

Residents and perceptions on locally produced food

Influence of income on attitude, knowledge, budget, behaviour and perceived behaviour control with regards to purchasing locally produced food in Amerongen and Doorn.

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1. Introduction

The global population is increasing exponentially every year and is beginning to put food security, defined as food availability, in danger (Goldfray et al., 2010). Although food production is increasing, food and agriculture are facing multiple problems, such as land degradation, reduction of biodiversity, and climate change effects. One of the reasons for the advancing of these effects is the rising greenhouse gases that are becoming a bigger problem every day. For this reason, all the members' states of the United Nations from 2015 have adopted the 17 Sustainable Development Goals (SDGs) to try and tackle various issues related to inequality and climate change. The Netherlands is also implementing the SDGs through different policies and institutions. Two possible SDGs related to the beforehand mentioned issues associated with food and agriculture are: "Sustainable Cities and Communities" (SDG 11) and "Responsible Consumption and Production" (SDG 12) (Population matters, 2020).

For this reason, a potential solution to help achieve these goals could be consuming more local food to reduce the emissions of greenhouse gases. Studies have shown that choice of food and diet can influence greenhouse gas emissions (Carlsson-Kanyama, 2003). Certain diets, like consuming vegan food, are known for their positive environmental impact. However, transportation emissions, such as planes, are also emitting a significant amount of greenhouse gases. Carlsson-Kanyama (2009) stated that products like fruits and vegetables transported by plane sometimes produce as many emissions as the production of meat. Although making agriculture more nature-inclusive is highly challenging, Utrechtse Heuvelrug aims to have a more responsible consumption of food. Schwartz (2017) states that sustainable food choices are often more expensive, and therefore consumers with lower wages will avoid this kind of product. Therefore, the aim of this research project is to investigate if there is a difference in attitude, knowledge, budget, behaviour, and perceived behaviour control on purchasing locally produced food, between residents with an average of low and high earnings in two cities of Utrechtse Heuvelrug.

Hence, this paper intends to answer the question: "What are the differences in attitude, knowledge, budget, behaviour and perceived behaviour control with regard to locally produced food, under residents with a high and low income in Amerongen and Doorn?". This paper will analyse each variable individually, to eventually answer the research question. The paper is organised into different chapters: In the first chapter, the problem is defined whereas in the second chapter, the literature review of the framework of Planned Behaviour from Ajzen (1991), is identified. In the third chapter, the explanations of the procedures that are going to

be used to collect data and the methodological choices are discussed. Additionally, in the fourth chapter, the results found in the fieldwork are described, while in the fifth the insights from these analyses are evaluated to answer our research question. Finally, in the last chapter, after the explanation of the importance of our findings in the conclusion, the connection between the results in this research and in other subtopics will be explained.

2. Literature review

2.1 Definition local

Although “local” is a geographical concept, it is difficult to define how distant an area between producers and consumers can still be considered local and not regional. Different definitions vary depending on the situation. For instance, Albert Heijn sells local food within a range of 140 km, which equals the entire Netherlands. However, local food systems do not only have geographical characteristics but might have other characteristics that consumers perceive from this notion, such as, sustainable production, the length of the supply chain, small local farms or products with history and tradition from a specific area that is protected (Martinez et al., 2010). For example, in northern Europe, the concept of local food is characterised by the idea of sustainability, organic, traceability but mostly by the fact food is localized (Amilien et al., 2007). Considering that the following research will focus on two towns, Amerongen and Doorn, located in Utrechtse Heuvelrug, a region in the Netherlands, it seems appropriate to look at local food in the geographical sense of food produced within the country. This indicates products originating from the Netherlands.

2.2 Increasing trend

The consumption of locally produced food has increased, especially in developed countries (Penny and Prior, 2014). This increase has multiple motives, like perceived quality and freshness of local food and support for the local economy (Martinez et al., 2010). A second reason for the increased demand of locally produced food is stimulation from the government. The municipality of Utrecht created different policies to stimulate the production and consumption of local food. One policy entails connecting new food initiatives with events or existing alliances, like Stedennetwerk stadslandbouw, to strengthen the production and consumption of local food (Gemeente Utrecht, 2015). To analyse the intentions of residents in Amerongen and Doorn to buy locally produced food, the Theory of Planned Behaviour will be used.

2.3 Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB) has been widely used to analyse consumer decision behaviour. According to this theory, the intentions of an individual decide which behaviour to perform. In TPB, intentions consist of attitudes, subjective norms, and perceived behavioural control, as can be seen in figure 1.

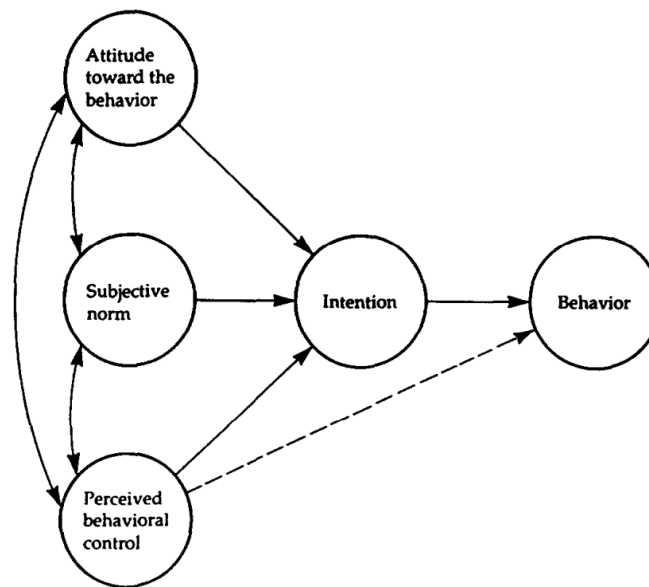


Figure 1 : Theory of planned behaviour (Ajzen, 1991)

Attitude points out a person's beliefs, either positive or negative, of an accurate behaviour. Subjective norm concerns the social acceptance a person perceives in relation to a behaviour. Perceived behavioural control is the capacity of an individual to perform a certain behaviour. This is determined by control beliefs, which are the perceived beliefs of an individual that incorporates the presence of possible obstacles or opportunities that help or interrupt the behavioural control. Ajzen (1991) states, if attitude, subjective norms, and PBC are strong, the intention will also be strong. This framework fits the research well because it focuses on the consumer's behaviour. The research targets the influence of income, a person's beliefs, and knowledge towards buying locally produced food, which refers to perceived behavioural control and attitudes. Not having the resources to buy locally produced food or not having knowledge about locally produced food may influence behaviour. The variables that will be researched are therefore attitudes, implying the beliefs of residents about locally produced food, knowledge, if there is awareness of where to buy locally produced food and the advantages, (grocery) budget, if someone is able to buy locally produced food, perceived behaviour control, what might be constraining factors, and lastly the actual behaviour of the residents. These variables are the dependent variables, and (low or high) income is the independent variable.

