people's shared experiences (Avis et al., 2005). This type of focus group could also be called an 'expert panel,' as it brings together acknowledged experts (Avis et al., 2005). The consultants work within the digital transition team but hold junior to senior positions. Although this group consists of highly educated people, just like the survey respondents, the distribution between men and women and age is more even. In addition, they have different educational backgrounds and expertise (public administration and technical). By working with a team of colleagues, an attempt is made to create an environment where a natural discussion arises. It makes mutual communication pleasant but can cause groupthink. This can be counteracted by explicitly asking the respondents questions. Further, the possible effect of hierarchy was counteracted by asking participants direct questions and collecting individual input in advance with the Mentimeter.

The session consists of three parts and lasts approximately 45 minutes. First, the panel is informed through a presentation that briefly introduces the topic, method, and experiment set-up. It concludes with the findings from the results. Subsequently, the experts will be asked to answer questions through Mentimeter individually, after which they are treated centrally. Ultimately, the goal is to discuss the topics jointly. The session was organized at the end of January after analyzing the survey responses. This ensured that the researcher leading the discussion is well-versed in the subject. There will be a specific focus on usability for governments and the consequences of the results. In addition, the questions will also be aimed at creating ideas for translating the results and validating the obtained results. Moreover, it helps with the interpretation of the survey and aims for depth.

The respondents are invited to the session via email and during a joint meeting. They are informed in advance that they will provide input in addition to listening to the presentation and that no preparation is required. The focus group session is held on location as Avis et al. (2005) indicate that it helps to hold the sessions in a place easily accessible and familiar to respondents. It is held in a reserved space so the participants can talk freely and away from interruptions. A relaxed atmosphere is created in the session by organizing it in a spacious room where everyone can sit around the same table. Further, no recording is made during the session so everyone can speak freely. Initial input via Mentimeter and carefully taken notes during the discussion still ensured adequate reporting.

Analyzing the focus group is basically the same as analyzing other qualitative data: drawing together and comparing discussions of similar themes (Avis et al., 2005). It is essential to distinguish between individual opinions and the actual group consensus. Further, attention must be given to minority opinions and examples that do not fit the theory.

4.6 Reliability and Validity

The reliability and validity of the research set-up are important to assure its integrity, ensure that the data are sound and replicable, and that the results are accurate. Grey literature is used to identify and create a longlist and academic literature to select the final attributes and levels. This literature is also important to strengthen this research as it is one study with a limited number of respondents. To arrive at reliable and consistent results and to minimize the errors and biases in the research, an attempt is made to work with a set-up that is as constant as possible: using the same algorithm as the example, in the same context, and with the same variables. Further, the attributes and levels are defined as clearly as possible to ensure all respondents understand and can answer the questions. As an extra check, respondents are asked if they understand the conjoint questions and have the possibility to answer the question open-ended. Furthermore, the results and set-up of the focus group are made as systematic as possible. In addition to bringing in new input, this focus group also is used to validate the found results.

4.6.1 Interpretation of P-value

An important measure of whether there is a relationship and whether the results of a study can be generalized to the population is the p-value. The $p < 0.05$ rule has traditionally been considered protection against noise-chasing, a guarantee of reproducibility, and it is often seen as strong evidence in the acceptance of a scientific theory (McShane et al., 2019). However, McShane et al. (2019) pointed out that several well-publicized examples coupled with theoretical work showed that statistical significance can easily be obtained from pure noise. This default is based on the false idea that there is a 95% chance that the computed interval itself contains the true value (Amrhein et al., 2019) and is often misinterpreted by researchers (McShane & Gal, 2017). Focusing on estimates chosen for their significance will create bias as statistically significant estimates are biased upwards, whereas statistically non-significant estimates are biased downwards in magnitude (Amrhein et al., 2019). All statistics, including p-values, naturally vary from study to study (McShane & Gal, 2017). Researchers should never conclude there is no difference or association just because the p-value is larger than a threshold (Amrhein et al., 2019). The rule is a purely statistical measure that fails to take a more holistic view of the evidence (McShane et al., 2019). Amrhein et al. (2019) indicate that factors such as study design, data quality, and understanding underlying mechanisms are often more important than statistical measures such as p-values. Scientific conclusions and policy decisions should not be based solely on whether the p-value exceeds a certain threshold (Amrhein et al., 2019; McShane & Gal, 2017). However, Amrhein et al. (2019) indicate that a retiring statistical significance should not be considered a panacea either.

This study, therefore, takes a more holistic and integrative view and not only emphasizes statistical considerations. In a more holistic view, the p-value will be regarded as just one among many pieces of evidence. The p-values will be treated continuously and not just as a threshold screening role. The term statistical significance will be replaced with a gradual notion of evidence (see the variable estimates in tables 5.2 and 5.3). Additionally, all relevant results will be analyzed and reported. This approach also ensures that the relevance of the variable is examined in terms of content. Uncertainties and assumptions will be acknowledged as clearly as possible to prevent making overconfident claims. In addition, the full range of potential explanations for the results will be discussed as Amrhein et al. (2019) indicates that scientific inferences go far beyond mere statistics.

5. Survey Results

The first part of this chapter gives descriptive statistics, specifically the representativeness and data modifications. The conjoint analysis is conducted to answer the third sub-question: *What positive and negative effects do different characteristics of algorithm registers have on citizens' trust in government decisions?*

5.1 Descriptive Statistics

The descriptive statistics will describe the basic features of the used dataset in this analysis. It will first focus on the representativeness of the data sample and then describe the performed data modifications.

5.1.1 Data Representativeness

The survey was opened 255 times and 131 times fully completed. For 84 attempts, nothing was filled in; for 37, one or more answers to conjunct questions were missing; and for 3, the conjoint part was completely filled in, but one or more answers to the demographic questions were missing. Although it cannot be verified, it is expected that a large portion of the attempts where nothing was filled in is caused by people who clicked on the LinkedIn message but did not have the time (or did not want to make time) to fill in the survey or people who first opened the survey on their phone and then switched to their computer. Also noticeable is the substantial part that started the survey but did not complete it. Besides the time aspect mentioned above, this could also be due to the comprehensibility of the survey or the register itself.

Table 5.1: Age, educational level, and gender of respondents

Subgroups	Number of respondents	Percentage of respondent group
Gender		
Male	89	68%
Female	42	32%
Age group		
18 – 24	32	24%
25 - 34	61	47%
35 – 44	6	5%
45 – 54	8	6%
55 – 64	17	13%
65+	7	5%
Education level		
Secondary education	9	7%
Secondary vocational	13	10%
Bachelor	37	28%
Master	68	52%
other	4	3%

Table 5.1 indicates the quantities by subgroup within the respondent group. The distribution of these variables is compared with the distribution of the same variables in the Dutch population. Data from Statistics Netherlands indicates that in January 2022, 21% of the Dutch population was under the age of 20, 26% between the age of 20 and 40, 35% between 40 and 65, and 20% over the age of 64 (*Bevolking Op 1 Januari En Gemiddeld; Geslacht, Leeftijd En Regio*, 2022). Statistics Netherlands also indicates that in 2021 25.8% of the population was low, 37.9% medium, and 35.5% highly educated (van der Mooren & de Vries, 2022), and that on 1 January 2022, 49.1% of the population was male (*Bevolking Op 1 Januari En Gemiddeld; Geslacht, Leeftijd En Regio*, 2022). Although representativeness concerns the distribution of the target variables and not the distribution of demographical

characteristics, this comparison shows a clear over-representation of men and highly educated people. In addition, it can be seen that the older-aged groups are underrepresented in this experiment.

As indicated, there was a certain level of selectivity in how respondents were recruited. Fortunately, correlations are less sensitive to unrepresentativeness than distributions (Molin, 2019). However, all categories of demographical variables should be sufficiently represented, and respondents in the under-represented categories should be representative of those categories in the population (Molin, 2019).

5.1.2 Data Modifications

After data preparation, as described in section 4.4, 131 observation were obtained. In addition to removing incomplete responses, other points outside the general pattern influencing the results are also examined. The data is checked for responses with the same score for every profile. This is the case for seven. For four of these responses, respondents indicated in question 11 of the survey that they did not understand what was shown in the algorithm registers; one indicated to understand it but found it difficult to make a choice; and the other two chose the 'other' option. In this, they both indicated that their trust in government decisions depends very little, if at all, on an algorithm register (see appendix C). Although a regression analysis was performed without these seven responses as a control, it was decided not to exclude them. The choice for an equal assessment of the variations is also a legitimate response, and the rating differs between these respondents. Furthermore, exclusion did not lead to substantial changes in the analysis results: the R Square increases by 0.001, the constant decreases by 0.015, and all coefficients amplify by a maximum of 0.01 and the p-values by 0 to 0.005. Further, the four responses for which the option 'other' was selected for education level have been adjusted to the correct education category. This way, this option can be left out of the analysis.

5.2 Outcome of the Analysis

Given the exploratory approach, the regression will mainly be used to make predictions. There are many potential variables of which there, in advance, is no (clear) idea which are important and which direction they have. The (Likert) rating scale using an interval measurement level results in performing a linear regression. With this analysis, the measure of the direction and coherence of the linear relationship between variables can be determined. This means that something can be said about a predictor's effect and relative influence.

However, in this study (after performing the predictive basis), the first steps are taken to explain the effects. This is because it is important to have an idea of why and how effects occur. The collected theoretical basis will be used for this interpretation. The direction for causality of the attributes is certain, given that these are varied experimentally.

Table 5.2: Variable estimates (all variables)

Variable name	Unstandardized coefficient B	P-value	Gradual notion of evidence
(Constant)	4.143	< 0.001	
Legal_basis	0.056	0.337	Little or no
Impact	0.099	0.089	Weak
Human_interference	0.104	0.074	Weak
Risks	- 0.186	0.001	Strong
Methods_models	0.020	0.727	Little or no
Source_data	0.051	0.383	Little or no
URGC	0.138	0.315	Little or no
URDC	0.280	0.019	Moderate
DURDC	- 0.036	0.777	Little or no
Age (Q12)	- 0.050	0.007	Strong

Men	- 0.155	0.006	Strong
Education level (Q14)	- 0.051	0.094	Weak
Trust in central government (Q15)	0.152	< 0.001	Very strong
Trust in local government (Q16)	0.128	0.003	Strong
Experience with algorithms (Q17)	0.015	0.538	Little or no

Table 5.3: Variable estimates (only conjoint variables)

Variable name	Unstandardized coefficient B	P-value	Gradual notion of evidence
(Constant)	3.029	< 0.001	
Legal_basis	0.056	0.366	Little or no
Impact	0.099	0.109	Little or no
Human_interference	0.104	0.092	Weak
Risks	- 0.186	0.003	Strong
Methods_models	0.020	0.742	Little or no
Source_data	0.051	0.411	Little or no

5.2.1 Goodness of Fit

First, the proportion of explained variance expressed in R-square value, was examined. This indicates the part of the variance in the dependent variable that the predictor explains. The explained proportion is relatively low with the 11.7 % of the model (see appendix D). However, this study does not necessarily concern the model fit. It focuses on the size and direction of the effects of the attributes in the relatively small part that influences citizens' trust.

5.2.2 Model Estimates

As described in chapter 4, this study will follow the advice of (Amrhein et al., 2019; McShane et al., 2019; McShane & Gal, 2017) and will not deal with the p-value conventionally. The study takes a more holistic and integrative view and not only emphasizes statistical considerations. The values will be treated continuously, so statistical significance will be replaced with a gradual notion of evidence (see tables 5.2 and 5.3). Additionally, all relevant results will be analyzed and reported, and uncertainties and assumptions will be acknowledged as clearly as possible. In addition, the full range of potential explanations for the results will be discussed, as Amrhein et al. (2019) indicate that scientific inferences go far beyond mere statistics. In addition, the unstandardized coefficient is used since standardized effects are not easy to interpret with dummy variables. The unstandardized coefficients are great for interpreting the relationship between the independent and dependent variables. However, it must be taken into account that they are not useful for comparing the effect of an independent variable with each other.

The constant of the regression (using only the conjunct variables) is around three. This is not entirely unexpected as this is the neutral option (medium trust) of the 5-point Likert scale. Of the coefficients of the conjoint variables, it is striking that *risks* has a negative value. Correlation is a measure of the direction and coherence of the linear relationship between two variables and, in this case, the relationship between the trust rating of the register and the conjoint variables. Showing an overview of the anticipated risks in the register, therefore, results in lower trust in government decisions. Providing additional transparency, therefore, has a negative effect. *Legal basis*, *methods and models*, and *source data*, further, only have a small coefficient. In addition, the p-values of these variables are higher than the p-values of the other three conjoint variables.

The respondents of the experiment who indicated to understand what was shown in the algorithm registers (Q11) showed a more positive trust rating. When looking at the education level of this group, 24 to 33 percent of each level group belongs to this group. The group that indicated to find it difficult

to make decisions about their trust in government decisions also has a reasonably high coefficient (and a p-value that provides moderate evidence).

There is strong evidence for the negative coefficient of the variable age; the older the respondent, the lower the trust rating. Further, men show a lower trust rating, as was already predicated in the literature. Education level goes against its expected outcome (predicated in literature) with a negative coefficient. Nonetheless, evidence for this is weak. Further, there is very strong evidence for the positive coefficient for the variable about trust in the central government. Clearly, the higher the trust of respondents in the central government, the more positive the effect. This is also reflected in the trust rating of local authorities. Further, the variable about respondents' experience with the functioning of algorithms is positive but small and has little to no evidence.

5.2.3 Part-worth and Importance

The coefficients represent (by dummy coding) the part-worth of the attribute levels. The part-worth utility range is divided by the total valuation to determine the relative importance (see table 5.4). This shows the impact of the variation in levels of the attributes. Table 5.5 shows that the variation in the operation attribute has the strongest influence on the valuation and the technology the lowest for the respondent group of this study. It is, therefore, crucial for this group of respondents to show clear information about the operation in the register.

Table 5.4: Variable estimates (attribute and levels)

Attribute	Attribute level	Unstandardized coefficient B	Significance	Gradual notion of evidence
	(Constant)	3.029	< 0.001	
Intention	Legal_basis	0.056	0.366	Little or no
	Impact	0.099	0.109	Little or no
	Proportionality	0		
Operation	Human_interference	0.104	0.092	Weak
	Risks	- 0.186	0.003	Strong
	Detailed_description	0		
Technology	Methods_models	0.020	0.742	Little or no
	Source_data	0.051	0.411	Little or no
	Source_code	0		

Table 5.5: Part-worth utility and importance for the respondent group of this study

Attribute	Lowest part-worth utility	Highest part-worth utility	Part-worth utility range	Relative importance
Intention	0	0.099	0.099	30%
Operation	0	- 0.186	0.186	55%
Technology	0	0.051	0.051	15%

5.2.4 Holdout Question

The sum of the components of the holdout question (constant + *impact* + *human interference* + *source code*) gives a value of 3.232 (see table 5.3). This value is 0.020 lower than the average entered value of 3.252. Further, the percentage difference between the two is 0.062%. This is lower than the deviations between the predicted and naive values of the conjoint questions included in the regression. These have a range of 0.090 to 1.300% deviation. Therefore, this test of the model's predictive ability confirms the model's validity.