The research that has been done on this subject using this framework often considers attitudes and subjective norms but leaves out perceived behavioural control. Therefore, the research regarding this topic is inadequate in this regard. This research also focuses on attitudes and perceived behavioural control. As Shin points out in Self-congruity and the Theory of Planned

behaviour in the prediction of local food purchases (2016), a limitation of the research did not include control variables. He states: 'Another limitation comes from the fact that control variables such as gender, past experience, education level, etc. were not analysed'. Therefore, this research is focused on perceived behavioural control along with attitudes, knowledge, budget, and behaviour. Particularly, there will be looked at financial situations, and how this might influence the ability to purchase local food.

3. Methods

3.1 Methodological approach

The research problem that is investigated consists of the differences in attitude, knowledge, budget, behaviour, and perceived behavioural control towards locally produced food between residents with a higher average income and a lower average income. To answer this research question, different variables are used. Considering this research is about comparing groups based on the difference between income, this means attitude, knowledge, budget, behaviour, and perceived behavioural control are dependent variables and income is the independent variable. The inventory of data was based on a questionnaire and additional literature. The variables attitude, behaviour, and knowledge are qualitative variables and generated through open questions in the questionnaire. Qualitative data can be observed and recorded, but does not analyse numerical data for statistical analysis. In order to acquire two different perspectives on the dynamics of attitude, knowledge, budget, behaviour and perceived behavioural control, focused on locally produced food, also a quantitative methodology is used. A quantitative method is used within the questionnaire by using multiple-choice questions, open questions, and questions that need to be answered using a Likert scale. The monthly grocery budget and perceived behavioural control are quantitative variables that are used to analyse the research problem. Using quantitative data simplifies the analysis of the data.

The division between Amerongen and Doorn is made based on average income. The table of CBS concerning the average income states that the average income in Amerongen is considerably lower than the average income of residents of Doorn (Centraal Bureau voor de Statistiek, 2020). The inhabitants of Doorn have an average income of 33.100 euros per year. The inhabitants of Amerongen however, have an average income of 26.900 euros per year. In order to make the research as reliable as possible, the contrast is increased by conducting the questionnaire among people who live in socially rented homes in Amerongen and costlier houses in Doorn (above € 500.000). Consequently, this will provide data that will support the predictions and thereby make the data more accessible. However, in the questionnaire monthly grocery budget was asked instead of income, to make the questionnaire less discreet, and increase response rates. To increase response rates in a different manner, the residents were asked to fill in the questionnaire directly at their houses.

During the research, it was seen that there was no significant difference in the monthly grocery budget between Amerongen and Doorn. The mean grocery budget per person of respondents living in Amerongen is 216.7 euros and 237.5 euros for the people in Doorn. Because of this insignificant difference between Amerongen and Doorn, the division between high and low income, based on the monthly grocery budget, is made differently and will be analysed. A budget of 200 euros or higher is considered a 'high budget', and a budget of 200 euros or less is considered a 'low budget'. This research will mainly focus on low and high budgets instead of the division between Amerongen and Doorn that was made before.

3.2 Data collection

The methodology of using a questionnaire was chosen because this is a more convenient way to gather a substantial amount of data, than other research methods, such as interviewing the participants. As this research is focussing on processing and analysing the behaviour of a large population it is more convenient to choose a method that is less time-consuming, this is another reason for using questionnaires. An additional benefit of using a questionnaire is that participants can fill in their data anonymously, which is essential for their privacy as the participants can be truly honest. The questionnaire is set up in a way that the data collected from the detailed questions contains short and simple answers which makes it more accessible to process and analyse the data and also draw a conclusion out of it. As a finalising step, to minimize respondent fatigue, a few non-respondents filled in the questionnaire before the start of the fieldwork trip with the intention to make sure the questionnaire questions are interpreted in the right way and the questionnaire is not too time-consuming. This questionnaire is conducted through the programme Survey123 because this platform is the most accessible.

3.3 Sampling method

For this research, the stratified sampling method within the non-probability sampling method is used. The non-probability method entails developing an initial understanding of a small population which is the main goal of this research. The population is divided into two subpopulations which are, high and low budgets, they will be compared using different variables. To target residents with a high and low grocery budget, the stratified sampling method suits this research best.

3.4 Data analysis

All five variables are tested to see whether they display a significant difference among the two income groups. The data is analysed using the programme SPSS. This programme is helpful to combine and compare different variables on the basis of different statistical tests. Qualitative data was coded, to perform different statistical tests, including the different income groups, whereas 0 represents the low-income group and 1 represents the high-income group.

In this research, it was decided to use descriptive statistics, the Chi-Square test, and the Mann Whitney U test. Firstly, descriptive statistics is useful to present the data in a way that enables the results to allow a straightforward interpretation. The Chi-square test is a test to analyse whether two or more distributions differ from each other, using nominal variables as dependent. Moreover, the Mann-Whitney U test detects the differences between two independent groups when the dependent variable is ordinal. These different statistical tests and graphs give a good overview of the collected data. The data is analysed and afterwards conclusions are drawn to answer the research question. Meanwhile, because the amount of significant values was low, correlation statistical tests between the variables were also performed. The appropriate analysis to use was Spearman's test because the variables included are ordinal.

4. Results

In this chapter, the results from the survey are analysed in order to answer the research question: 'What are the differences in attitude, knowledge, budget, behaviour and perceived behaviour control, with regard to locally produced food, under residents with a high and low income in Amerongen and Doorn?' The aim is to determine if the hypothesis can be rejected or accepted. The hypothesis states that there are differences in knowledge, attitude, budget, perceived behaviour control, and behaviour regarding locally produced food, among residents with a high and low income in Amerongen and Doorn. Accordingly, the null hypothesis states that there are no differences in attitude, knowledge, budget, behaviour, and perceived behavioural control regarding locally produced food, under residents with a high and low income in Amerongen and Doorn. In order to observe the variety of the respondents group, different households filled in the survey, which resulted in different ages and different income levels. The details of the age of the respondents can be found in annex 9.3 figure 19.

4.1 Missing data

When making the low- and high-income division the results showed that six out of the sixty respondents did not fill the open question regarding their monthly grocery budget, leaving the results with 54 respondents instead of sixty. Those respondents either did not understand the question correctly or they did not fill it in because they experienced this question as an invasion of privacy. This implies some data in this research is coded as missing data.

4.2 Significant difference between Amerongen and Doorn

Because the results showed no substantial difference in income (derived from monthly grocery budget per person) between Amerongen and Doorn, it was still decided to compare these two groups, because there was still an opportunity to observe differences in attitude, knowledge, budget, behaviour, and perceived behavioral control. However, most of the comparisons made with Amerongen and Doorn, seen as the independent variable, were insignificant. Nonetheless, figure 2 shows one established significant difference between the two towns. Therefore, only this table is included, and the other insignificant differences can be found in annex 9.2. When looking at whether the monthly budget influences the capability of buying locally produced food, the difference between Amerongen and Doorn is significant. We can draw this conclusion when looking at the Pearson Chi-square, where the asymptotic difference shows 0.000. This value is lower than $p > 0.05$, which makes the difference between the two

towns significant. This states that people living in Amerongen see monthly budgets as something that is negatively influencing their ability to buy locally produced food.

variable	subvariable	type of test	p-value	significant/ insignificant
budget	money and its influence on the groceries	Chi-square	0	significant

Figure 2: Statistical analysis on the significant value

4.3 Significance between low and high income

First, the variable income will be analysed on the basis of the dependent variables stated on the vertical side in figure 3. The performed tests were the Whitney U test and the Chi-Square test. Looking at the significance value, also known as the p-value, it can be concluded that the only dependent variable that had a deviating value compared to the other dependent variables, was the influence of the monthly grocery budget on buying locally produced food. The null hypothesis, concerning this variable, is that the monthly grocery budget does not have an influence on buying locally produced food. As can be seen in the table, the significance value is 0,02. This is a lower value than 0,05. Therefore, the null hypothesis can be rejected which comes down to accepting the hypothesis, stating that the monthly grocery budget, income, have an influence on buying locally produced food. figure 4.1 and figure 4.2 support this acceptance. It states that 14 people with a low income do see money as an influencing factor towards buying locally produced products. This is in contrast with the respondents with a high income. Four people in this group answered that money is an obstructive factor in this matter.

Variable	Sub-variable	Type of test	P-value	Significant/Insignificant
<i>Attitude</i>	-	Mann-Whitney U test	0,353	Insignificant
<i>Knowledge</i>				
	<i>Knowledge (1) definition</i>	Chi-square	0,816	Insignificant
	<i>Knowledge (2) benefits</i>	Chi-square	0,817	Insignificant
<i>Budget</i>				
	<i>As cheap as possible</i>	Mann-Whitney U test	0,224	Insignificant
	<i>Money and its influence on the groceries</i>	Chi-square	0,02	Significant
<i>Behaviour</i>				
	<i>Where do people shop</i>	Chi-square	0,155	Insignificant
	<i>Whether or not respondents buy locally produced food</i>	Mann-Whitney U test	0,317	Insignificant
	<i>Willingness to change behaviour</i>	Chi-square	0,665	Insignificant
<i>Perceived behavioural control</i>				
	<i>Distance</i>	Chi-square	0,638	Insignificant
	<i>Time</i>	Chi-square	0,361	Insignificant
	<i>Supporting local entrepreneurs</i>	Chi-square	0,98	Insignificant
	<i>Health</i>	Chi-square	0,348	Insignificant
	<i>Offer</i>	Chi-square	0,734	Insignificant

Figure 3: Significant value of the variables

The other variables, attitude, knowledge, behaviour, and perceived behaviour control all have a significant value above the value of 0,05. In this case, this implies that there are no significant differences in attitude, knowledge, behaviour and perceived behaviour control regarding locally produced food, under residents with a high and low income in Amerongen en Doorn.

4.4 Relevant questions of the survey

The division between low and high income was not visible within multiple questions in the survey. For instance, the question that asked where people buy their groceries, 47 people out of the 60 participants filled in that they occasionally buy their groceries in a place where locally produced products are available. Twenty-five people of the total respondents of 47 have a low income and 12 people have a high income. Another outcome of the variable attitude indicates that overall half of the respondents did not even pay attention to buying locally produced products, however, there is no significant difference found within the variable attitude which is shown in figure 14. Another outcome, concerning the knowledge variable, is that 56 of the participants do know what the term locally produced means and 46 of them are aware what the benefits of locally produced products are. These outcomes are evenly spread between the high and low income respondents.

The next variable is behaviour. Behaviour stands for the way in which one acts or conducts oneself, especially towards others (Cambridge Dictionary, 2021). Different questions are asked in the survey to investigate the influence of this variable on our research question. Confirming the variable behaviour, 34 respondents are willing to change their grocery shopping behaviour after being informed about the benefits of locally produced products. Restraining factors are linked to perceived behaviour control. Health, effort, offer, distance, time and the support of local entrepreneurs are the factors that might influence the shopping behaviour of people.

The following five variables are all dependent; distance, time, supporting local entrepreneurs, health and offer. The variables are compared to the dependent variable income, divided into high and low income. The comparisons made between those groups gave an insignificant outcome. This states that these variables all do not show a difference between high and low income and do not influence the shopping behaviour of locally produced products. However, according to the data, the offer was seen as the largest restraining factor compared to the other factors. 21 people voted that it had an obstructive influence on buying locally produced food. Nonetheless, 25 people answered that it was not an obstructive factor at all. Moreover, twenty people voted for distance as an obstructive factor in buying locally produced products.

Variable	Sub-variable	Total respondents	Answer	Total frequency	Frequency low-income (0)	Frequency high-income (1)
<i>Attitude</i>						
		60	I do not pay attention to it at all	12	5	4
			I do not pay attention to it	18	11	7
			I do pay a bit attention to it	11	8	3
			I do pay attention to it	15	5	9
			I do pay attention to it a lot	4	1	1
<i>Knowledge</i>						
	<i>Knowledge (1) definition</i>	60	Yes	56	28	22
			No	4	2	2
	<i>Knowledge (2) benefits</i>	59	Yes	45	23	17
			No	14	7	6
<i>Budget</i>						
	<i>As cheap as possible</i>	60	I do not pay attention to it at all	10	3	6
			I do not pay attention to it	13	7	5
			I do pay a bit attention to it	19	9	7
			I do pay attention to it	12	8	4
			I do pay attention to it a lot	6	3	2
	<i>Money and its influence on the groceries</i>	60	Yes	20	14	4
			No	40	16	20

Figure 4.1: Descriptive statistics on the results

Variable	Sub-variable	Total respondents	Answer	Total frequency	Frequency low-income (0)	Frequency high-income (1)
Behaviour						
	<i>Where do people shop</i>	60	Sustainable shopping	47	25	16
			Unsustainable shopping	13	5	8
	<i>Whether or not respondents buy locally produced food</i>	60	My groceries are not locally produced at all	4	3	1
			My groceries are very occasionally locally produced	21	11	7
			My groceries are occasionally locally produced	27	13	13
			My groceries are often locally produced	8	3	3
	<i>Willingness to change behaviour</i>	60	Yes	34	17	15
			No	26	13	9
Perceived behavioural control						
	<i>Distance</i>	60	Not obstructive	26	12	12
			Neutral	14	8	4
			Obstructive	20	10	8
	<i>Time</i>	60	Not obstructive	24	10	12
			Neutral	18	9	7
			Obstructive	18	11	5
	<i>Supporting local entrepreneurs</i>	60	Not obstructive	42	21	17
			Neutral	16	8	6
			Obstructive	2	1	1
	<i>Health</i>	60	Not obstructive	42	21	17
			Neutral	14	8	4
			Obstructive	4	1	3
	<i>Offer</i>	60	Not obstructive	21	11	8
			Neutral	14	6	7
			Obstructive	25	13	9

Figure 4.2: Descriptive statistics on the results

4.5 Correlations

As there was an insubstantial amount of significant outcomes, it was relevant to consider investigating the data more in-depth, by analysing the correlations between different variables. The statistical test that was used to conduct the analysis was the Spearman's test. However, the outcome of these tests was that the correlation between the variables was insignificant. Figure 5 shows an overview of a few of the executed correlation tests. The outcome of the insignificant values tells that the null hypothesis cannot be rejected and thus needs to be accepted. The null hypothesis states the following: there are no significant correlations between attitude, budget, and behaviour with regards to locally produced food, under residents with a high and low income in Doorn and Amerongen.