5.2.5 Feedback Question

On the closing question of part one (Q11) about understanding the survey and register, respondents could also indicate what they thought with the 'other' option. Six respondents used this option (see appendix C). This contained two recurring themes:

1. My trust in government decisions is not or only very slightly determined by an algorithm register and/or is mainly based on the expertise of the person who controls the algorithms or how they are handled.
2. The texts were tough and complicated to read and understand (high level), or the context was not clear enough.

5.2.6 Control Questions

Three control questions were asked at the end of the survey. These questions were about the general trust of the respondents in the central and local government and the respondents' proficiency with algorithms. Table 5.2 shows that the first two questions affect the trust rating and thus influence the relationship between the dependent and the independent variable. Table 5.6 reveals that the largest group of respondents has medium to high trust in the government. It also shows a bigger group of respondents who have a lot of trust in the central government compared to the local government. Further, it shows that for both questions, there are two responses for a rating of one. This comes from three respondents, as one chose one for both questions. Further, it shows that there are two responses for a rating of one for both questions. These ratings come from three respondents, as one chose one for both questions. These respondents also gave higher ratings to the registers and scored an average of 2.96, similar to the general average. This contrasts with the group which gave a rating of five to the questions, scoring higher than the general average, with a score of 3.69.

Table 5.6: Number of respondents per rating (Q15 and Q16)

Rating	**Q15** (nr. of respondents)	**Q16** (nr. of respondents)
1	2	2
2	11	10
3	59	74
4	56	44
5	3	1

5.2.7 Multicollinearity and Interaction

Although the conjoint part is orthogonally constructed (no correlations between the attributes), correlations can be found between the other variables. The fact that some of these variables are dummy coded has no consequence for modeling interactions between attributes and other variables. It is important to look at the relationships between two or more predictors and specifically high correlations.

In the analysis, some correlations can be seen between the different dummies of question 11. This is expected and does not indicate multicollinearity. Furthermore, experience with algorithms has somewhat higher correlations with DURDC (-0.300), age (-0.416), and education level (0.375). The higher a respondent scores on algorithm proficiency, the lower the chance that the person answered question 11 that they do not understand the registers and the lower the chance that they belong to one of the older age groups. In addition, the chance is greater that the respondent has a higher level of education. It was decided not to do anything with these higher correlations as the effect of algorithm proficiency is small and has little to no evidence. The only variables with a high correlation are trust in the central government and trust in the lower government (0.525). These two continuous variables seem to have more to do with each other than emerged in the literature (the Dutch have little trust in the central government but relatively high in lower governments).

6. Focus Group Results

As indicated in section 4.5, a focus group of eight digital transition consultants with junior to senior positions and different educational backgrounds and expertise is consulted. The session consisted of three parts and took 45 minutes in total. After the panel was informed through a presentation of the choices made in the graduation process up to that point, it concluded with five findings from the results:

- Showing an overview of the anticipated risks has a negative effect on citizens' trust.
- The attribute operation has the greatest relative importance for the respondent group of this study, and the attribute technology has the smallest.
- Respondents who indicated that they did not (really) understand the algorithm registers gave a lower trust rating (and qualitative responses indicated that some respondents found the material complicated to read and understand).
- The higher the trust in the government, the higher the trust rating.
- Algorithm knowledge has little or no influence on the trust rating.

Subsequently, the experts were asked to answer a statement and two open questions through Mentimeter individually, after which they were treated centrally. The statement was about whether governments should be fully transparent, even if this has a negative impact on citizens' trust. The use of this statement was chosen to warm up those present and to start a discussion. After completing the Mentimeter, they were asked who and why they had filled in one or five. Ultimately, the goal was to jointly discuss how governments should deal with this and how policymakers can use the results. The first open question asked to what extent the insights obtained are useful for policymakers and other stakeholders. The second asked how governments can ensure that the average Dutch person also benefits from an algorithm register (or if they should not want that at all). It was decided to ask these open questions to continue the conversation that started from the statement.

6.1 Outcome of the Focus Group

This part of the analysis will draw and compare the discussion results with similar themes. It will emphasize whether it concerns individual opinions or group consensus. Furthermore, there is a specific focus on usability for governments and the consequences and validation of the survey results. The original Dutch results can be found in appendix E.

In table 6.1, the results of the Mentimeter statement can be found. The statement addressed the question of whether governments should be fully transparent, even when this has negative consequences for citizens' trust. While two experts believed that governments should strive for total transparency, and one strongly disagreed, the rest were more nuanced. They indicated that how governments are transparent is very important (since you want to prevent unrest). For this, they point to the ethical consequences of algorithms and people's emotions that can result from them. Further, they indicated that governments have the task of explaining, but that does not mean they always have to be completely transparent and, thereby, always show all indicators. Making it understandable is more critical; preconditions must always be clear, and verbatim explanations (in accessible language) are important.

Table 6.1: Raw response Mentimeter statement 1: *Governments must be fully transparent, even when this has a negative impact on citizens' trust*

1 (strongly disagree)	2	3	4	5 (strongly agree)
1	4	1	0	2

In table 6.2, the results of the first Mentimeter question can be found. It was asked to what extent the obtained insights were useful for policymakers and other stakeholders. Three points can be filtered from the answers and the discussion that followed. The first point is about the purpose of the register. Is the purpose of the register increasing citizen trust or offering (full) transparency? The focus group indicated that when that is clear, a discussion can be held about the usefulness of a register (based on the results of this research). The second point is about the set-up of the register. The experts seize on the importance of the operation attribute and the minor importance of the technical attribute. However, they do see the possible influence of the type of data used and the use of the algorithm. Thirdly, they indicate that the form of presentation of the findings to policymakers will be important. They indicate that the attributes must be concrete enough for policymakers and could be elaborated in scenarios. It is wise to provide guidelines that policymakers can use.

Table 6.2: Raw response Mentimeter question 1: *To what extent are the obtained insights useful for policymakers and other stakeholders?*

Useful provided that insights do not automatically lead to decisions
More transparency does not always lead to more trust = interesting!!
Starts the conversation about the usefulness of algorithm registers and the degree of transparency.
Useful: it indicates what is important to people, e.g., that information about the operation attribute has an important effect on trust
Very usable but not in its current form. A synthesis and then guidelines for 'how to use these insights' is, in my opinion, essential.
Useful for the choices you make when setting up an algorithm register
The negative effect of foreseen risks: indicates that transparency is not always desirable. This may mean that although it is good that it can be explained (decision-making process), this should not always be done by default
Shows that real technical understanding is not necessarily necessary for humans as long as the preconditions (or another term) can be explained
I think it depends on the type of data used and the use of the algorithm. So, for example, is it about forecasting fraud or predicting water use? I think the amount of information you provide will be useful
It is important to make the various attributes concrete enough for policymakers; how they can use them for stakeholder confidence.

In table 6.3, the results of the second Mentimeter question can be found. It was asked how governments can ensure that the average Dutch person also benefits from an algorithm register (or should governments not want that at all). Two points can be filtered from the answers and the discussion that followed. The first point is the shape of the register. It is indicated that it can be visually supported, that it must use clear and easy language, that there must be no information overload, and that different registers must be drawn up uniformly. The second point is the interaction of governments with citizens. It is indicated that co-creation can offer opportunities, starting a conversation with citizens is vital, and explaining why is essential. However, the limit of comprehensibility is also pointed out, followed by the warning that a lack of understanding is not good for trust. Lastly, they emphasize the importance of reflexivity. Reflexivity is the ability to learn from previous behavior and to arrive at new effective behavior. The learning citizen is unpredictable. Governments must, therefore, constantly respond to new circumstances, as policy and implementation will always diminish in strength. This also applies the other way around: citizens must learn how to deal with new government rules and policies repeatedly (Stolk et al., 2021).

Table 6.3: Raw response Mentimeter question 2: *How can governments ensure that the average Dutch person also benefits from an algorithm register, or is that something they should not want?*

Do not think that the average Dutch person is interested in that. But otherwise, perhaps clarify with a visualization tool
Explain in clear language what the organization does with an algorithm and what use it has for citizens and entrepreneurs.
Be open to co-creation with citizens and entrepreneurs to make algorithms more human-friendly.
I do not think you have to. It must be transparent if you want it, but more importantly that people with expertise can see whether it is correct (but then from the outside, so controlling)
To this end, governments should mainly enter into dialogue with (representatives of) the average Dutch population
I do not think the government should want that; there is a limit to making substantive domains understandable. On the other hand, for specialists (e.g., bits for freedom) it must indeed be imitable.
Explaining why algorithms are used; otherwise, people will have no understanding at all, let alone trust
Easy language use. Agree on the algorithm definition and what kind of systems it covers. Not taking in an overload of information and systems, how do you see the forest for the trees?
Ensure that the various existing algorithm registers are drawn up uniformly. In addition, make it easy to reach and accessible if 'the average Dutchman' wants to see it.
Governments must learn to be transparent about algorithm use as the use will only increase (is my assumption)

6.2 Expert Recommendations

The response to the first Mentimeter question (see table 6.2) that the insights of the conjoint analysis need synthesis and guidelines about their use also apply to recommendations of the focus group. The recommendations must be made explicit, and their meaning and impact must be translated into practice. Ultimately, this will have to be further elaborated, with a keen eye for the added (social) value and the reality in which the policy workers operate.

The panel's recommendations can be divided into a why, how, and what level. The first level is about the purpose and thinking behind the registry. The panel indicates that it is important to talk about the why: why should there be an algorithm register, why is it useful, and why would governmental organizations want it? This discussion should be held internally within governments, as openness requires a different basic attitude when making and implementing policy. In addition, they have to think about what the algorithm register should deliver, for example, what it does with public value or what the impact is for specific target groups. The panel indicates that clarity about the why question ensures that it can be better explained why certain choices are made. Why related topics covered in the session are:

- The majority indicates that governments should opt for explainability rather than full transparency: Politicians should discuss this as it requires an entirely different attitude from governments and input from the algorithm register. In addition, the national government should coordinate to ensure that (for the main features) a single policy is pursued and citizens are not unnecessarily confused.
- There is a limit to making content domains understandable: It is important to understand better what can be made understandable to citizens. Ideally, this will be periodically evaluated, preferably by a changing citizen panel.

The second level is about the blocks with which a register is filled, with whom, and how to collaborate with the others. This how level has an external character and involves legitimacy. Having a dialogue with citizens can help to understand where their wishes, ideas, pain points, and requests lie. In doing so, it is important to involve citizens in the entire procedure, both in the creation and the evaluation. However, not only the usual suspects must be involved in this dialogue. How related topics covered in the session are:

- Engage in co-creation with citizens: This is a form of collaboration in which all participants influence the process and its result. It goes beyond having a dialogue and engages and reflects in collaboration with citizens from the start. This active approach looks at the people involved and their value and works with them in the translation. Nonetheless, it is an iterative process, so staying connected with citizens is important to improve and refine continuously. Further, co-creation must be well-prepared and organized; governments must have answers to the why-level questions, set preconditions, and a desired goal.
- Avoid information overload: This aligns with the elaboration of the why point regarding the limit to making content domains understandable. Omit unnecessary information and create clarity.
- Explain why an algorithm is used: This elaborates the why level.
- Ensure uniformity across different registers: A standard/national framework must be used, describing what governments must do and where they may deviate from if necessary. Again, this is a call to the government to coordinate.

The last level is about the what. This involves looking precisely at what should and should not be included in a register and what that should look like. This involves the actual filling of the register. What related topics covered in the session are:

- Use clear and easy language in the registers: Several possible implementations exist; for example, everything can be written in language level B, or minor adjustments can be made to the website, such as displaying a slider to adjust the font size. Conducting a dialogue with citizens and/or co-creation provides opportunities for elaboration.
- Make use of visualizations

7. Discussion and Policy Recommendations

This chapter discusses the results of this study. First, the main findings are discussed. Secondly, the limitations are presented, and lastly, recommendations for policymakers are made.

7.1 Main Findings

Despite the often high value put on transparency and interest among scholars and governments, there needs to be more clarity about the effect of transparency on citizens' trust in governments. This research aims to explore the possible explanation variations of the registers to see if it affects citizens' trust and advise governments on how to use an algorithm registry best. It, thereby, tries to fill the lack of knowledge. In this way, an attempt is made to contribute to science and advise government policymakers to support the current course of governments. A combination of grey and academic literature was used as input for the experiment, which ultimately provided the research findings. The results revealed the effects of the chosen attributes and attribute levels, general trust in governments, and understandability for citizens.

7.1.1 Effect of Attributes and Attribute Levels

The experiment results show that the different attribute (algorithm register characteristics described in chapter 3) levels affect the trust rating of citizens (see table 5.3). There is little to no evidence for most levels indicating that this research does not find sufficient evidence for a (linear) relationship between the dependent and independent variables. The only level with strong evidence is the *overview of the foreseen risks*. This level also has the most substantial effect and is the only negatively oriented one. The latter is an exciting finding, showing that more transparency does not always lead to a higher trust rating. These findings hence answer the third sub-question: “what positive and negative effects do different characteristics of algorithm registers have on citizens' trust in government decisions?” Although it needs further research, this exploratory study provides evidence that more transparency does not always lead to more trust. In addition, with weak evidence, the attribute level *human interference* shows a positive effect. The respondent group in this study also prefers the attribute of these two levels (operation) over the other two; it has the highest relative importance, in contrast to the technology attribute, which has the lowest (see table 5.5).

7.1.2 Effect of General Trust in Governments

Furthermore, the results of this experiment show that the general trust in governments influences the trust rating of the algorithm registers (see table 5.2). There is a stronger effect on trust in the central government than in the local. The results of the respondents from this study do not reflect the indicated (in various polls and studies) low trust in national politics and higher trust in the municipal authorities. Although both are not doing badly, the general trust in the central government is slightly higher in this research. Further, as indicated in section 5.2.7, these two variables highly correlate. This value, however, does not cause any concern, as it does not come close to the threshold value that serves as an indicator for multicollinearity, even though different heights can be found in the literature.