Variable	sub-variable	correlated with	type of test	p-value	significant/ insignificant
behaviour	respondents buy locally	monthly budget	Spearman's test	0,137	insignificant
attitude	/	monthly budget	Spearman's test	0,128	insignificant
budget	as cheap as possible	monthly budget	Spearman's test	-0,167	insignificant

Figure 5: Overview of correlation tests

5. Discussion

In order to answer the research question; 'What are the differences in attitude, knowledge, budget, behaviour and perceived behaviour control between residents with a high and low income in Amerongen and Doorn?', the different variables were analysed.

After analyzing all the results it can be seen that there is no significant difference for the four variables; attitude, knowledge, behaviour, and perceived behaviour control. For the variable 'budget' there was a significant difference in one of the two sub-variables between high and low income. The question that was included in this variable is 'Does your monthly grocery budget have an influence on the ability to buy locally produced food?'. This question provided a significant difference between high and low income. The other question, however, concerning the variable budget did not show a significant difference between the high and low income groups. Therefore, it cannot be concluded that there is an overall significant difference concerning this variable. Nevertheless, it is interesting to notice that residents think their budget has an influence on their ability to purchase locally produced food, but their behaviour does not show its influence, as there is no significant difference in behaviour between the low and high income groups. Even though there were no significant differences between the high and low income groups, some other noticeable things arose after analyzing the results. For instance, it can be seen in figure 4.2, that when it comes to perceived behavioural control the respondents experienced the most hindrance when it comes to offer. Additionally, it can be seen in figure 4.2, that approximately half of the participants do not want to change their behaviour after being aware of the advantages of purchasing behaviour. With regards to all the answers that have been given, the answer to the research question can be stated, namely: 'Overall there are no significant differences in attitude, knowledge, budget, behaviour and perceived behaviour control towards locally produced food between residents with a higher average income and a lower average income in Doorn and Amerongen.'

5.1 Other research

As has been stated in the introduction, sustainable food choices, such as locally produced food, are often more expensive, and therefore consumers with a lower income will consume less sustainable food (Schwartz, 2017). Additionally, Padel and Foster (2005) also find price being a barrier for many consumers, especially people with a low income. These two studies show a difference in behaviour between people with a high and low income, which differs from this research. Webber and Dollahite (2008) detected the same attitude towards locally produced food between people with high and low income. But they did detect a difference in

knowledge between high and low income groups, although this research did not detect any significant difference in knowledge (Webber & Dollahite, 2008). This difference could be explained as they used a different research method, namely interviewing. In addition, they targeted high and low income in a different way, and this may have influenced the results. Furthermore, Kumar and Smith (2017), found no influence of perceived behavioural control. However, nearly half of the participants in this research found one of the factors (time, distance, offer, etc.) hindering.

There could be multiple reasons why these studies have different conclusions. To begin with, the sample size of this research is limited. This leads to less variability within the sample size and therefore does not represent the population as closely. Furthermore, having a small sample size can lead to a volunteer bias (Sedgwick, 2013). This research is especially sensitive to this phenomenon because the survey was mostly conducted in public. Another reason why this research has a different outcome might be the way high and low income were targeted. The assumption was made that residents with a high monthly grocery budget also have a high income. Likewise, residents with a low monthly grocery budget have a low income. However, this might not always be the case, considering residents may have different priorities. Residents with a high income could spend less on groceries than residents with a low income, as they might have different priorities. Furthermore, in the survey the following question: 'Are you in charge of the groceries in your household?' was raised. Twenty people responded with 'no' to this question. The assumption that was made during this research is that even though people responded with no, they still do have enough knowledge about the groceries in order to fill in the questionnaire, and therefore it was decided to also include them in the data analysis. However, it could also be that there is not just one person in charge of the groceries in the house, or that the people do not have enough knowledge about the groceries, and therefore can not fill in the survey accurately.

5.2 Limitations

The research encountered various limitations during the fieldwork in Amerongen and Doorn. The reasons are mostly related to the fact that it was decided to ask people to fill in the questionnaire door to door. Firstly, due to the regulations imposed by the Dutch government because of the Covid-19 pandemic, the majority of people were working from home. Hence, although in the majority of the houses there was someone at home, most of the time they were in the middle of a working meeting or unable to spare a few minutes to listen to the reason why of the research. Consequently, this made the option of giving the questionnaires on paper inconvenient, due to the fact that they did not have time to fill it out at the moment of when it

was asked. Because of the pressure that it could give, and because it was complicated to get the responses back on time later on via post mail.

Therefore, even though our survey was thought to be filled out online in their free time, the rate of non-response was remarkably high. However, the pandemic was not the only reason for these results. Although the QR code seemed a better solution to have a higher response, due to a scam that happened a few months prior, numerous people had trouble trusting the link of the survey. The scam happened in January, and it was concerning fraudsters who sent a QR code to the sellers of online secondhand markets, which if activated can open the sellers' bank account (Politie waarschuwt voor phishing met QR-codes, 2021). To increase the sample size, it was also decided to spread the survey online, through Facebook groups for the residents of Doorn and Amerongen, through WhatsApp groups, and by asking people that lived there or had friends/family living in either city. Although the Facebook group administrator did not respond to our request, there were still a few responses. However, the number of non-responses was still significant.

Other limitations encountered are related to the methods used to analyse the results. Firstly, because it was decided to use non-probability sampling, meaning without the use of random selection, it is difficult to know if the research is well representative of the population. Therefore, non-probability sampling might often lead to biased samples, because unconsciously the researchers might more likely include some kind of respondents and avoid others. Although the probability of sampling might be more accurate and rigorous, the circumstances of the social research made it not feasible to use random sampling.

5.3 Factors not taken into account

When conducting research, there are always factors that may influence the results of the research. The research focused on the role of income when looking at the behaviour of residents towards locally produced food. This research was conducted by looking at two different villages in the Utrechtse Heuvelrug. However, when drawing conclusions from the results, there are always some factors that are not taken into account.