In addition, the literature indicates that a distinction between cynics, skeptics, and credulous citizens can be made and that an active critical attitude of citizens is desirable (Norris, 2022). Given the results, the first group is suspected to be missing in this study. Even though these are extremely small groups, the conjoint results are examined by looking at the general trust questions (Q15 and Q16). Section 5.2.6 reveals that the respondents that gave both questions a rating of one scored similarly to the general average. What is also notable in Table 5.6 is that, contrary to what emerged in the literature, the largest group of respondents has medium to high trust in the central government. The respondent selection may have positively affected the estimate of the average trust rating as this influences the relationship between the dependent and the independent variable. Further, despite being speculative, the 72 respondents that indicated in question 11 that they understood well what was shown in the

algorithm registers but found it difficult to make choices about their trust in government decisions could be regarded as critical citizens. This group also has a reasonably high positive coefficient (and a p-value that provides moderate evidence). Therefore, it is desirable that the respondent understands the register, but not necessarily harmful if they find it quite challenging to form an opinion.

One of the recurring themes in the qualitative answers from the experiment emphasizes that the respondents' trust in government decisions is not or only very slightly determined by an algorithm register and is mainly based on the expertise of the person who controls the algorithms or how they are handled (see appendix C). The low explained variance of the independent variables in this study supports this (see appendix D). Therefore, the algorithm register must be seen as part of the solution to solving the loss of citizens' trust in government decision-making. Nevertheless, an effective design remains meaningful.

7.1.3 Effect of Understandability

Finally, the registers' understandability for the respondents is notable. Although many other reasons can be thought of for opening the survey but not (completely) answering, a clear finding can be made from the results of question 11. In this question, 35 respondents indicated that they did not really understand what was shown in the algorithm registers and therefore found it difficult to make choices about their trust in government decisions. This shows to have a negative effect on the trust rating of the algorithm registers (see table 5.2). Confusion and ambiguity, therefore, have a negative effect. In addition, the second recurring theme in the qualitative answers shows that respondents found that the texts were tough and complicated to read and understand or that the context was not clear enough (see appendix C).

This also emerged in the focus group. The experts pointed to the limit to making content domains understandable and the danger of information overload (also mentioned in the literature). In addition, the majority was in favor of explainability over full transparency. Given section 7.1.1, it is wise for the government to focus on this. Uniformity across registers, the use of clear and easy language in the registers, and the use of visualizations can help here. The operation part needs to be explained clearly to citizens. The panel also emphasized this as they stated that it needs to be explained why an algorithm is used.

The results of question 17 show that 20% of the respondents indicate that they have no experience with algorithms. The literature also often talks about demystifying algorithms. The Netherlands Scientific Council for Government Policy indicates that the image of algorithms is distorted and that a realistic image helps avoid disappointments and ensures that citizens dare to embrace the good sides of technology (*Artificiële Intelligentie*, n.d.). In addition to its informative role, an algorithm register can enhance citizens' knowledge of algorithms.

7.2 Impacts of Limitations on Results

Choices throughout the research process have caused limitations that can impact the results. This section will discuss these limitations based on the following division: limitations caused by the literature research, experiment, and analysis.

7.2.1 Limitations of Literature Research

Choices in the (grey) literature research may have led to limitations. This research looked at existing characteristics of governmental algorithm registers and may therefore be incomplete. Only the chosen attributes and levels are tested, but it is possible that an influential characteristic is not included in this study.

7.2.2 Limitations of Experiment

The experiment's limitations are divided into the following subparts: limitations of the experiment itself, the respondent group, and general limitations.

There are several choices in the conjoint part of the experiment that entailed limitations. For example, the choice to use only one example algorithm can influence the results. The reason for this choice is also the limitation that it details; the choice of algorithm can influence the results. This was also confirmed in the focus group, where the consequences of people's emotions were highlighted. The importance of choices in text and visualization was also highlighted. Although current government registers have been used as an example, and efforts have been made to keep the language accessible, the possible impact of this cannot be excluded. The importance of choices in text and visualization is highlighted in sections 3.2 and 4.2.3. Variations in text or visualization may have led to different results, especially given the currently still noteworthy group who have indicated that they have had difficulty with this. Furthermore, the choice to work with an orthogonal fractional factorial design limits the analysis since it does not allow the analysis of the interaction effects. It will not be unexpected if the chosen attribute levels will influence each other, for example, by generating a particular effect on trust when combined in a register. The subjectivity of the rating-based conjoint analysis scale also has a limitation, as this can distort the results. In addition, a learning effect can occur with the respondents while completing the survey. In the case of the first conjoint question, everything is still new, but this will increasingly decline for subsequent cases. This is partially resolved with the ability to go back and the inclusion of a warm-up question, but it will likely still occur. Further, The survey is designed such that levels maintain a consistent place in the register, but this means that the same ones are always shown first and also last.

The respondent group, and thus the recruitment process, also has limitations. Although the survey had an open entry, the researcher mainly approached his personal circle and partly worked with targeted recruiting. It cannot be said that no selectivity has crept into the recruitment process of respondents. Therefore, the respondent group in this study cannot be seen as a random selection. Section 5.1.1 endorses this deviation between the demographic characteristics of the respondent group and the Dutch population. Table 5.2 shows that age and men (dummy) have low p-values. For this reason, they had a negative effect on the estimate of the average trust rating. Education level also has a negative effect but has a higher p-value. Further, the analysis showed that the results of the respondents also do not reflect the indicated low trust in national politics and higher trust in the municipal authorities. This gives a limitation as the results of target variables can also be influenced. In addition, the analysis shows that the size of the subgroups often needs to be larger. Lastly, online distribution can be a limitation as it can be difficult for individuals not well-versed in technology. Nevertheless, the algorithm registers are also only available digitally.

The moment of questioning may have had consequences for the results. For example, the Dutch Central Bank indicates that the trust of the Dutch population in national politics has fallen from 42% in the spring of 2021 to 22% in the autumn of 2022 (*Lager Vertrouwen in Centrale Bank En Overheid Door Hoge Inflatie*, 2023). Trust and, thus, the response might have been influenced by the current state of affairs in the Netherlands and the respondent's state. Social and political developments, or gloom due to the fact that the responses were collected in part of December, may have influenced the results.

7.2.3 Limitations of Analysis

Limitations in the analysis are divided into the following subparts: limitations that became clear during the analysis and choices in the analysis that resulted in limitations.

Although not unexpected, the small R square limits the possibilities of the analysis. As described in section 5.2, this is partly caused by the fact that other, besides linear, relationships also play a role.

Therefore, the chosen set-up of the analysis limits the possible higher potential of the data. In addition, the limiting size of the subgroups, as described above, is an example of limitations unimagined in the analysis. This may have resulted in the need for more evidence for a large part of the findings.

The choice not to go along with the dichotomization of evidence, as described in section 5.2, also has consequences and should, as (Amrhein et al., 2019) indicate, not be considered a panacea. They, thereby, note that it could also introduce new bad practices. Furthermore, the choice of the current set-up of the experiment has meant that certain things cannot be analyzed. For example, the dependent variables cannot be changed afterward to look at specific clusters.

7.3 Recommendations for Policymakers

The most important finding of this research is that an algorithm register can adversely affect citizens' trust in government decisions. While the literature is not unilateral about the current course of governments in which they have invested in trust through transparency, this research provides insights into the effects of certain characteristics on citizens' trust in government decisions. Full transparency does not result in the highest trust. Therefore, it deserves sufficient consideration. The advice on how governments can use an algorithm registry best depends on their purpose. For this reason, **a discussion within governments about the purpose of algorithm registers is desirable to formulate its goal**. Is the goal full transparency, the highest amount of trust, or something else? This point is confirmed in the focus group, which also indicated that clarity within governments about the purpose and reasoning behind the registers ensures that it can be better explained why certain choices are made. In addition, it is in line with the letter from the State Secretary (van Huffelen, 2022b) in which she indicates that it is essential to determine the registers' scope and the algorithms to be included in them before making the register mandatory for governments.

Given the possibility of negative effects, it is wise to check whether the application of the measure has the intended effect and whether unintended side effects occur. **Governments should, therefore, evaluate algorithm registers periodically**.

In addition to the result that more transparency does not always lead to more trust, the research also shows that certain attribute levels have little to no effect, and others, for example, *human interference* have a positive effect. **To appropriately design a register, it is therefore wise for governments to further expand on this exploratory study**.

The results confirm the claim from the literature that citizens' attitude toward the government influences citizens' trust in government decisions; higher general trust in governments positively influences the trust rating of the algorithm registers. **Therefore, ensuring a higher general trust is also beneficial for trust in algorithmic government decisions**.

In addition to a discussion within governments, the Netherlands Scientific Council for Government Policy (Prins et al., 2021) indicates that the establishment of algorithm registers only has added value if the government also initiates a discussion about algorithm use with those who deal with it. The focus group also indicated that starting a conversation with citizens is vital. Governments should have an active approach and involve citizens in the entire procedure, from the creation to the evaluation. It is an iterative process, so staying connected with citizens is important to improve and refine continuously. This also ties in with the three-aspect distinction of Esaiasson et al. (2015): listening, adapting, and explaining. The first two are essential to be able to move with human limitations. **Governments should not only focus on explaining their algorithms but also on a conversation with citizens about the use of these algorithms and, thereby, listen and adapt**.

The literature, the experiment results, and the experts emphasize the importance of the quality and comprehensibility of the information provided. For example, the Netherlands Scientific Council for Government Policy indicates that society's ability to work with the information provided is important (Prins et al., 2021) and Margetts (2006) warns of the possible negative consequences of opaque or fuzzy transparency. It also recommends basing policy on a realistic assessment of ordinary citizens' thinking and acting capacity (*Samenvatting WRR-Rapport 97 Weten Is Nog Geen Doen. Een Realistisch Perspectief Op Redzaamheid*, 2017). This ability to weigh information and make rational choices is often more limiting than traditionally thought (Kahneman, 2011). In ad(Kahneman, 2011). In addition, modern skills such as good use of information and communication technology go beyond citizens' standard capabilities. The experiment results also show that confusion and ambiguity have a negative effect. Lastly, the digital experts pointed out the limit to making content domains understandable and the danger of information overload. They make three practical recommendations: uniformity across registers, clear and easy language in the registers, and visualizations. For clear and easy language, governments can follow the government's own recommended guidelines (*Taalniveau B1*, n.d.). This contains practical tips for comprehensible web texts, for example, writing at a lower language level (B1). Characteristics of texts at language level B1 are clear titles and subheadings, active writing style with examples, simple words everyone knows, and short and clear sentences. **Governments must be aware of the information they provide and ensure it is of good quality and comprehensibility. They must make a realistic assessment of ordinary citizens' thinking and acting capacity to avoid crossing their border of comprehensibility and avoid confusion and opacity**. Further, **the national government should coordinate and create a national framework describing what governments must do and where they may deviate to ensure uniformity across different registers and that citizens are not unnecessarily confused.**

Algorithm registering characteristics influence citizens' trust in government decisions. However, a register only slightly affects citizens' trust; many other factors influence citizens' trust in government decisions. Therefore, **governments must also take other steps outside of creating algorithm registers**.

8. Conclusion and Recommendations for Future Research

In this chapter, a conclusion is drawn from the research results. First, an answer to the research question is formulated, after which the scientific contribution is stated and recommendations for future research are made.

8.1 Answer to Research Question

The problem statement of this research concerns the lack of knowledge about how governments can best explain their algorithmic decisions in algorithm registers. Although governments are currently taking action on the fact that algorithmic decisions must be made explainable to provide trust in the decision, little research has been done into the explainability of algorithmic decisions (in combination with the register) and their effect on citizens' trust. This section will discuss the answers to the sub-questions and will conclude by answering the main research question as formulated in chapter 1:

"What are the positive and negative effects of governmental algorithm registers on citizens' trust in government decisions?"

The first sub-question is: *"What are the (intended) characteristics of Dutch governmental algorithm registers?"* The answer to this sub-question defines the current approach for algorithm registers of governments in the Netherlands and the reasons behind the choices. A longlist of characteristics (see table 3.1) is made with input from a document study with grey literature; for example, giving the algorithm type or impact on citizens. The grey literature gave a more cohesive understanding of governments' current implementation and thoughts behind the algorithm registers. In addition, it provided insights into the range of components that can be made transparent, ranging from technical data to the purpose of use. The proposal for the European artificial intelligence act also made a vital contribution as it described the mandatory characteristics; for example, giving a short description in which the role of the algorithm is described at a high level. This information is not tested in this study and is visible in table 3.2.

The second sub-question is: *"What factors influence citizens" trust in governments' decisions?"* This sub-question is devoted to the relationship between trust and explanation. Various factors are found in the literature. Firstly, the impact of citizens' background variables, sex, political preference, education, income, and age, are indicated as important background variables that might affect trust in government. However, scholars point to the complexity and interrelatedness of possible causes, and there is no complete agreement about the influence. Secondly, the information needs of citizens. This shows the need for information about algorithms, the used information sources, the handling of privacy, the inclusion of human control in the process, and why the algorithm is used. Thirdly, the citizens are divided by their attitude toward governments: the credulous, the cynics, and the skeptics. Literature elaborates why an (active) critical attitude is desirable from a democratic point of view and, therefore, the more skeptical citizen is desired. Further, it indicated that perceived trustworthiness cannot be seen as an objective quality of government but often coincides with good governance. Fourthly, the different types of transparency are also considered. This has been investigated despite the need for more academic support for what effects on trust can be attributed to transparency. It has provided insight into the range of possibilities ranging from the openness of the algorithm's source code to explanations regarding the processes that lead to the decisions such that they are interpretable by humans. Lastly, e-government research gave insight into the distinction between process-based and institutional-based trust, indicating how to improve it, and presented four factors influencing citizens to trust e-government. These factors influencing citizens' trust in governments' decisions are used to help select the attribute and attribute levels from the longlist.

The third sub-question: *"What positive and negative effects do different characteristics of algorithm registers have on citizens' trust in government decisions?"* This sub-question is devoted to the experiment itself and analyses the effect of different characteristics. The attributes intention, operation, and technology are chosen with the output of sub-question one and two. The first includes the levels: *legal basis, impact,* and *proportionality*; the second: *human interference, risks,* and *detailed description*; and the last: *methods and models, source data,* and *source code*. The conjoint analysis is used to examine the characteristics of alternative registers variations. Each register variation is composed of a set of attribute levels that are the characteristics of the algorithm registers. The ratings are analyzed using multiple (linear) regression. The regression provides insight into the explained variance of the used variables, the utilities of each attribute level, and the importance of an attribute. The results show that the coefficient of *risks* has a negative value. Showing an overview of the anticipated risks in the register results in lower trust in government decisions, thereby showing that additional transparency can also have negative effects. All the other coefficients are positive. However, the p-value of *legal basis, methods and models*, and *source data* are higher than the p-value of the other three conjoint variables.