The first factor that was not taken into account is that the research mostly targeted old people (see annex 9.3 figure 19). The largest part of the residents in Doorn, as well as in Amerongen were elderly people, as can be seen in the bar chart. Therefore, the conclusions that were drawn from the survey are not representative of the whole population, because of the fact that the behaviour of these two groups may be different.

Secondly, the personal norms of people were not taken into account. People may have their own personal reasons for choosing where to purchase their food. The reason for people to not buy locally produced food may be different than just because of their income. There can be concluded that the limitation of the research is that it focuses on income, which causes the research to pay little attention to the other possible reasons. Lastly, the subjective norms were not taken into account in the survey. The residents' purchase behaviour may be influenced by subjective norms, seen by the fact that they live in a small village, where their behaviour can be consciously or unconsciously influenced by the behaviour of the other residents of the village.

6. Conclusion

The aim of this research paper was to find if there are differences in attitude, knowledge, budget, behaviour, and perceived behaviour control regarding locally produced food, under residents with a high and low income in Amerongen and Doorn. Hence, the different variables were compared with the monthly grocery budget of people with a low or a high income. Overall, while comparing the two distinct groups, most of the variables did not have a significant difference towards locally produced food. However, there is a difference between the low and high income in the case of whether their budget has an influence on buying locally produced food. Respondents with lower earnings believe that income plays a major role in the ability to buy locally produced food, while accordingly, the respondents with a higher average income are influenced less by the price of food that is locally produced. In the end, perceived behavioural control gave the outcome of the variable offer as the main obstacle when it comes to buying locally produced food. The question was asked if people were willing to change their shopping behaviours after hearing about the benefits. The outcome was evenly distributed. Half of the respondents were willing to change their shopping behaviour.

Even though the research did not detect a significant difference in the results between the variables while comparing the high and low-income respondents, this does not mean that future research is not needed. Future research can provide more knowledge on the significant differences but also on the insignificant differences between the different variables. This research focused on the framework of the Theory of Planned Behavior, and especially on attitudes, knowledge, and perceived behavioural control, but did not include subjective norms, which should be included in future research. Furthermore, future research could target high and low income differently. The way it was targeted in this research was not significant enough, therefore results could also be influenced by this factor. Moreover, research in the future should target it differently, so that the difference between income gets clearer. Although there were not many significant differences between Amerongen and Doorn, and high and low income, certain data did spread more knowledge about the behaviour of residents towards locally produced food. For example, almost half of the participants in the questionnaire found 'offer' hindering, which means a bigger offer could mean more extensive purchases of locally produced food. Hence, after analysing the difference in the variables between the higher and lower income for the residents in Amerongen and Doorn, it is possible to conclude that implementing a more natural inclusive agriculture, by consuming more locally produced food, is complex. When trying to stimulate the purchasing of locally produced food, the most accessible change is increasing the offer and the residents' knowledge. Increasing the income,

however, is more complicated. To achieve the SDGs of “Sustainable Cities and Communities” and “Responsible Consumption and Production” many factors need to be taken into account.

7. Relevance

The results of the research shine light on the difference between attitude, knowledge, budget, behaviour, and perceived behavioural control, between high and low income groups, which provides information about the intention of residents towards locally produced food. The questionnaire consisted of multiple questions to discover different variables related to behavior of residents. The results showed that there were no considerable differences between the high and low income groups. Even though this research did not detect differences, other information did stand out. For instance, offer was found to be the most hindering factor in buying locally produced food. Therefore, trying to increase the amount of locally produced food being sold could be done by increasing the offer of locally produced food near Doorn and Amerongen.

The outcome of this paper will help to answer the overarching research question, as these results provide information about a challenge that could be solved about the consumption of sustainable food in the Utrechtse Heuvelrug. This research also relates to different subtopics, such as the topic of group 4F. The group pays attention to the personal values about sustainable food, and what people experience in purchasing sustainably produced food. These two topics will help to answer the consumption part of the overarching research question. Moreover, this research focuses more on locally produced food, which is one of the categories of sustainable food and other groups might focus on the broader term of sustainable food. This can also help to answer the research question more extensively. The natural sciences part of the topic is also of significant value. These topics pay more attention to the production side of the issue, which helps to answer the research question in more depth. Bianchi and Mortimer (2015) explain that producers have a significant role to achieve higher levels of local food sales. They are a part of developing positive attitudes towards sustainable food, which can increase the purchase of sustainable food. For example group 4C, which focuses on services of food forests, that helps inform people about sustainable food supply, and this can support the development of a positive attitude. Also, food forests are in need of volunteers, and therefore creating a positive attitude towards sustainable food can be relevant to the existence of food forests (De Groot & Veen, 2017). Looking at the production, and the consumption side of sustainable food in the Utrechtse Heuvelrug can help to understand different attitudes and control beliefs, which in the end can stimulate sustainable food consumption.

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9. Annexes

9.1 Annex 1: Questionnaire questions

Questionnaire questions:

Hallo, wij zijn 5 studenten van de universiteit van Utrecht. Wij doen onderzoek naar de consumptie van lokaal geproduceerd voedsel in de Utrechtse Heuvelrug en hiervoor wordt de data van deze enquête ook gebruikt. Bij voorbaat dank voor het invullen van deze enquête. De enquête is anoniem en de data wordt enkel gebruikt voor dit onderzoek. Meedoen met deze enquête zou ons erg helpen in het onderzoek en neemt 5-10 minuten van uw tijd in beslag.

1. Wat is uw leeftijd?
 - a. 0-18
 - b. 18-25
 - c. 25-40
 - d. 40 of ouder
2. Wat is uw geslacht?
 - a. Man
 - b. Vrouw
 - c. Anders:
 - d. Zeg ik liever niet
3. Wat is uw hoogst genoten opleidingsniveau?
4. Waar bent U op dit moment woonachtig?
 - a. Doorn
 - b. Amerongen
5. Uit hoeveel personen bestaat uw huishouden?

Open vraag

6. Bent u de hoofdverantwoordelijke voor de boodschappen in uw huishouden?

- a. Ja
- b. Nee

7. Wat is uw gemiddelde maandbudget voor boodschappen?

Open vraag

8. Bent u bekend met de term lokaal geproduceerde producten?

- a. Ja
- b. Nee

9. Zo ja, wat zijn de bijkomende voordelen van lokaal geproduceerd voedsel volgens u?

Open vraag

10. Heeft uw maandbudget invloed op uw vermogen om lokaal geproduceerd voedsel te kopen?

- a. ja
- b. nee

Informatie: Lokaal geproduceerd is een omstreden concept. Er zijn erg veel verschillende manieren om dit op te vatten. **In dit onderzoek definiëren wij lokaal geproduceerd als geproduceerd in Nederland.**

11. Waar koop u uw boodschappen? (meerdere antwoorden mogelijk)

- a. 'Grote' supermarktketens (bv. Jumbo, Albert Heijn)
- b. Biologisch/ecologische supermarkt ketens (bv. Ekoplaza)
- c. Speciaalzaak (bv. Natuurvoeding Doorn V.O.F.)
- d. Markt
- e. Bij mensen thuis
- f. Boer/teler
- g. Overige, namelijk:

12. Wat zijn uw focuspunten wanneer u boodschappen doet? Ik let er op op een schaal van 1-5 (1= ik let er totaal niet op, 5= ik let er erg op)

Factor	Schaal 1-5
Ik let er op dat mijn producten uit de streek komen	
Ik let er op dat mijn producten voorzien zijn van bepaalde keurmerken	
Ik let er op dat mijn boodschappen zo goedkoop mogelijk zijn	
Ik let er op dat mijn producten biologisch zijn	
Ik let er op dat mijn producten seizoensgebonden	

13. In hoeverre bent u het eens met de volgende stelling: 'Mijn boodschappen zijn lokaal geproduceerd'

a. 1-5 (1= totaal niet lokaal geproduceerd, 5 = erg lokaal geproduceerd)

14. Welk effect hebben de volgende factoren op uw koopgedrag omtrent lokaal geproduceerd voedsel?

Factor	Niet belemmerend	Neutraal	Belemmerend
Geld			
Het ondersteunen van lokale ondernemers			
Gezondheid			
Tijd			
Afstand			
Aanbod			

Informatie: Sommigen voordelen van lokaal geproduceerde producten zijn :

- Het stimuleren van de lokale economie
- Beter voor het milieu
- Verser en vaak ook gezonder

17. Nadat de voordelen van lokaal geproduceerd voedsel nu bekend zijn, zou u dan bewuster uw boodschappen doen?

- a. Ja
- a. Nee

9.2 Annex 2: Results comparing Amerongen and Doorn

9.2.1 Attitude

9.2.1.1 To what extent do people pay attention in buying locally produced food in Amerongen and Doorn?

Attitude is one of the variables that is analysed in order to answer the research question. Therefore, people living in Amerongen and Doorn are asked whether or not they pay attention to buying locally produced food. The independent variable is the city of residence, meanwhile the dependent variable is paying attention to buying locally produced food. The analysis test that is used is the Chi-square test.

Uit streek (1-5)					Test Statistics ^a	
		Frequency	Percent	Valid Percent	Cumulative Percent	Uit streek (1-5)
Valid	ik let er totaal niet op	12	19,7	20,0	20,0	Mann-Whitney U
	ik let er niet op	18	29,5	30,0	50,0	424,000
	ik let er een beetje op	11	18,0	18,3	68,3	Wilcoxon W
	ik let er op	15	24,6	25,0	93,3	920,000
	ik let er erg op	4	6,6	6,7	100,0	Z
	Total	60	98,4	100,0		Asymp. Sig. (2-tailed)
Missing	System	1	1,6			,698
Total		61	100,0			

a. Grouping Variable:
Woonplaats

Figure 6: Paying attention to locally produced versus place of residence

Figure 6 shows that the asymptotic significance of the Pearson Chi-Square is 0,667 and this value is above 0,05. This indicates that there is no significant difference between the two groups, in this case the groups are Amerongen and Doorn. Residents of both places pay an equal amount of attention to buying locally produced food.

9.2.2 Knowledge

9.2.2.1 How well educated are people on the term 'locally produced food' in Amerongen and Doorn?

This knowledge section is split up into two different parts. The one part where knowledge on the term of locally produced food is analysed and the part where the knowledge on benefits of locally produced food is analysed. These variables are both dependent. Therefore the Chi-square test is used in this section.

Frequency Table

Kennis 1 (term)				
		Frequency	Percent	Cumulative Percent
Valid	no	4	6,6	6,7
	yes	56	91,8	93,3
	Total	60	98,4	100,0
Missing	System	1	1,6	
Total		61	100,0	

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	,005 ^a	1	,945		
Continuity Correction ^b	,000	1	1,000		
Likelihood Ratio	,005	1	,945		
Fisher's Exact Test				1,000	,668
N of Valid Cases	60				

a. 2 cells (50,0%) have expected count less than 5. The minimum expected count is 1,93.

b. Computed only for a 2x2 table

Kennis 2 (voordelen)

Figure 7: Knowledge on the term locally produced food

These results show that only four out of the sixty respondents had never heard of the term 'locally produced' this means that the residents are well educated. The table in Figure 7 shows that the asymptotic significance of the Pearson Chi-square is 0,945. Because 0,945 is larger than 0,05 it can be stated that there is no significant difference between both Amerongen and Doorn and their knowledge about the definition 'locally produced' does not contradict.

9.2.2.2 How well educated are people on the benefits of 'locally produced food' in Amerongen and Doorn?

Kennis 2 (voordelen)				
		Frequency	Percent	Cumulative Percent
Valid	no	14	23,0	23,7
	yes	45	73,8	76,3
	Total	59	96,7	100,0
Missing	System	2	3,3	
Total		61	100,0	

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2,626 ^a	1	,105		
Continuity Correction ^b	1,727	1	,189		
Likelihood Ratio	2,704	1	,100		
Fisher's Exact Test				,133	,094
N of Valid Cases	59				

a. 0 cells (0%) have expected count less than 5. The minimum expected count is 6,64.

b. Computed only for a 2x2 table

Figure 8: Knowledge on the benefits of locally produced food

Figure 8 shows that the Pearson Chi-square from these results is 0,105. This is closer to 0,05 than the p value in the previous question, which shows that less respondents are aware of the benefits than the literal definition. However, 0,105 is still larger than 0,05 which indicates that this difference is still not significant.

9.2.3 Budget

Amerongen and Doorn are the places of residence and is the independent variable in this matter, the dependent variable is the influence of money.

9.2.3.1 What influence does the monthly budget have on the capability of buying locally produced food

Frequency Table

Heeft uw maandbudget invloed op het vermoen om lokaal geproduceerd te kopen					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	no	40	65,6	66,7	66,7
	yes	20	32,8	33,3	100,0
	Total	60	98,4	100,0	
Missing	System	1	1,6		
Total		61	100,0		

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	13,348 ^a	1	,000		
Continuity Correction ^b	11,421	1	,001		
Likelihood Ratio	14,407	1	,000		
Fisher's Exact Test				,000	,000
N of Valid Cases	60				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 9,67.

b. Computed only for a 2x2 table

Figure 9: Influence of monthly budget on capability of buying locally produced food

When looking at whether the monthly budget influences the capability of buying locally produced food, the difference between Amerongen and Doorn is significant. We can draw this conclusion when looking at the Pearson Chi-square, where the asymptotic difference shows 0,000. This is lower than $p > 0,05$, which makes the difference significant.