The focus group panel emphasizes that governments must better understand what can be made understandable to citizens. Clear and easy language and visualizations should be used in the registers. Omit unnecessary information and create clarity to avoid information overload. Involving citizens in the entire procedure can help to understand where their wishes, ideas, pain points, and requests lie. Nonetheless, it is an iterative process, so staying connected with citizens is essential to improve and refine continuously. In addition, the national government should coordinate to ensure that a single policy is pursued and citizens are not unnecessarily confused. This coordination also ensures uniformity across different registers.

It can be concluded from this study that additional transparency can also have negative effects, as the results show that displaying an *overview of the anticipated risks* in an algorithm register has a negative effect on citizens' trust in government decisions. The attribute levels' *legal basis, impact, human interference, methods and models,* and *source data* have a positive effect. However, the p-value of these results only provides weak to no evidence. Therefore, an appropriate design of governmental algorithm registers is crucial, as they have positive and negative effects on citizens' trust in government decisions. Further, it can be concluded for this group of respondents that showing clear information about the *operation* in the register is crucial, as the results show that the variation in the operation attribute has the strongest influence on the valuation. The *technology* attribute also has the lowest relative importance for the respondent group of this study.

8.2 Scientific Contribution

This exploratory and empirical research contributes to filling the existing knowledge gap and hence responds to the lack of scientific knowledge about the effects of transparency on trust. It specifically investigates the effects of transparency on citizens' trust in algorithmic decisions and takes a step in researching how best to explain algorithmic decisions. In doing so, it responds to the described need for more empirical studies, helps to clarify the link between explainability and trust in algorithmic decisions, and researches explicitly for the public sector.

The results show that full transparency does not ensure the highest level of trust because the transparency of certain elements can also have a negative effect on citizens' trust. This aligns with some scholars that emphasize the negative effects of transparency and state that there are circumstances in which it is better to avoid transparency. However, the results also show the positive effects of transparency. Although complete optimism is not the case, it is unnecessary to side with the pessimist immediately. The limits to people's ability to process information indicated by the pessimists

in the academic literature were also emphasized in the focus group and gray literature. Furthermore, the results confirm that opaque or fuzzy transparency can have negative consequences.

8.3 Recommendations for Future Research

Due to the explorative approach of this study, both the relationships with strong evidence and the relationships with little to no evidence will require more research. An example of this is the relative importance of the attributes. While this study showed that the operation attribute was of great relative importance for the surveyed respondents and the technology attribute was of minor importance, additional research needs to be performed. Working with a larger and more representative group of respondents will be necessary. The attribute levels next to the *overview of the foreseen risks* also benefit from more substantiation. Further, more research can be done on other characteristics of algorithm registers, as this research only worked with the shortlist. This also applies to the inclusion of several example algorithms. Further research can be performed with different example algorithms to provide insight into the impact and possible changes in the effects caused by the variation.

Further, it is expected that, in addition to linear, other relationships also play a role, considering the model's relatively low explained proportion. Linear regression is one of many possibilities; therefore, the data's potential might be higher. For this reason, the continuous variables in table 5.2 have been controlled for curve linearity. Although there still is little or no evidence for the results of general trust and algorithm proficiency according to this relationship, there is more evidence for a non-linear correlation than a linear one. Therefore, the data may hold more information than is currently presented in the results. This can be combined with the (above-described) additional research with a larger and more representative group of respondents.

Further, the following recommendations for future research are made based on the discussion in the previous chapter:

- Perform research with a full-factorial design (instead of an orthogonal one) to show the possible interaction effects between the attribute levels.
- Perform research into the different clusters in the respondent group or research using standardization. As a first example, in-depth research into cynics, skeptics, and credulous citizens or examining subgroups using latent class analysis based on non-conjunct questions can be performed. Secondly, research that distinguishes the groups that give relatively high and relatively low ratings to the registers can be performed. One respondent may be positive about a variation and give a rating of three; the other may be negative but give the same rating. From the respondent group of this study, a group of 30 respondents who have only entered ratings between one and three can be filtered. Besides the fact that this group is too small for analysis, the set-up of this study is also not made to analyze this difference. The dependent variable cannot be edited afterward.
- Perform research that looks with a completely different set-up at the content of the algorithm register. For example, co-creating the registers with the first part of the respondents, followed by research of the created register with the second part of the respondent group. This way, more emphasis could be placed on making the register understandable.
- Perform research that examines the panel effect of the conjoint questions. Whether and to what extent a learning effect occurs when completing the conjoint questions in the survey.
- Perform research with a broader scope, for example, including algorithm supervision. A combination of transparency and proper supervision could reinforce each other; citizens have a good insight into algorithm use through transparency and can report complaints to the regulator.

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Appendices

Appendix A: Survey design

1

Openingsverklaring

Overheden geven steeds meer openheid over hun gebruik van algoritmes via open algoritmeregisters. Zo'n algoritmeregister is een overzicht van de algoritmes die worden gebruikt bij dienstverlening en geeft informatie over de bedoeling en werking van het algoritme. Een voorbeeld is te vinden op https://algorithmregister.amsterdam.nl/.

De enquête die u zo gaat invullen is onderdeel van een afstudeeronderzoek naar het vertrouwen van burgers in overheidsbeslissingen bij het gebruik van open algoritmeregisters. Het wordt uitgevoerd door Jip de Meijer van de TU Delft in samenwerking met Berenschot Groep B.V. en duurt ongeveer 10 minuten.

Privacybescherming en dataopslag

Er zullen enkele persoonlijke gegevens worden verzameld, waaronder leeftijd, geslacht en opleidingsniveau. Zoals bij elke online activiteit, is het risico van een inbreuk altijd mogelijk. Echter zullen uw antwoorden in dit onderzoek naar mijn beste vermogen vertrouwelijk blijven. De risico's worden geminimaliseerd door de enquête volledig te anonimiseren. De persoonlijksgegevens worden alleen opgeslagen op de beveiligde projectdata opslag van de TU Delft en zijn alleen toegankelijk voor de onderzoeker en begeleiders van de TU Delft. Daarnaast zullen deze gegevens binnen zes maanden na afronding van het onderzoek worden verwijderd. De (niet-persoonlijke) geaggregeerde gegevens worden gebruikt voor mijn afstudeeronderzoek aan de TU Delft en worden openbaar gemaakt op repository.tudelft.nl.

Uw deelname aan dit onderzoek is geheel vrijwillig en u kunt zich op elk moment terugtrekken. Verder staat het u vrij om eventueel vragen over te slaan.

Door verder te gaan naar de online enquête stemt u in met bovenstaande verklaring.

Jip de Meijer
j.b.demeijer@student.tudelft.nl.

2

Enquête instructie

Deze online enquête bestaat uit twee delen. In het eerste deel wordt u gevraagd de hoeveelheid vertrouwen die u heeft in de overheidsbeslissing op basis van het weergegeven algoritmeregister uit te spreken. In het tweede deel wordt u gevraagd enkele algemene vragen te beantwoorden. Het is mogelijk om terug te gaan naar reeds ingevulde vragen.

3

Altijd beschikbare informatie

Ik vraag naar uw mening over open algoritmeregisters. U heeft geen voorkennis nodig om deze vragen te beantwoorden. In alle versies van de mogelijke algoritmeregisters zal de volgende informatie beschikbaar zijn:

- naam en contactgegevens van de organisatie (e-mailadres en telefoonnummer) die het algoritme gebruikt
- algoritmenaam
- status
- een korte beschrijving

De afbeelding hieronder toont deze informatie op dezelfde manier als in de rest van de enquête zal worden gedaan. Tussen de lijnen staat steeds één onderdeel met informatie met:

- vetgedrukt bovenaan het betreffende onderdeel
- cursief de beschrijving van de invulling
- onderaan de specifieke invulling voor het gebruikte algoritme

Ondersteuning uitkeringsberekening
Het algoritme wordt gebruikt door gemeente X en stelt op basis van wet- en regelgeving vast of er recht is op een uitkering, welke soort uitkering, de hoogte en de duur.

Organisatie: gemeente X

Naam
De naam die wordt gebruikt om dit algoritme aan te duiden.

Ondersteuning uitkeringsberekening

Organisatie
De volledige naam van de organisatie die verantwoordelijk is voor het inzetten van het algoritme.

Gemeente X

Korte beschrijving
Een korte omschrijving van maximaal 150 karakters waarin de rol van het algoritme op hoog niveau wordt beschreven.

Het algoritme wordt gebruikt door Nederlandse gemeenten en stelt op basis van wet- en regelgeving vast of er recht is op een uitkering, soort uitkering, hoogte en duur.

Toestand
Is het algoritme in ontwikkeling, in gebruik of buiten gebruik?

In gebruik

E-mailadres en telefoonnummer van de contactpersoon
E-mailadres en telefoonnummer van de organisatie of de contactpersoon voor deze registratie.

MunicipalityX@email.nl
0123-456789

4

Opwarmvraag

Dit is een opwarmvraag om te laten zien hoe de vragen eruit gaan zien. Deze vraag heeft geen invloed op de resultaten van dit onderzoek.

Onderstaande informatie zal in deze versie van het register verschijnen bovenop de "altijd beschikbare informatie" getoond op de vorige pagina. Bij het beantwoorden van deze (voorbeeld)vraag gaat het dus om de mogelijke meerwaarde van het weergeven van wettelijke grondslag, risico's en methoden & modellen in het register. Hoewel de inhoud van het register per vraag verandert, blijft het gebruikte algoritme in heel de enquête hetzelfde.

Voorbeeld register

Wettelijke grondslag
Een omschrijving van de wettelijke grondslag voor de inzet van het algoritme, of URL van het formele besluit.

De juridische grondslag is uitvoering van de wettelijke taak Bijstandswet.

Risico's
Een overzicht van de voorziene risico's.

De afdeling Beleid interpreteert de wet- en regelgeving. Bij de automatisering van dit proces zijn de risico's in kaart gebracht. Het systeem wordt bij elke nieuwe vrijgave opnieuw getest. Dagelijks vindt technische en menselijke controle plaats.

Methoden en modellen
Standaardmethoden of modellen die het algoritme gebruikt.

Beslisboom: een statistische methode die (vereenvoudigd) kan worden gezien als een omgekeerde boom waarin de uitkeringsaanvragers op basis van kenmerken van hun gegevens steeds verder wordt opgedeeld, om te komen tot subgroepen waarvan de leden allemaal tot dezelfde categorie behoren. Het geeft de waarschijnlijkheid dat een aanvrager tot een categorie behoort en biedt de gebruiker van het algoritme daarmee inzichten om tot een weloverwogen beslissing te kunnen komen.

Aan de hand van dit register, hoeveel vertrouwen heeft u in overheidsbeslissingen?

- ○ 1. Geen vertrouwen in overheidsbeslissingen
- ○ 2. Weinig vertrouwen in overheidsbeslissingen
- ○ 3. Gemiddeld vertrouwen in overheidsbeslissingen
- ○ 4. Veel vertrouwen in overheidsbeslissingen
- ○ 5. Volledig vertrouwen in overheidsbeslissingen

5

Vanaf dit punt begint het eerste deel van deze online enquête.

6

Register 1

Wettelijke grondslag
Een omschrijving van de wettelijke grondslag voor de inzet van het algoritme, of URL van het formele besluit.

De juridische grondslag is uitvoering van de wettelijke taak Bijstandswet.

Menselijke tussenkomst
Een omschrijving van hoe uitkomsten van het algoritme door een mens gecontroleerd en bijgesteld (kunnen) worden.

Nadat de gehele beslisboom op basis van de ingevoerde gegevens is afgelopen, wordt een signaal afgegeven in de vorm van een betalingsvoorstel. Het algoritme geeft een advies aan de adviseur, besluitvorming is niet geautomatiseerd en de adviseur beslist. De adviseur zal alert zijn om de resultaten te controleren.

Methoden en modellen
Standaardmethoden of modellen die het algoritme gebruikt.

Beslisboom: een statistische methode die (vereenvoudigd) kan worden gezien als een omgekeerde boom waarin de uitkeringsaanvragers op basis van kenmerken van hun gegevens steeds verder wordt opgedeeld, om te komen tot subgroepen waarvan de leden allemaal tot dezelfde categorie behoren. Het geeft de waarschijnlijkheid dat een aanvrager tot een categorie behoort en biedt de gebruiker van het algoritme daarmee inzichten om tot een weloverwogen beslissing te kunnen komen.

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- ○ 3. Gemiddeld vertrouwen in overheidsbeslissingen
- ○ 4. Veel vertrouwen in overheidsbeslissingen

- 5. Volledig vertrouwen in overheidsbeslissingen

7

Register 2

Impact
(1) De impact op burgers van de effecten van het algoritme, (2) onder welke omstandigheden dit gebeurt, en (3) wat de verwachte consequenties daarvan zijn voor het individu en/of de samenleving.

Dit algoritme heeft betrekking op bewoners van gemeente X die een aanvraag doen voor een uitkering of een uitkering ontvangen, bijvoorbeeld voor levensonderhoud. Zij hebben ermee te maken op het moment dat zij een uitkering ontvangen. De uitkomst zal worden gecommuniceerd naar de ontvanger van de uitkering.

Menselijke tussenkomst
Een omschrijving van hoe uitkomsten van het algoritme door een mens gecontroleerd en bijgesteld (kunnen) worden.

Nadat de gehele beslisboom op basis van de ingevoerde gegevens is afgelopen, wordt een signaal afgegeven in de vorm van een betalingsvoorstel. Het algoritme geeft een advies aan de adviseur, besluitvorming is niet geautomatiseerd en de adviseur beslist. De adviseur zal alert zijn om de resultaten te controleren.

Brondata
Een overzicht van de databronnen die gebruikt worden door of bij het maken of trainen van het algoritme.

Gezinssituatie (alleenstaand, gezin met kinderen, koppel met kinderen, eenoudergezin of anders), woonsituatie (zelfstandig of niet-zelfstandig), inkomen, vermogen, persoonlijke gegevens en normgegevens vanuit wet- en regelgeving.

Aan de hand van dit register, hoeveel vertrouwen heeft u in overheidsbeslissingen?

- 1. Geen vertrouwen in overheidsbeslissingen
- 2. Weinig vertrouwen in overheidsbeslissingen
- 3. Gemiddeld vertrouwen in overheidsbeslissingen
- 4. Veel vertrouwen in overheidsbeslissingen
- 5. Volledig vertrouwen in overheidsbeslissingen

8

Register 3

Proportionaliteit
Een afweging van de voor- en nadelen van de inzet van het algoritme en waarom dit redelijk gerechtvaardigd is.