9.2.3.2 To what extent do the residents pay attention to the prices of their groceries?

Goedkoop (1-5)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	ik let er totaal niet op	10	16,4	16,7	16,7
	ik let er niet op	13	21,3	21,7	38,3
	ik let er een beetje op	19	31,1	31,7	70,0
	ik let er op	12	19,7	20,0	90,0
	ik let er erg op	6	9,8	10,0	100,0
	Total	60	98,4	100,0	
Missing	System	1	1,6		
Total		61	100,0		

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7,550 ^a	4	,110
Likelihood Ratio	7,879	4	,096
N of Valid Cases	60		

a. 3 cells (30,0%) have expected count less than 5. The minimum expected count is 2,90.

Figure 10: The paying of attention to the prices of the groceries

The difference between Amerongen and Doorn, when looking at whether they pay attention to the price of the groceries is insignificant. This can be concluded because the Pearson Chi-square shows an asymptotic significance of 0,110. This is larger than $p > 0,05$, which indicates that the outcome is insignificant and there is no large difference between people living in Amerongen and Doorn on paying attention to prices of locally produced food.

9.2.4 Behaviour

Behaviour stands for the way in which one acts or conducts oneself, especially towards others (Cambridge Dictionary, 2021). Different questions are asked in the survey to investigate the influence of this variable on our research question. This paragraph will analyse the results on the behaviour tests.

9.2.4.1 Do people, living in Amerongen and Doorn, buy locally produced food?

Chi-Square Tests				
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	1,159 ^a	1	,282	
Continuity Correction ^b	,582	1	,445	
Likelihood Ratio	1,165	1	,280	
Fisher's Exact Test				,355
N of Valid Cases	60			,223

Chi-Square Tests				
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	1,159 ^a	1	,282	
Continuity Correction ^b	,582	1	,445	
Likelihood Ratio	1,165	1	,280	
Fisher's Exact Test				,355
N of Valid Cases	60			,223

a. 0 cells (0,0%) have expected count less than 5. The minimum expected count is 6,28.
b. Computed only for a 2x2 table

Figure 11: Behaviour of buying locally produced foods

The dependent variable is whether or not the respondents buy food in stores selling locally produced foods. The independent variable is the place of residence. It can be analysed that people living in Doorn buy more food in stores that sell locally produced foods. The Asymptotic significance indicates that this difference between the two towns however is negligible.

9.2.4.2 After the advantages of buying locally produced food are known, would people living in Amerongen and Doorn be more aware of this while doing groceries?

Chi-Square Tests				
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	,087 ^a	1	,768	
Continuity Correction ^b	,001	1	,972	
Likelihood Ratio	,087	1	,768	
Fisher's Exact Test				,800
N of Valid Cases	60			,486

a. 0 cells (0%) have expected count less than 5. The minimum expected count is 12,57.
b. Computed only for a 2x2 table

Figure 12: Advantages of locally produced food are known, will people do their groceries more focused on buying locally produced food compared to people with low or high income.

The dependent variable in this matter is the place of residence, the independent variable is the shopping behaviour of people. The analysis test that is used is the Chi-Square test. The asymptotic significance is 0,769, this indicates that there is no significant difference between the two groups. What can be said from these data in figure 12 is that the difference between

grocery shopping behaviour of people living in Doorn and people living in Amerongen after the advantages of locally produced food are known is negligible.

9.2.4.3 On what scale measurement do people, living in Amerongen and Doorn, rate their groceries as locally produced?

Zijn uw boodschappen lokaal geproduceerd				
		Frequency	Percent	Valid Percent
Valid	totaal niet lokaal geproduceerd	4	6,6	6,7
	heel soms lokaal geproduceerd	21	34,4	35,0
	soms lokaal geproduceerd	27	44,3	45,0
	vaak lokaal geproduceerd	8	13,1	13,3
	Total	60	98,4	100,0
Missing	System	1	1,6	
Total		61	100,0	

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1,901 ^a	3	,593
Likelihood Ratio	1,952	3	,582
N of Valid Cases	60		

a. 4 cells (50,0%) have expected count less than 5. The minimum expected count is 1,93.

Figure 13: On what scale are groceries rated as locally produced

People living in Amerongen and Doorn are asked to fill in the question on what scale they would rate their groceries as locally produced. The outcome is that the significance is 0,593 and is therefore higher than 0,05 and indicates that there is no significant difference between people living in Amerongen and Doorn.

9.2.5 Perceived behavioural control

This paragraph will analyse the results on the Perceived behavioural control tests, this includes five dependent sub-variables per the two groups that are being compared, which are distance, time, supporting local entrepreneurs, health and offer.

9.2.5.1 Distance

Afstand					Chi-Square Tests			
		Frequency	Percent	Valid Percent	Cumulative Percent	Value	df	Asymptotic Significance (2-sided)
Valid	niet belemmeremd	26	42,6	43,3	43,3	Pearson Chi-Square	4,094 ^a	2
	neutraal	14	23,0	23,3	66,7			
	belemmeremd	20	32,8	33,3	100,0			
	Total	60	98,4	100,0		Likelihood Ratio	4,187	2
Missing	System	1	1,6			N of Valid Cases	60	
Total		61	100,0			a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 6,77.		

Figure 14: influence of the variable distance

The following figures show that the respondents in both Amerongen and Doorn are not affected by distance when it comes to buying locally produced foods. The p-value is 0,129, which is larger than 0,05 and we can thus conclude that there is no significant difference between the two groups.

9.2.5.2 Time

Tijd					Chi-Square Tests			
		Frequency	Percent	Valid Percent	Cumulative Percent	Value	df	Asymptotic Significance (2-sided)
Valid	niet belemmeremd	24	39,3	40,0	40,0	Pearson Chi-Square	,545 ^a	2
	neutraal	18	29,5	30,0	70,0			
	belemmeremd	18	29,5	30,0	100,0			
	Total	60	98,4	100,0		Likelihood Ratio	,546	2
Missing	System	1	1,6			N of Valid Cases	60	
Total		61	100,0			a. 0 cells (,0%) have expected count less than 5. The minimum expected count is 8,70.		

Figure 15: influence of the variable time

The following figures show that the respondents in both Amerongen and Doorn are not affected by time when it comes to buying locally produced foods. The p-value is 0,761, which is larger than 0,05 and we can thus conclude that there is no significant difference between the two groups.

9.2.5.3 Supporting local entrepreneurs

Het ondersteunen van lokale ondernemers						Chi-Square Tests			
		Frequency	Percent	Valid Percent	Cumulative Percent	Value	df	Asymptotic Significance (2-sided)	
Valid	niet belemmerend	42	68,9	70,0	70,0	Pearson Chi-Square	,184 ^a	2	,912
	neutraal	16	26,2	26,7	96,7				
	belemmerend	2	3,3	3,3	100,0	Likelihood Ratio	,184	2	,912
	Total	60	98,4	100,0		N of Valid Cases	60		
Missing	System	1	1,6			a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is ,97.			
Total		61	100,0						

Figure 16: influence of the variable supporting local entrepreneurs

The following figures show that the respondents in both Amerongen and Doorn are not affected by time when it comes to buying locally produced foods. The p-value is 0,912, 0,912 is larger than 0,05 and we can thus conclude that there is no significant difference between the two groups.