De handmatige opvoer en controle van de uitkeringscomponenten zou een alternatief kunnen zijn. Dit is echter veel werk en vraagt veel kennis van de consulent op het gebied van wet- en regelgeving. Naast dat dit het proces een stuk duurder maakt, zal het ook het risico op fouten vergroten.

Risico's
Een overzicht van de voorziene risico's.

De afdeling Beleid interpreteert de wet- en regelgeving. Bij de automatisering van dit proces zijn de risico's in kaart gebracht. Het systeem wordt bij elke nieuwe vrijgave opnieuw getest. Dagelijks vindt technische en menselijke controle plaats.

Methoden en modellen
Standaardmethoden of modellen die het algoritme gebruikt.

Beslisboom: een statistische methode die (vereenvoudigd) kan worden gezien als een omgekeerde boom waarin de uitkeringsaanvragers op basis van kenmerken van hun gegevens steeds verder wordt opgedeeld, om te komen tot subgroepen waarvan de leden allemaal tot dezelfde categorie behoren. Het geeft de waarschijnlijkheid dat een aanvrager tot een categorie behoort en biedt de gebruiker van het algoritme daarmee inzichten om tot een weloverwogen beslissing te kunnen komen.

Aan de hand van dit register, hoeveel vertrouwen heeft u in overheidsbeslissingen?

- 1. Geen vertrouwen in overheidsbeslissingen
- 2. Weinig vertrouwen in overheidsbeslissingen
- 3. Gemiddeld vertrouwen in overheidsbeslissingen
- 4. Veel vertrouwen in overheidsbeslissingen
- 5. Volledig vertrouwen in overheidsbeslissingen

9

Register 4

Wettelijke grondslag
Een omschrijving van de wettelijke grondslag voor de inzet van het algoritme, of URL van het formele besluit.

De juridische grondslag is uitvoering van de wettelijke taak Bijstandswet.

Risico's
Een overzicht van de voorziene risico's.

De afdeling Beleid interpreteert de wet- en regelgeving. Bij de automatisering van dit proces zijn de risico's in kaart gebracht. Het systeem wordt bij elke nieuwe vrijgave opnieuw getest. Dagelijks vindt technische en menselijke controle plaats.

Brondata
Een overzicht van de databronnen die gebruikt worden door of bij het maken of trainen van het algoritme.

Gezinssituatie (alleenstaand, gezin met kinderen, koppel met kinderen, eenoudergezin of anders), woonsituatie (zelfstandig of niet-zelfstandig), inkomen, vermogen, persoonlijke gegevens en normgegevens vanuit wet- en regelgeving.

Aan de hand van dit register, hoeveel vertrouwen heeft u in overheidsbeslissingen?

- 1. Geen vertrouwen in overheidsbeslissingen
- 2. Weinig vertrouwen in overheidsbeslissingen
- 3. Gemiddeld vertrouwen in overheidsbeslissingen
- 4. Veel vertrouwen in overheidsbeslissingen
- 5. Volledig vertrouwen in overheidsbeslissingen

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Register 5

Proportionaliteit
Een afweging van de voor- en nadelen van de inzet van het algoritme en waarom dit redelijk gerechtvaardigd is.

De handmatige opvoer en controle van de uitkeringscomponenten zou een alternatief kunnen zijn. Dit is echter veel werk en vraagt veel kennis van de consulent op het gebied van wet- en regelgeving. Naast dat dit het proces een stuk duurder maakt, zal het ook het risico op fouten vergroten.

Menselijke tussenkomst
Een omschrijving van hoe uitkomsten van het algoritme door een mens gecontroleerd en bijgesteld (kunnen) worden.

Nadat de gehele beslisboom op basis van de ingevoerde gegevens is afgelopen, wordt een signaal afgegeven in de vorm van een betalingsvoorstel. Het algoritme geeft een advies aan de adviseur, besluitvorming is niet geautomatiseerd en de adviseur beslist. De adviseur zal alert zijn om de resultaten te controleren.

Broncode
Geeft de URL van de algoritmische toepassing of broncode. De daadwerkelijke code van het algoritme is zichtbaar via deze link (de onderstaande link is illustratief en werkt niet). De onderstaande afbeelding is een voorbeeld van een pseudocode van een beslissingsboom algoritme en is alleen bedoeld voor visuele ondersteuning.

https://data.overheid.nl/dataset/algoritme-register

```
ID3 (Examples, Target_Attribute, Attributes)
    Create a root node for the tree
    If all examples are positive, Return the single-node tree Root, with label = +.
    If all examples are negative, Return the single-node tree Root, with label = -.
    If number of predicting attributes is empty, then Return the single node tree Root,
    with label = most common value of the target attribute in the examples.
    Otherwise Begin
        A = The Attribute that best classifies examples.
        Decision Tree attribute for Root = A.
        For each possible value, v_i, of A,
            Add a new tree branch below Root, corresponding to the test A = v_i.
            Let Examples(v_i) be the subset of examples that have the value v_i for A
            If Examples(v_i) is empty
                Then below this new branch add a leaf node with label = most common target value in the examples
            Else below this new branch add the subtree ID3 (Examples(v_i), Target_Attribute, Attributes - {A})
    End
    Return Root
```

Aan de hand van dit register, hoeveel vertrouwen heeft u in overheidsbeslissingen?

- ○ 1. Geen vertrouwen in overheidsbeslissingen
- ○ 2. Weinig vertrouwen in overheidsbeslissingen
- ○ 3. Gemiddeld vertrouwen in overheidsbeslissingen
- ○ 4. Veel vertrouwen in overheidsbeslissingen
- ○ 5. Volledig vertrouwen in overheidsbeslissingen

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Register 6

Wettelijke grondslag
Een omschrijving van de wettelijke grondslag voor de inzet van het algoritme, of URL van het formele besluit.

De juridische grondslag is uitvoering van de wettelijke taak Bijstandswet.

Uitgebreide omschrijving
Een uitgebreide uitleg tussen de 500 en 10000 karakters van hoe het algoritme werkt.

Het algoritme is het programma Regels en Wetten. Regels en Wetten wordt geraadpleegd om het recht, de hoogte en duur van de uitkering vast te stellen. Regels en Wetten bevat de geldende en historische wet- en regelgeving van de Bijstandswet om een correcte uitkering te berekenen. Door vanuit het computersysteem op de knop Bereken te drukken wordt Regels en Wetten aangeroepen. Het stuurt een verzoek naar Regels & Wetten met daarin onder andere het administratienummer van de klant, de soort dienst, de soort verstrekking en de periode waarover de uitkering moet worden berekend. Aan de aangevraagde producten zijn onderwerpen gekoppeld die bestaan uit beslisbomen die afgelopen worden. Als de hele beslisboom doorlopen is volgt er een signaal in de vorm van een voorstel tot uitkering.

Broncode
Geeft de URL van de algoritmische toepassing of broncode. De daadwerkelijke code van het algoritme is zichtbaar via deze link (de onderstaande link is illustratief en werkt niet). De onderstaande afbeelding is een voorbeeld van een pseudocode van een beslissingsboom algoritme en is alleen bedoeld voor visuele ondersteuning.

https://data.overheid.nl/dataset/algoritme-register

```
ID3 (Examples, Target_Attribute, Attributes)
    Create a root node for the tree
    If all examples are positive, Return the single-node tree Root, with label = +.
    If all examples are negative, Return the single-node tree Root, with label = -.
    If number of predicting attributes is empty, then Return the single node tree Root,
    with label = most common value of the target attribute in the examples.
    Otherwise Begin
        A = The Attribute that best classifies examples.
        Decision Tree attribute for Root = A.
        For each possible value, v_i, of A,
            Add a new tree branch below Root, corresponding to the test A = v_i.
            Let Examples(v_i) be the subset of examples that have the value v_i for A
            If Examples(v_i) is empty
                Then below this new branch add a leaf node with label = most common target value in the examples
            Else below this new branch add the subtree ID3 (Examples(v_i), Target_Attribute, Attributes - {A})
    End
    Return Root
```

Aan de hand van dit register, hoeveel vertrouwen heeft u in overheidsbeslissingen?

- 1. Geen vertrouwen in overheidsbeslissingen
- 2. Weinig vertrouwen in overheidsbeslissingen
- 3. Gemiddeld vertrouwen in overheidsbeslissingen
- 4. Veel vertrouwen in overheidsbeslissingen
- 5. Volledig vertrouwen in overheidsbeslissingen

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Register 7

Proportionaliteit
Een afweging van de voor- en nadelen van de inzet van het algoritme en waarom dit redelijk gerechtvaardigd is.

De handmatige opvoer en controle van de uitkeringscomponenten zou een alternatief kunnen zijn. Dit is echter veel werk en vraagt veel kennis van de consulent op het gebied van wet- en regelgeving. Naast dat dit het proces een stuk duurder maakt, zal het ook het risico op fouten vergroten.

Uitgebreide omschrijving
Een uitgebreide uitleg tussen de 500 en 10000 karakters van hoe het algoritme werkt.

Het algoritme is het programma Regels en Wetten. Regels en Wetten wordt geraadpleegd om het recht, de hoogte en duur van de uitkering vast te stellen. Regels en Wetten bevat de geldende en historische wet- en regelgeving van de Bijstandswet om een correcte uitkering te berekenen. Door vanuit het computersysteem op de knop Bereken te drukken wordt Regels en Wetten aangeroepen. Het stuurt een verzoek naar Regels & Wetten met daarin onder andere het administratienummer van de klant, de soort dienst, de soort verstrekking en de periode waarover de uitkering moet worden berekend. Aan de aangevraagde producten zijn onderwerpen gekoppeld die bestaan uit beslisbomen die afgelopen worden. Als de hele beslisboom doorlopen is volgt er een signaal in de vorm van een voorstel tot uitkering.

Brondata
Een overzicht van de databronnen die gebruikt worden door of bij het maken of trainen van het algoritme.

Gezinssituatie (alleenstaand, gezin met kinderen, koppel met kinderen, eenoudergezin of anders), woonsituatie (zelfstandig of niet-zelfstandig), inkomen, vermogen, persoonlijke gegevens en normgegevens vanuit wet- en regelgeving.

Aan de hand van dit register, hoeveel vertrouwen heeft u in overheidsbeslissingen?

- ○ 1. Geen vertrouwen in overheidsbeslissingen
- ○ 2. Weinig vertrouwen in overheidsbeslissingen
- ○ 3. Gemiddeld vertrouwen in overheidsbeslissingen
- ○ 4. Veel vertrouwen in overheidsbeslissingen
- ○ 5. Volledig vertrouwen in overheidsbeslissingen

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Register 8

Impact

(1) De impact op burgers van de effecten van het algoritme, (2) onder welke omstandigheden dit gebeurt, en (3) wat de verwachte consequenties daarvan zijn voor het individu en/of de samenleving.

Dit algoritme heeft betrekking op bewoners van gemeente X die een aanvraag doen voor een uitkering of een uitkering ontvangen, bijvoorbeeld voor levensonderhoud. Zij hebben ermee te maken op het moment dat zij een uitkering ontvangen. De uitkomst zal worden gecommuniceerd naar de ontvanger van de uitkering.

Risico's

Een overzicht van de voorziene risico's.

De afdeling Beleid interpreteert de wet- en regelgeving. Bij de automatisering van dit proces zijn de risico's in kaart gebracht. Het systeem wordt bij elke nieuwe vrijgave opnieuw getest. Dagelijks vindt technische en menselijke controle plaats.

Broncode

Geeft de URL van de algoritmische toepassing of broncode. De daadwerkelijke code van het algoritme is zichtbaar via deze link (de onderstaande link is illustratief en werkt niet). De onderstaande afbeelding is een voorbeeld van een pseudocode van een beslissingsboom algoritme en is alleen bedoeld voor visuele ondersteuning.

https://data.overheid.nl/dataset/algoritme-register

```
ID3 (Examples, Target_Attribute, Attributes)
    Create a root node for the tree
    If all examples are positive, Return the single-node tree Root, with label = +.
    If all examples are negative, Return the single-node tree Root, with label = -.
    If number of predicting attributes is empty, then Return the single node tree Root,
    with label = most common value of the target attribute in the examples.
    Otherwise Begin
        A = The Attribute that best classifies examples.
        Decision Tree attribute for Root = A.
        For each possible value, v_i, of A,
            Add a new tree branch below Root, corresponding to the test A = v_i.
            Let Examples(v_i) be the subset of examples that have the value v_i for A
            If Examples(v_i) is empty
                Then below this new branch add a leaf node with label = most common target value in the examples
            Else below this new branch add the subtree ID3 (Examples(v_i), Target_Attribute, Attributes - {A})
    End
    Return Root
```

Aan de hand van dit register, hoeveel vertrouwen heeft u in overheidsbeslissingen?

- ○ 1. Geen vertrouwen in overheidsbeslissingen
- ○ 2. Weinig vertrouwen in overheidsbeslissingen
- ○ 3. Gemiddeld vertrouwen in overheidsbeslissingen
- ○ 4. Veel vertrouwen in overheidsbeslissingen
- ○ 5. Volledig vertrouwen in overheidsbeslissingen

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Register 9

Impact
(1) De impact op burgers van de effecten van het algoritme, (2) onder welke omstandigheden dit gebeurt, en (3) wat de verwachte consequenties daarvan zijn voor het individu en/of de samenleving.

Dit algoritme heeft betrekking op bewoners van gemeente X die een aanvraag doen voor een uitkering of een uitkering ontvangen, bijvoorbeeld voor levensonderhoud. Zij hebben ermee te maken op het moment dat zij een uitkering ontvangen. De uitkomst zal worden gecommuniceerd naar de ontvanger van de uitkering.

Uitgebreide omschrijving
Een uitgebreide uitleg tussen de 500 en 10000 karakters van hoe het algoritme werkt.

Het algoritme is het programma Regels en Wetten. Regels en Wetten wordt geraadpleegd om het recht, de hoogte en duur van de uitkering vast te stellen. Regels en Wetten bevat de geldende en historische wet- en regelgeving van de Bijstandswet om een correcte uitkering te berekenen. Door vanuit het computersysteem op de knop Bereken te drukken wordt Regels en Wetten aangeroepen. Het stuurt een verzoek naar Regels & Wetten met daarin onder andere het administratienummer van de klant, de soort dienst, de soort verstrekking en de periode waarover de uitkering moet worden berekend. Aan de aangevraagde producten zijn onderwerpen gekoppeld die bestaan uit beslisbomen die afgelopen worden. Als de hele beslisboom doorlopen is volgt er een signaal in de vorm van een voorstel tot uitkering.

Methoden en modellen
Standaardmethoden of modellen die het algoritme gebruikt.

Beslisboom: een statistische methode die (vereenvoudigd) kan worden gezien als een omgekeerde boom waarin de uitkeringsaanvragers op basis van kenmerken van hun gegevens steeds verder wordt opgedeeld, om te komen tot subgroepen waarvan de leden allemaal tot dezelfde categorie behoren. Het geeft de waarschijnlijkheid dat een aanvrager tot een categorie behoort en biedt de gebruiker van het algoritme daarmee inzichten om tot een weloverwogen beslissing te kunnen komen.

Aan de hand van dit register, hoeveel vertrouwen heeft u in overheidsbeslissingen?

- ○ 1. Geen vertrouwen in overheidsbeslissingen
- ○ 2. Weinig vertrouwen in overheidsbeslissingen
- ○ 3. Gemiddeld vertrouwen in overheidsbeslissingen
- ○ 4. Veel vertrouwen in overheidsbeslissingen
- ○ 5. Volledig vertrouwen in overheidsbeslissingen

Holdout-taak

Register 10

Impact
(1) De impact op burgers van de effecten van het algoritme, (2) onder welke omstandigheden dit gebeurt, en (3) wat de verwachte consequenties daarvan zijn voor het individu en/of de samenleving.

Dit algoritme heeft betrekking op bewoners van gemeente X die een aanvraag doen voor een uitkering of een uitkering ontvangen, bijvoorbeeld voor levensonderhoud. Zij hebben ermee te maken op het moment dat zij een uitkering ontvangen. De uitkomst zal worden gecommuniceerd naar de ontvanger van de uitkering.

Menselijke tussenkomst
Een omschrijving van hoe uitkomsten van het algoritme door een mens gecontroleerd en bijgesteld (kunnen) worden.

Nadat de gehele beslisboom op basis van de ingevoerde gegevens is afgelopen, wordt een signaal afgegeven in de vorm van een betalingsvoorstel. Het algoritme geeft een advies aan de adviseur, besluitvorming is niet geautomatiseerd en de adviseur beslist. De adviseur zal alert zijn om de resultaten te controleren.

Broncode
Geeft de URL van de algoritmische toepassing of broncode. De daadwerkelijke code van het algoritme is zichtbaar via deze link (de onderstaande link is illustratief en werkt niet). De onderstaande afbeelding is een voorbeeld van een pseudocode van een beslissingsboom algoritme en is alleen bedoeld voor visuele ondersteuning.