9.2.5.4 Health

Gezondheid					Chi-Square Tests				
		Frequency	Percent	Valid Percent	Cumulative Percent		Value	df	Asymptotic Significance (2-sided)
Valid	niet belemmerend	42	68,9	70,0	70,0	Pearson Chi-Square	2,078 ^a	2	,354
	neutraal	14	23,0	23,3	93,3				
	belemmerend	4	6,6	6,7	100,0	Likelihood Ratio	2,139	2	,343
	Total	60	98,4	100,0		N of Valid Cases	60		
Missing	System	1	1,6			a. 2 cells (33,3%) have expected count less than 5. The minimum expected count is 1,93.			
Total		61	100,0						

Figure 17: influence of the variable health

The following figures show that the respondents in both Amerongen and Doorn are not affected by health when it comes to buying locally produced foods. The p-value is 0,354, which is larger than 0,05 and we can thus conclude that there is no significant difference between the two groups.

9.2.5.4 Offer

Aanbod						Chi-Square Tests		
		Frequency	Percent	Valid Percent	Cumulative Percent	Value	df	Asymptotic Significance (2-sided)
Valid	niet belemmeremd	21	34,4	35,0	35,0	Pearson Chi-Square	1,363 ^a	,506
	neutraal	14	23,0	23,3	58,3	Likelihood Ratio	1,370	,504
	belemmeremd	25	41,0	41,7	100,0	N of Valid Cases	60	
	Total	60	98,4	100,0				
Missing	System	1	1,6					
Total		61	100,0					

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 6,77.

Figure 18: influence of the variable offer

The following figures show that the respondents in both Amerongen and Doorn are not affected by the variable offer when it comes to buying locally produced foods. The p-value is 0,506, this is a larger value than 0,05 and it can be concluded that there is no significant difference between the two groups.

9.3 Annex 3: Analysis figures

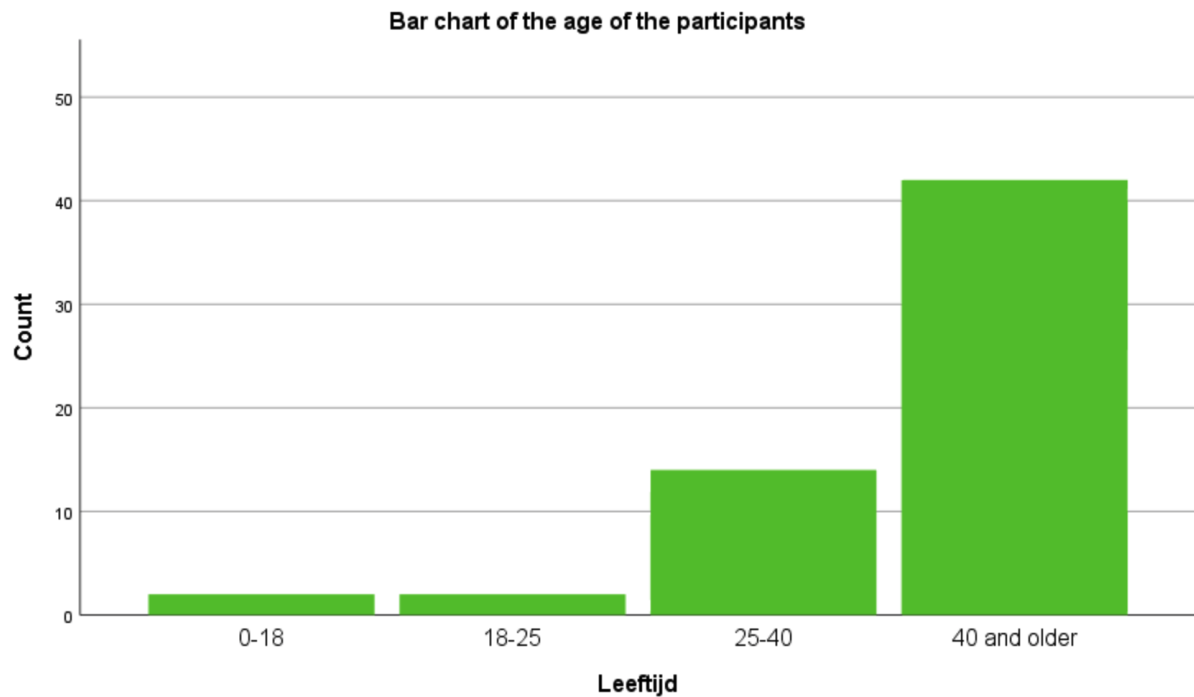


Figure 19: A bar chart that shows the division of different age groups

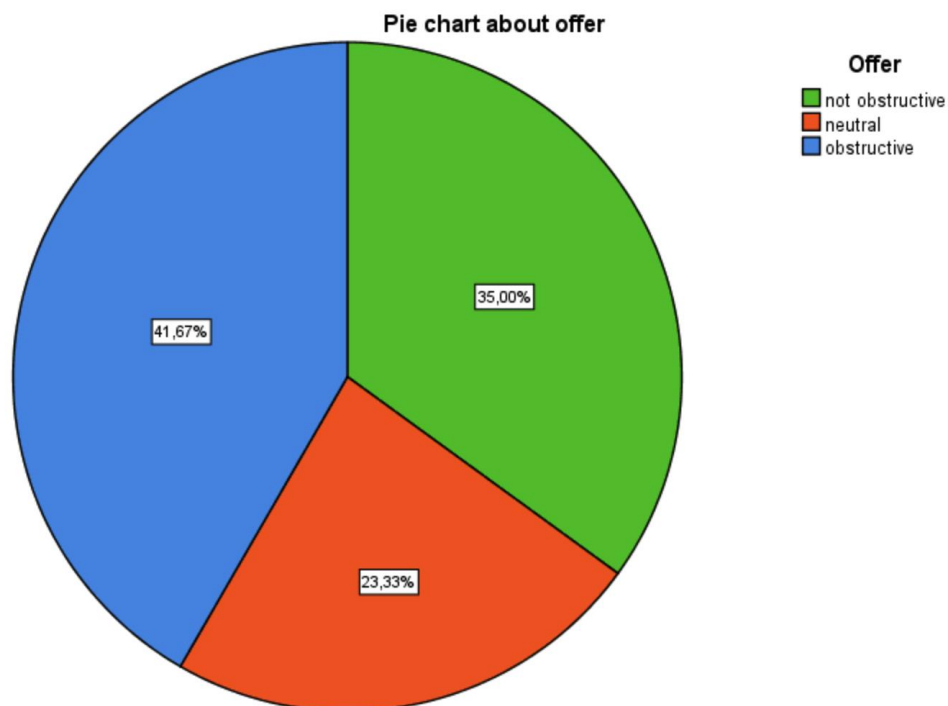


Figure 20: A pie chart with the division on how hindering the respondents experience offer when it comes to shopping locally produced food