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    If number of predicting attributes is empty, then Return the single node tree Root,
    with label = most common value of the target attribute in the examples.
    Otherwise Begin
        A ← The Attribute that best classifies examples.
        Decision Tree attribute for Root = A.
        For each possible value, v_i, of A,
            Add a new tree branch below Root, corresponding to the test A = v_i.
            Let Examples(v_i) be the subset of examples that have the value v_i for A
            If Examples(v_i) is empty
                Then below this new branch add a leaf node with label = most common target value in the examples
            Else below this new branch add the subtree ID3 (Examples(v_i), Target_Attribute, Attributes - {A})
    End
    Return Root
```

Aan de hand van dit register, hoeveel vertrouwen heeft u in overheidsbeslissingen?

- ○ 1. Geen vertrouwen in overheidsbeslissingen
- ○ 2. Weinig vertrouwen in overheidsbeslissingen
- ○ 3. Gemiddeld vertrouwen in overheidsbeslissingen
- ○ 4. Veel vertrouwen in overheidsbeslissingen
- ○ 5. Volledig vertrouwen in overheidsbeslissingen

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Welke van de onderstaande uitspraken past het best bij hoe u de vragen in het dit eerste deel van de enquête heeft ingevuld?

- ○ Ik snapte goed wat er in de getoonde algoritmeregisters stond en kon goed keuzes maken over hoeveel vertrouwen ik heb in overheidsbeslissingen
- ○ Ik snapte goed wat er in de getoonde algoritmeregisters stond, maar vond het lastig om keuzes te maken over mijn vertrouwen in overheidsbeslissingen
- ○ Ik snapte niet goed wat er in de getoonde algoritmeregisters stond en vond het dus lastig om keuzes te maken over mijn vertrouwen in overheidsbeslissingen
- ○ [ ] Anders, namelijk ...

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Vanaf dit punt begint het tweede deel van deze online enquête.

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Demografische vragen

In welke leeftijdscategorie valt u?

- ○ 18 - 24 jaar oud
- ○ 25 - 34 jaar oud
- ○ 35 - 44 jaar oud
- ○ 45 - 54 jaar oud
- ○ 55 - 64 jaar oud
- ○ 65+ jaar oud

Hoe ziet u zichzelf?

- ○ Man
- ○ Vrouw
- ○ Anders

Wat is het hoogste opleidingsniveau waarvoor u een diploma heeft behaald?

- ○ Basisonderwijs
- ○ Voortgezet onderwijs
- ○ Middelbaar beroepsonderwijs
- ○ Hbo-, wo-bachelor
- ○ Hbo-, wo-Master
- ○ [ ] Anders, namelijk …

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Aanvullende vragen

Geef aan hoeveel vertrouwen u over het algemeen heeft in de Rijksoverheid.

- ○ 1. Geen vertrouwen
- ○ 2. Weinig vertrouwen
- ○ 3. Gemiddeld vertrouwen
- ○ 4. Veel vertrouwen
- ○ 5. Volledig vertrouwen

Geef aan hoeveel vertrouwen u over het algemeen heeft in lokale Nederlandse overheden (provincies, gemeenten en waterschappen).

- ○ 1. Geen vertrouwen
- ○ 2. Weinig vertrouwen
- ○ 3. Gemiddeld vertrouwen
- ○ 4. Veel vertrouwen
- ○ 5. Volledig vertrouwen

Heeft u kennis over de werking van algoritmes in het algemeen?

- ○ 1. Geen ervaring
- ○ 2. Enigszins ervaren
- ○ 3. Gemiddeld ervaren
- ○ 4. Zeer ervaren
- ○ 5. Uitermate ervaren

Appendix B: Survey results

	ResponseId	Voorbeeldvraag	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
1	R_qUAvmRoV4iH...	3	3	3	4	2	3	3	3	4	3
2	R_qD8lIdjoMNOnk...	3	3	2	3	2	4	3	3	4	4
3	R_TvyvhmwoCgvL...	3	3	4	4	4	3	3	3	4	3
4	R_2xDdI4lMTLVcQ...	4	3	5	5	3	4	4	3	4	4
5	R_tGLtG7Opx08Vl...	3	3	3	3	3	3	3	3	3	3
6	R_22X2Kdf5iDgU...	2	3	3	2	3	3	2	1	1	2
7	R_W1EKz6o7ulhf...	4	3	3	4	2	4	2	4	3	1
8	R_9NsiKFSQPksS...	4	4	3	2	2	4	2	2	2	4
9	R_2wnUAxG5zcye...	4	4	4	2	2	3	3	2	4	4
10	R_25XyaAWCQ0iu...	4	5	5	2	3	2	4	4	2	4
11	R_1doH9wRnsoZ...	3	3	3	4	4	3	4	4	3	4
12	R_2TXCOkioYoDM...	2	2	2	2	2	3	3	2	3	2
13	R_2pLjozi1emS6n...	3	3	3	3	3	3	3	3	3	3
14	R_2RQwKcLleu17...	3	4	3	2	2	3	3	2	1	2
15	R_1jV6Aqnykj6raLT	3	2	3	4	4	3	2	3	4	3
16	R_21EpWNYPZQ...	4	3	4	1	2	3	4	5	1	5
17	R_2zXWP7NUc7C...										
18	R_Y09D3qmO8hn...										
19	R_3OiACIVKH1XA...										
20	R_phm4JqypgEua...	3	4	4	4						
21	R_2BsQjkYFyHTX...										
22	R_3KGzn1ISjhXao...										
23	R_elHUfMX1z7h8F...										
24	R_u1zPANXLQSG...										
25	R_ZsCwY518syQ...										
26	R_2rkgvQNqB4IKg...	3	4	3	3	3					
27	R_cP9JjDZaWhG6...	4	4	3	4	3	5	5	3	4	4
28	R_2abMfGoMgKFs...										
29	R_2fDuQ0KGX6x3...										
30	R_3g263ICd9J61...	3	3								
31	R_C2h8uusFHCv...										
32	R_3GftK28ixlA4gzR										
33	R_2aWW0vbK73Fl...										
34	R_3hoKwd7r6otR...										
35	R_2c0WSWitT0O...										
36	R_2ZNDG7Dx222...										
37	R_25zQYHBbOfg...										
38	R_2BbtxmkqHYfP...	4	4	3	5	3	4	3	3	4	3

	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
1	4	2	2	2	5	3	3	3
2	4	2	2	2	5	4	3	2
3	3	2	5	2	5	3	3	1
4	4	1	1	1	4	4	4	4
5	3	4	1	1	4	4	3	4
6	3	2	2	1	5	2	2	4
7	3	2	1	1	2	4	3	3
8	3	2	2	1	4	3	3	5
9	4	2	1	2	4	4	3	3
10	5	2	2	1	5	3	4	5
11	3	2	1	1	4	4	3	3
12	3	3	2	1	5	3	3	3
13	3	4	4	1	5	4	4	2
14	5	1	4	1	5	4	4	5
15	3	3	2	2	5	4	4	3
16	3	1	2	1	5	3	4	4
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27	5	1	1	1	5	4	5	5
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38	3	2	2	2	4	4	4	5

	ResponseId	Voorbeeldvraag	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
39	R_2D7W5Y3H3p2...	.	.	.	.	.	.	.	.	.	.
40	R_2TAZcRRE4Go...	4	.	.	.	.	.	.	.	.	.
41	R_2YaY4Sy9EEFB...	4	3	3	3	3	2	2	3	2	3
42	R_26gslL0YpOX6glj	.	.	.	.	.	.	.	.	.	.
43	R_3mG93sg8YkY...	.	.	.	.	.	.	.	.	.	.
44	R_2q1PCbdkQSvJ...	4	4	.	.	.	.	.	.	.	.
45	R_5tJ0sBbFLqJgJ...	.	.	.	.	.	.	.	.	.	.
46	R_1oFtBb4ZjiiUVbA	.	.	.	.	.	.	.	.	.	.
47	R_3R9qv0KPXAd...	4	4	3	4	.	.	.	.	.	.
48	R_3HoZyRPu11Y4...	.	.	.	.	.	.	.	.	.	.
49	R_1jKdXV4W8rxtNrd	2	.	.	.	.	.	.	.	.	.
50	R_1LRSpkVgr823...	.	.	.	.	.	.	.	.	.	.
51	R_08wrfheqiMoTo...	.	.	.	.	.	.	.	.	.	.
52	R_Do5KIGK3dP6T...	2	2	2	.	.	.	.	.	.	.
53	R_6YCN580PJD4...	4	4	.	.	.	.	.	.	.	.
54	R_1Kxs3sEYEM1t...	.	.	.	.	.	.	.	.	.	.
55	R_2qDSWcX8RO...	4	.	.	.	.	.	.	.	.	.
56	R_2PaJoCBHW5Y...	3	.	.	.	.	.	.	.	.	.
57	R_uvHt7IAAp9fDQfT	.	.	.	.	.	.	.	.	.	.
58	R_1IgyIFIZjiRoVa9	.	.	.	.	.	.	.	.	.	.
59	R_tX45m8mdOb7...	.	.	.	.	.	.	.	.	.	.
60	R_ZaTo95PpQprF...	.	.	.	.	.	.	.	.	.	.
61	R_pLabez7TkoBB...	.	.	.	.	.	.	.	.	.	.
62	R_10YkeHgUVbA0...	3	3	4	2	3	4	3	2	3	2
63	R_1FmFkEPIkXBn...	.	.	.	.	.	.	.	.	.	.
64	R_2bIxl0IBJSnunXd	.	.	.	.	.	.	.	.	.	.
65	R_1H0HVTXNseU...	3	4	4	3	3	2	3	5	3	5
66	R_2xSsx9X8BgN5...	3	3	3	.	.	.	.	.	.	.
67	R_BSnFskUs6klw...	3	3	4	3	4	5	5	4	4	3
68	R_2YbTkMs2clyLh...	4	4	4	4	4	3	4	4	4	4
69	R_1BQkVwDKN3...	.	.	.	.	.	.	.	.	.	.
70	R_1jpShmyMZL87...	3	3	4	2	4	1	3	4	2	3
71	R_9TdsoPtmzDRt...	.	.	.	.	.	.	.	.	.	.
72	R_1C155VGhGWd...	.	.	.	.	.	.	.	.	.	.
73	R_0kzjLRBzUpmP...	.	.	.	.	.	.	.	.	.	.
74	R_1qevSxnlLJE2xkT	.	.	.	.	.	.	.	.	.	.
75	R_2uhJtMY6e3tAY...	.	.	.	.	.	.	.	.	.	.
76	R_6zokcq75Llt3B1T	4	4	4	3	3	4	4	3	3	4

	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
39	.	.	.	.	.	.	.	.
40	.	.	.	.	.	.	.	.
41	2	2	2	1	5	3	4	4
42	.	.	.	.	.	.	.	.
43	.	.	.	.	.	.	.	.
44	.	.	.	.	.	.	.	.
45	.	.	.	.	.	.	.	.
46	.	.	.	.	.	.	.	.
47	.	.	.	.	.	.	.	.
48	.	.	.	.	.	.	.	.
49	.	.	.	.	.	.	.	.
50	.	.	.	.	.	.	.	.
51	.	.	.	.	.	.	.	.
52	.	.	.	.	.	.	.	.
53	.	.	.	.	.	.	.	.
54	.	.	.	.	.	.	.	.
55	.	.	.	.	.	.	.	.
56	.	.	.	.	.	.	.	.
57	.	.	.	.	.	.	.	.
58	.	.	.	.	.	.	.	.
59	.	.	.	.	.	.	.	.
60	.	.	.	.	.	.	.	.
61	.	.	.	.	.	.	.	.
62	4	1	1	2	5	3	4	5
63	.	.	.	.	.	.	.	.
64	.	.	.	.	.	.	.	.
65	2	2	1	2	5	3	3	5
66	.	.	.	.	.	.	.	.
67	5	2	2	1	3	2	3	2
68	4	3	2	1	5	4	3	4
69	.	.	.	.	.	.	.	.
70	1	2	5	1	5	3	3	3
71	.	.	.	.	.	.	.	.
72	.	.	.	.	.	.	.	.
73	.	.	.	.	.	.	.	.
74	.	.	.	.	.	.	.	.
75	.	.	.	.	.	.	.	.
76	4	1	1	2	4	4	4	2

	ResponseId	Voorbeeldvraag	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
77	R_ve7f5Vv5e3tFqox	1	.	.	.	.	.	.	.	.	.
78	R_3NLixVqjZ3yJ48n	3	3	3	3	3	4	4	3	4	3
79	R_24eKKHTpr1ryg...	3	3	4	3	4	3	2	2	3	3
80	R_2EEShPTfvoV6...	3	2	3	2	2	1	1	2	1	2
81	R_31bKdftvWaZle...	2	3	3	2	2	3	3	3	3	3
82	R_z7OgFiSeeBkw...	.	.	.	.	.	.	.	.	.	.
83	R_3PvJA42tYTzyR...	3	3	4	3	3	2	.	.	.	.
84	R_6AogigXr3glQ46d	.	.	.	.	.	.	.	.	.	.
85	R_3n8fzUfhdlQCfGs	4	4	4	4	4	4	4	4	4	4
86	R_blunwk8lLAtu6fD	4	3	2	4	3	4	4	4	2	4
87	R_3dLzbjuiF83FL...	.	.	.	.	.	.	.	.	.	.
88	R_2s0b7iNkV1uny...	.	.	.	.	.	.	.	.	.	.
89	R_V1JyKBrkduT0...	3	3	3	3	2	.	.	.	.	.
90	R_9Ad4cJBBNOG...	3	4	3	2	2	3	2	3	4	2
91	R_302BnxAngCEa...	3	3	3	4	4	3	3	3	3	3
92	R_2PyZr7EEdFzB...	3	3	2	2	2	2	2	2	2	2
93	R_1mmIH7QM5m...	.	.	.	.	.	.	.	.	.	.
94	R_2sRefXUSD2o...	4	4	4	3	4	4	3	3	3	3
95	R_1LUphEoiuzcH...	4	4	4	4	4	2	3	5	3	4
96	R_2azvZEcmOvqo...	2	3	3	4	3	4	4	3	4	3
97	R_3pal9moQvwpP...	.	.	.	.	.	.	.	.	.	.
98	R_3pr6o3ZT2kLq8...	3	3	3	2	2	2	4	3	3	4
99	R_3iKZhDawgfBlP...	3	4	4	4	3	4	4	4	4	3
100	R_2sRsytvp4rg696Y	4	4	4	2	4	3	3	2	2	4
101	R_1Iyrf5AX5bSSxeT	4	4	4	2	3	3	2	3	3	2
102	R_3dWlfA3E7DOv...	3	3	3	3	3	3	2	4	3	4
103	R_3Rgybi6Ooqsz4...	3	4	4	2	4	2	4	3	3	2
104	R_1g2rOqygRNtm...	3	3	4	2	4	4	3	3	4	2
105	R_29iWYGkGXrCX...	3	3	4	2	4	2	3	2	4	4
106	R_3JjXnDFm7Be4...	4	3	3	4	3	4	4	3	3	5
107	R_1ltXeP8ei0xaC9N	3	2	3	3	2	3	3	3	3	2
108	R_eD4wN3uUE80...	4	5	4	4	3	3	3	5	2	4
109	R_bJbQOQueO9C...	3	3	4	3	3	5	5	4	4	3
110	R_3oGTR9GfhIkw...	3	4	4	2	2	2	2	3	1	2
111	R_2uPt8am01lkrP...	3	1	2	2	2	4	4	2	3	2
112	R_1OOHhudesE8...	3	4	3	3	3	5	4	4	3	4
113	R_3PjmoQN9WPt...	4	4	3	2	2	3	4	4	2	3
114	R_2teVDSAnBiGm...	.	.	.	.	.	.	.	.	.	.

	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
77	.	.	.	.	.	.	.	.
78	4	2	2	1	5	3	3	3
79	3	2	4	1	3	4	4	1
80	2	3	3	1	5	3	3	2
81	3	2	5	1	4	2	2	3
82	.	.	.	.	.	.	.	.
83	.	.	.	.	.	.	.	.
84	.	.	.	.	.	.	.	.
85	4	2	6	1	4	4	4	1
86	3	2	1	2	4	3	3	4
87	.	.	.	.	.	.	.	.
88	.	.	.	.	.	.	.	.
89	.	.	.	.	.	.	.	.
90	3	2	2	1	4	4	4	2
91	4	2	5	2	4	3	3	2
92	2	3	5	1	4	3	3	1
93	.	.	.	.	.	.	.	.
94	4	2	2	1	5	4	3	4
95	3	1	2	1	5	4	4	4
96	.	.	.	.	.	.	.	.
97	.	.	.	.	.	.	.	.
98	3	3	2	2	4	3	3	2
99	4	2	2	2	4	3	4	4
100	3	3	2	1	5	4	4	2
101	4	3	1	1	4	4	4	2
102	3	3	2	1	5	3	3	1
103	3	2	2	1	5	4	2	2
104	4	2	1	1	5	4	3	2
105	3	2	1	2	5	4	3	1
106	4	2	2	1	5	2	1	2
107	2	4	2	1	5	3	3	3
108	3	1	2	2	5	4	3	3
109	5	2	2	1	5	3	4	5
110	3	1	1	1	4	4	4	4
111	3	3	2	1	4	1	1	3
112	3	2	2	1	5	4	4	3
113	3	2	2	1	5	4	3	4
114	.	.	.	.	.	.	.	.

	ResponseId	Voorbeeldvraag	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
115	R_2OSJK15dZEU...	3	4	3	4	2	4	2	2	4	3
116	R_1liaJfVdlcGocjA	4	4	5	3	3	4	4	3	4	3
117	R_1mmVNnZbXer...	5	4	5	4	5	5	5	4	4	5
118	R_2dsa6jxkS6pglrt	3	4	4	3	4	3	2	3	3	2
119	R_278tgPHQpd4i...	3	3	4	3	4	4	3	2	4	2
120	R_2Ymhc5lmiGv1...	.	.	.	.	.	.	.	.	.	.
121	R_2QYZjiFpw2IILFU	3	3	4	3	3	3	2	2	3	3
122	R_12hSjX8zSkiXkul	2	2	3	3	4	2	4	3	4	3
123	R_3lYpboWTmTrz...	3	3	3	3	3	3	3	3	3	3
124	R_2s0jHkjdZZfsxKl	3	2	2	2	3	2	1	1	2	2
125	R_wQU1PjWD4o9...	.	.	.	.	.	.	.	.	.	.
126	R_3jSSV6O5FGN...	.	.	.	.	.	.	.	.	.	.
127	R_2rpE5ZptVWRF...	2	.	.	.	.	.	.	.	.	.
128	R_27EDjclmwHG...	3	4	3	3	3	2	3	2	2	3
129	R_269iKvPshCnpl...	.	.	.	.	.	.	.	.	.	.
130	R_1r00Z3ovJcSqh...	.	.	.	.	.	.	.	.	.	.
131	R_wR8mRMcS89...	3	4	3	4	3	4	4	4	3	4
132	R_en6BvJtad8AL...	3	3	3	2	3	2	4	.	.	.
133	R_3spNiDksSWrL...	.	.	.	.	.	.	.	.	.	.
134	R_1FQIRGPytZdy7...	.	.	.	.	.	.	.	.	.	.
135	R_u4wPbhkP5mz...	3	3	3	2	3	2	2	3	2	3
136	R_1Nz7yMyG5mU...	4	4	5	3	3	5	3	3	4	2
137	R_10qPl21nn80b...	4	4	3	2	3	4	5	4	3	5
138	R_2AL5NogpEXUl...	.	.	.	.	.	.	.	.	.	.
139	R_2OlUl5XA9WOt...	4	.	.	.	.	.	.	.	.	.
140	R_UGYx9AFaHFzb...	2	2	3	2	2	3	3	3	3	2
141	R_21jldw87bMYrV...	.	.	.	.	.	.	.	.	.	.
142	R_1mVnF67iZJjlX...	2	3	2	3	.	.	.	.	.	.
143	R_vVxYAmsMU36y...	4	4	4	3	.	.	.	.	.	.
144	R_3hgcDf5VeWEI...	4	4	4	4	4	4	5	4	5	4
145	R_6iiTp9eXcv4vTEd	4	4	4	3	3	4	2	3	2	3
146	R_33v56Vm2k6fx1...	3	3	4	4	3	3	4	5	3	4
147	R_ULb8jBXrxLgO6xr	4	4	2	.	.	.	.	.	.	.
148	R_0iGsWdzuQjM7...	4	4	4	4	4	4	4	3	3	3
149	R_211gTayTA4TU...	1	.	.	.	.	.	.	.	.	.
150	R_1Ediw9EYSCrx...	.	.	.	.	.	.	.	.	.	.
151	R_1EgvAD8zSOo...	3	3	4	2	2	3	2	2	2	2
152	R_3FXn4X4BEyr0...	3	3	4	4	2	4	3	2	4	3

	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
115	4	1	2	1	5	4	3	4
116	5	1	1	1	5	4	4	5
117	5	2	1	1	4	5	4	3
118	3	2	1	2	4	3	3	4
119	4	3	2	2	5	3	3	3
120	.	.	.	.	.	.	.	.
121	3	4	5	2	3	3	3	1
122	3	2	2	1	4	3	4	2
123	3	3	3	1	5	3	3	3
124	2	3	5	1	5	3	3	1
125	.	.	.	.	.	.	.	.
126	.	.	.	.	.	.	.	.
127	.	.	.	.	.	.	.	.
128	4	2	1	1	4	4	4	3
129	.	.	.	.	.	.	.	.
130	.	.	.	.	.	.	.	.
131	4	2	1	2	4	4	3	4
132	.	.	.	.	.	.	.	.
133	.	.	.	.	.	.	.	.
134	.	.	.	.	.	.	.	.
135	2	3	2	1	5	3	3	4
136	5	2	2	1	4	3	4	3
137	3	2	2	1	5	4	3	2
138	.	.	.	.	.	.	.	.
139	.	.	.	.	.	.	.	.
140	3	3	1	1	2	3	3	1
141	.	.	.	.	.	.	.	.
142	.	.	.	.	.	.	.	.
143	.	.	.	.	.	.	.	.
144	4	3	1	1	5	4	4	5
145	3	2	2	1	4	5	3	5
146	3	4	2	1	4	4	4	3
147	.	.	.	.	.	.	.	.
148	3	2	1	1	3	4	4	3
149	.	.	.	.	.	.	.	.
150	.	.	.	.	.	.	.	.
151	3	2	2	1	5	4	3	4
152	2	2	2	1	5	4	4	5

	ResponseId	Voorbeeldvraag	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
153	R_2Eo5kcoPE3Er...	4	4	4	2	4	4	2	2	3	3
154	R_pGzaKrjd8wuh4...	.	.	.	.	.	.	.	.	.	.
155	R_2vcXbnUbTtwlV...	3	.	.	.	.	.	.	.	.	.
156	R_31jzlj1tMVWxPX0	3	2	3	1	2	4	3	4	2	4
157	R_3kLO55jYM8kL...	4	4	4	4	4	4	4	4	4	4
158	R_2rVlrjnQdSWVE...	.	.	.	.	.	.	.	.	.	.
159	R_agI2wbEXXw0g...	3	4	4	3	3	4	3	4	3	4
160	R_2VlW32EYD6Vn...	.	.	.	.	.	.	.	.	.	.
161	R_2wTBUlYwl8ew...	.	.	.	.	.	.	.	.	.	.
162	R_1o0Ce9XHalw9...	2	1	2	2	2	2	2	2	2	2
163	R_1NrlP8SJqQ2x...	2	3	3	2	3	2	3	2	3	3
164	R_2e4muEeNlkl1...	3	3	2	3	3	4	4	3	4	3
165	R_3m8ip1FaLjet3...	4	3	4	5	3	4	3	4	3	4
166	R_2xDBjkZX70e30...	1	2	3	4	3	4	4	3	2	3
167	R_Rko8fTtQ6o7Yp...	3	3	4	5	4	3	3	3	2	4
168	R_2af1Brky02bvN17	4	3	2	4	2	2	2	3	2	3
169	R_6s6BK9EHBK9...	4	4	4	3	4	3	4	4	4	4
170	R_ahmtt56gLp9s6...	3	4	.	.	.	.	.	.	.	.
171	R_p9GnnX3VhDw...	3	3	5	3	3	3	3	3	2	2
172	R_30pnFCFsyKexl...	3	4	.	.	.	.	.	.	.	.
173	R_2ckE4Rgmuqg...	.	.	.	.	.	.	.	.	.	.
174	R_2dg6lKVU0iy7o...	.	.	.	.	.	.	.	.	.	.
175	R_2zvDGtcchAQCv...	3	3	4	3	4	2	4	4	3	3
176	R_32OTChDixJLe...	.	.	.	.	.	.	.	.	.	.
177	R_31F3YC5kysHT...	3	4	4	4	3	5	5	4	4	4
178	R_3gSOgYzTT6FX...	4	4	4	3	4	2	4	4	4	4
179	R_Q4cxnu0850qth...	.	.	.	.	.	.	.	.	.	.
180	R_3sB0lzaKABLYJ...	3	4	3	3	2	2	3	4	3	4
181	R_3O9CSDtBXrKc...	2	4	4	2	2	3	3	3	3	2
182	R_O2oKgCf5RYP...	.	.	.	.	.	.	.	.	.	.
183	R_3t6GopI3TNLvs...	3	3	.	.	.	.	.	.	.	.
184	R_2Eh4UNMZfqn...	3	2	3	2	2	3	4	4	2	4
185	R_28VczI5cbBwIynr	2	4	3	4	4	3	2	.	.	.
186	R_1IBnQzRbcY9m...	2	2	3	2	2	3	3	3	2	3
187	R_20UMGBJCS1o...	2	2	3	3	2	2	3	4	4	3
188	R_3kM1fDOKPES...	2	3	3	2	3	2	3	3	3	3
189	R_2q2zteQwUnXN...	2	2	2	2	2	2	2	2	3	1
190	R_87kKD2Vlk25ru...	4	4	4	3	3	4	4	4	3	4

	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
153	4	1	2	1	3	3	2	3
154	.	.	.	.	.	.	.	.
155	.	.	.	.	.	.	.	.
156	3	2	2	1	5	4	3	4
157	4	3	2	1	3	3	3	1
158	.	.	.	.	.	.	.	.
159	4	2	2	2	5	4	4	2
160	.	.	.	.	.	.	.	.
161	.	.	.	.	.	.	.	.
162	2	1	3	1	5	3	3	4
163	2	2	4	2	4	3	3	1
164	4	2	1	1	4	4	4	5
165	3	2	2	1	5	4	4	5
166	4	2	2	1	4	4	3	4
167	4	2	2	2	4	.	.	.
168	2	2	2	1	5	4	3	1
169	4	3	2	1	5	4	3	3
170	.	.	.	.	.	.	.	.
171	3	2	6	1	3	3	3	1
172	.	.	.	.	.	.	.	.
173	.	.	.	.	.	.	.	.
174	.	.	.	.	.	.	.	.
175	3	2	2	2	5	4	3	4
176	.	.	.	.	.	.	.	.
177	4	2	2	1	5	4	4	5
178	4	2	2	2	5	4	3	3
179	.	.	.	.	.	.	.	.
180	4	2	1	1	4	3	4	3
181	4	3	3	1	5	3	3	3
182	.	.	.	.	.	.	.	.
183	.	.	.	.	.	.	.	.
184	2	1	6	2	2	1	2	1
185	.	.	.	.	.	.	.	.
186	2	3	6	1	3	2	3	1
187	3	2	1	1	3	2	3	1
188	3	3	1	1	4	3	3	1
189	2	2	1	1	2	2	3	3
190	4	1	5	1	5	4	3	3

	ResponseId	Voorbeeldvraag	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
191	R_2vkb4r7dngNQ...	3	3	3	3	4	4	4	2	3	4
192	R_1kRG6u8FfFPQ...	3	2	3	2	3	4	2	4	4	3
193	R_3lVqpt5PJJbVyVA	4	4	3	4	4	3	4	4	3	3
194	R_1Ld59cCAxDAll...	3	4	4	2	2	4	4	3	3	3
195	R_aWNBlUgdmtyz...	.	.	.	.	.	.	.	.	.	.
196	R_27g9MPbUajV8...	3	3	3	2	3	3	4	3	4	4
197	R_OuMXLjQYBCb...	2	3	3	2	2	3	1	1	2	3
198	R_1gCjd2vgZeFY5...	3	3	.	.	.	.	.	.	.	.
199	R_3CBBzol5FeN7l...	2	3	2	3	3	2	3	2	3	4
200	R_2QKcqIYaonYW...	3	3	3	3	4	4	3	2	3	3
201	R_300u0sERDsv...	3	3	3	3	3	3	3	3	3	3
202	R_2THN2lTPHtYv...	.	.	.	.	.	.	.	.	.	.
203	R_3oXaDWBac8g...	.	.	.	.	.	.	.	.	.	.
204	R_2tGAF7wBofHs...	.	.	.	.	.	.	.	.	.	.
205	R_3J8b9UNeVivjLpl	3	3	4	2	1	2	2	2	3	2
206	R_1NFfTFHGi5Yez...	.	.	.	.	.	.	.	.	.	.
207	R_27Tf3JoiXOmD...	.	.	.	.	.	.	.	.	.	.
208	R_1OwuJMf63NKz...	3	3	3	3	3	3	3	3	3	3
209	R_ykl0L5nlHlFHFiF	.	.	.	.	.	.	.	.	.	.
210	R_11asC4REtxlZc...	2	3	3	4	4	3	2	3	4	2
211	R_3dGP7ZOQxTD...	2	2	2	.	2	2	2	.	2	2
212	R_QaBAFO92HgB...	1	1	1	2	1	3	2	2	2	2
213	R_3fwyk8YFQatuw...	.	3	3	4	3	3	3	4	2	2
214	R_9yo5ieWrXMR5...	3	.	.	.	.	.	.	.	.	.
215	R_1LheY8uZuSoe...	2	2	3	2	3	2	3	2	2	3
216	R_sbpSBquf99AY...	2	3	3	3	2	3	3	3	2	3
217	R_3kplQkb5U03b...	2	3	4	4	3	3	4	4	4	4
218	R_1jU0X2Q5Ku5h...	2	2	3	3	1	3	3	3	3	3
219	R_2Sc5sSjlKStWcjc	3	3	3	2	3	1	2	4	1	3
220	R_1M0rbZrv4ASbb5f	2	2	3	3	3	3	2	2	2	.
221	R_33cXclTgMhHA...	1	.	.	.	.	.	.	.	.	.
222	R_1hSGR4ZnDoX...	3	3	3	2	3	2	4	3	3	3
223	R_2vk2kKi5x3Kot3...	.	.	.	.	.	.	.	.	.	.
224	R_uferhoXKjh7duTf	2	2	3	2	3	2	2	2	2	3
225	R_a3KqKA3RAA4r...	2	3	3	3	3	2	2	2	2	3
226	R_3HUrDBEgeO7...	.	.	.	.	.	.	.	.	.	.
227	R_1OqrSBZdGtbd...	.	.	.	.	.	.	.	.	.	.
228	R_2VroMUtHpZOY...	.	.	.	.	.	.	.	.	.	.

	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
191	3	2	1	1	2	3	3	2
192	4	1	2	1	6	5	3	4
193	4	2	2	1	5	2	3	3
194	4	2	1	1	6	3	3	2
195	.	.	.	.	.	.	.	.
196	3	2	4	2	4	3	3	2
197	3	3	2	1	5	3	3	5
198	.	.	.	.	.	.	.	.
199	2	2	1	1	3	3	3	2
200	4	3	1	2	2	3	3	3
201	3	3	6	2	3	3	3	1
202	.	.	.	.	.	.	.	.
203	.	.	.	.	.	.	.	.
204	.	.	.	.	.	.	.	.
205	4	3	5	2	4	3	3	3
206	.	.	.	.	.	.	.	.
207	.	.	.	.	.	.	.	.
208	3	3	6	1	2	3	4	1
209	.	.	.	.	.	.	.	.
210	4	2	4	2	4	4	3	1
211	2	3	5	2	4	2	3	1
212	3	3	5	1	5	3	3	3
213	3	2	.	.	.	.	.	.
214	.	.	.	.	.	.	.	.
215	3	2	2	2	5	3	4	3
216	4	3	4	2	5	3	4	2
217	4	2	1	1	5	4	4	1
218	3	3	5	2	5	4	4	3
219	2	4	2	1	5	4	4	2
220	.	.	.	.	.	.	.	.
221	.	.	.	.	.	.	.	.
222	2	1	2	1	5	4	4	4
223	.	.	.	.	.	.	.	.
224	2	3	5	2	3	2	2	1
225	3	2	4	2	5	2	3	4
226	.	.	.	.	.	.	.	.
227	.	.	.	.	.	.	.	.
228	.	.	.	.	.	.	.	.

	ResponseId	Voorbeeldvraag	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9
229	R_2AT5hHdQmU...										
230	R_vHoikLeuwF65...	3	4	3	2	3	4	3	2	1	1
231	R_wLgcegtJ6cM8...										
232	R_CjArphbxR9H1...	4	5	4	4	4	5	5	4	5	4
233	R_phoTpBYPx2xe...										
234	R_2eVvy1ZxuYbNh...	3	4	3	3	4	4	2	3	4	3
235	R_2xM0dpJbm5P...	2	2	3	4	1	2	2	3	2	4
236	R_2Br3nK7CZYW...										
237	R_3RlWhTt5Uggfs...	3	3	3	4	3	4	3	4	4	4
238	R_1rGllguB2dZZC...	3	4	2	3	3	2	4	3	3	3
239	R_6mKlkFcmF9C...	3	4	3	2	2	2	2	3	2	2
240	R_29hSY8GDElle...	3	2	2	3	3	2	2	3	2	3
241	R_wSl5HPu5lrwqx...	3	3	4	3	3	2	3	3	2	3
242	R_23JoMWKO88w...	4	4	3	4	3	3	4	4	4	4
243	R_3irrzSYkVQx8xhu										
244	R_32PlKYRcJZ92...	3									
245	R_6yCkmr968UJ2...	3	3								
246	R_3FVXyqVAMem...	3	3	3	4	3	3	2	3		
247	R_2Eg8y90PDqS...	1	2	2	3	2	2	2	2	1	2
248	R_ALI7iq3viKhqcjT										
249	R_RfTbTupq8Tfz1Hr	3	3	4	4	3	2	4	4	2	3
250	R_3PNyGGZtTTqr...										
251	R_XnyTCBS7p7M...	3	3	2	3	2	3	2	3	3	2
252	R_2YDKuYUVcM3...		3	3	3	3	3	4	3	3	3
253	R_1GwZPBGqjpat...	2									
254	R_2wplpJrqCTQJ...	3	4	3	2	3	3	4	4	3	4
255	R_3fqlsgNtJ3kzrG7										

	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
229								
230	2	1	5	2	5	4	4	2
231								
232	5	2	5	1	5	3	3	4
233								
234	4	2	2	1	2	3	3	2
235	2	2	2	1	5	4	4	3
236								
237	4							
238	2	3	3	2	4	3	3	1
239	3	2	2	1	5	3	2	4
240	2	3	5	2	4	3	2	1
241	2	3	2	2	4	3	2	1
242	4	2	3	2	3	3	3	2
243								
244								
245								
246								
247	1	3	5	2	6	3	2	2
248								
249	2	2	2	2	5	2	3	3
250								
251	3	3	5	2	6	3	3	1
252	3	2	6	1	5	4	4	2
253								
254	5	2	2	1	5	3	3	3
255								

Appendix C: Raw response to “other” option question 11 (English and original Dutch response)

The context was not very clear, which made trust in government decisions rather difficult to place. This ensures that 'trust' is less great anyway.
I understood it well, but I can imagine that a large part of society would not understand it.
Tough material to read. University level.
My confidence is mainly based on the expertise of the person who controls the algorithms. How do I know that person is not sleeping? None of the options instilled much confidence in that.
I found the texts difficult to read and understand, but my trust in the government does not depend on the text I have seen. In the end, it's about how it is handled. You can write it beautifully, but that does not always reflect reality.
My trust in government decisions is only determined on a very, very, very small scale by an algorithm register.

De context was niet heel erg duidelijk, waardoor vertrouwen in overheidsbeslissingen nogal moeilijk te plaatsen was. Dat zorgt ervoor dat 'vertrouwen' sowieso al minder groot is.
Ik begreep het wel goed, maar ik kan mij voorstellen dat een groot deel van de maatschappij het niet zou snappen.
Taaie materie om te lezen natuurlijk op. universitair niveau
Mijn vertrouwen is voornamelijk gebaseerd op de deskundigheid van degene die de algoritmes controleert. Hoe weet ik dat die niet zit te slapen? Daar kweekte geen enkele optie veel vertrouwen in
Ik vond de teksten ingewikkeld om te lezen en begrijpen, maar mijn vertrouwen in de overheid hangt niet af van de tekst die ik heb gezien. Het gaat er uiteindelijk om hoe ermee omgegaan wordt. Je kunt het nog zo mooi opschrijven, maar dat geeft niet altijd de werkelijkheid weer.
Mijn vertrouwen in de overheidsbeslissingen wordt echt maar op heel heel heel heel kleine schaal bepaald door een algoritmeregister.

Appendix D: Model fit

Statistic	Value
Number of (fully completed) observations	131
R Square (only conjoint variables)	0.022
R Square (all variables)	0.117

Appendix E: Original Dutch Mentimeter results

Raw response Mentimeter statement 1: *Overheden moeten volledig transparant zijn, zelf wanneer dit negatieve gevolgen heeft op het vertrouwen van burgers*

1 (strongly disagree)	2	3	4	5 (strongly agree)
1	4	1	0	2

Raw response Mentimeter question 1: *In hoeverre zijn de verkregen inzichten bruikbaar voor beleidsmakers en andere stakeholders?*

Bruikbaar mits inzichten niet automatisch leiden tot besluiten
Meer transparantie leidt dus niet altijd tot meer vertrouwen = interessant!!
Brengt het gesprek op gang over het nut van algoritme registers en mate van transparantie.
Bruikbaar: het geeft aan wat belangrijk is voor mensen, bv dat informatie over het operatie attribuut belangrijk effect heeft op het vertrouwen
Zeer bruikbaar maar niet in de huidige vorm. Een synthese en vervolgens handvatten voor 'hoe deze inzichten te gebruiken' is mijns inziens daarbij essentieel.
Bruikbaar voor de keuzes die je maakt bij de inrichting van een algoritmeregister
Negatief effect van voorziene risico's: geeft aan dat transparantie niet altijd gewenst is. Dit kan betekenen dat alhoewel het goed is dat je het uit kan leggen (besluitvormingsproces), maar dat dit niet altijd by default moet gebeuren
Toont aan dat echt technisch begrip niet per se nodig is bij mensen, als je maar de randvoorwaarden (of andere term) wel kan uitleggen
Ik denk dat het afhangt van de soort data die gebruikt wordt en de inzet van het algoritme. Dus gaat het bijvoorbeeld om voorspelling fraude of voorspelling watergebruik? Ik denk wel dat de hoeveelheid informatie die je geeft idd bruikbaar gaat zijn
Van belang om de verschillende attributen waar het openbaar iets mee kan doen concreet genoeg te maken voor beleidsmakers, hoe kunnen zij deze inzetten t.b.v. vertrouwen van stakeholders.

Raw response Mentimeter question 2: *Hoe kunnen overheden zorgen dat de doorsnee Nederlander ook wat aan een algoritmeregister heeft of moeten ze dat helemaal niet willen?*

Denk niet dat de gemiddelde Nederlander daar echt in geïnteresseerd is. Maar anders, wellicht met een visualisatie tool verduidelijken
Leg in duidelijke taal uit wat de organisatie doet met een algoritme en welk nut dat heeft voor burgers en ondernemers.
Sta open voor samen co-creatie met burgers en ondernemers om algoritmen mensvriendelijker te maken.
Ik denk dat dat niet hoeft. Het moet inzichtelijk kunnen zijn als je dat wil, maar belangrijker dat mensen met kennis van zaken kunnen inzien of het klopt (maar dan wel van buitenaf, dus controlerend)
Overheden moeten hiervoor vooral het gesprek aangaan met (vertegenwoordigers van) de doorsnee NL'ers
Volgens mij moet de overheid dat niet willen; er zit een limiet aan het begrijpbaar maken van inhoudelijke domeinen. Daarentegen moet het voor specialisten (bv. bits for freedom) wel degelijk navolgbaar zijn.
Uitleggen waarom algoritmes worden ingezet, anders kunnen mensen er al helemaal geen begrip voor hebben, laat staan vertrouwen
Makkelijk taalgebruik. Eens worden over de definitie algoritme en wat voor soort systemen dat behelst. Niet een overload aan informatie en systemen opnemen, hoe vind je dan tussen de bomen het bos?
Zorg dat de diverse bestaande algoritmeregisters uniform opgesteld worden. Maak het daarnaast goed makkelijk te bereiken en toegankelijk indien 'de doorsnee Nederlander' het wil inzien.
Overheden moet leren transparant te zijn over algoritmegebruik aangezien het gebruik alleen maar meer gaat worden (is mijn aanname)