Age disparities in food consumption

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Abstract

Every individual takes value from a dinner in a different way. Factors that influence this value are price, preparation time, taste and healthiness of the meal. With data from the LISS panel, we investigate the role of these factors when it comes to choosing a meal. We do this by performing a mixed logit model for a representative sample of the Dutch population and for different age groups. Healthiness proves to be the most important factor when choosing a dinner, but it is also the factor which causes most differences between different age groups.

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1 Introduction

Different people have different eating habits. It is not alway clear which factors influence these eating habits and for which persons. However, it is very useful to know why people choose to eat certain food. The urgence of this lies in the fact that the amount of people with obesity is growing. Somewhat paradoxically, this problem especially is a matter of concern in the more prosperous countries. If we know which people choose to eat what food, there may be campaigns focused at the risk groups. These campaigns try to influence these people, because when they start to change their eating behaviour, they would probably live longer.

In our research, we replicate part of Koç and Van Kippersluis (2015). In this paper, the authors want to find an answer to the question what the cause is that higher educated generally eat healthier. The reason for this research is in line with what we mentioned above: if one knows why lower educated do not have as healthy eating habits as higher educated, he can take a focused approach to solve this issue.

The part of the paper we replicate is a mixed logit model. This model gives an indication which factors people take into account, perhaps implicitly, when choosing for dinner. We extend this research by figuring out what the differences are between different age groups. When age increases, people usually increase in wisdom. We check whether this expresses itself in choosing a healthier meal. It also applies here: if we know certain age groups that eat not as healthy as others, we know that the focus should lie on these groups when trying to solve this problem. Our research question therefore is as follows: *What are the factors that involve people's meal choice and what are there differences between age groups?*

For the paper we replicate, data was collected. Part of the respondents of the LISS panel filled in a survey with 18 choice situations. In each choice situation they had to choose which of the two shown dinners they would like to eat twice a week. For each dinner, characteristics describing the meals were given.

We find out that people take into account the following when choosing dinner: the price, the preparation time, the taste and the healthiness of a meal. The healthiness and to a lesser extent the price are most important for people. When looking at differences between different age groups, we see that there are no big differences when it comes to the price. However, we do see differences in how people of different ages value the preparation time, taste and healthiness of their meal.

2 Literature review

There may be various reasons for people to have a certain eating pattern. Potentially, these reasons lie in economic areas. Healthy meals generally are more expensive than cheap meals (Drewnowski & Specter, 2004). Therefore, rich people have more chances to buy healthy meals. Lower educated normally earn less than their higher educated peers, but lower educated people also tend to have unhealthy habits that are more costly. Smoking

(Huisman, Kunst, & Mackenbach, 2005) is an example. Therefore, it must be that there are also other factors of influence.

Health knowledge is another factor that influences food choice. This is argued in the paper we replicate (Koç & van Kippersluis, 2015). When people know more about the health consequences of certain eating habits, they mostly change at least bit of their behaviour.

However, Koç and Van Kippersluis argue that there is also difference in how much people value the healthiness of a meal. Lower educated value the healthiness of a meal lower than higher educated. It is quite conceivable that there are disparities in this area also in other divisions of the population. Therefore, in this paper we divide a representative sample of the population into different age groups, to see what the differences are.

Recent research has shown that the rise of obesity can be explained due to the fact that nowadays we tend to value immediate utility higher than delayed utility (Lammers, n.d.). The reason that younger people have unhealthier eating habits could be explained due to this fact. In this case they care less about their eating habits.

3 Data and descriptive statistics

3.1 The data set

We use data from the Longitudinal Internet Studies for the Social sciences (LISS) panel. This panel consists of 8,000 indidividuals, which form a representative sample of the individuals in the Netherlands. The representativity is based on the population register. Members of the panel earn money by filling in the surveys. The panel was administered by CentERdata (Tilburg University). The data was collected due to the research which this thesis is based (Koç & van Kippersluis, 2015). This research consists of two waves and therewith uses two data sets. We only replicate the first part of the research. 4,377 members of the panel were selected to fill in the survey of the first wave. They form a representative sample.

The following individiuial specific variables are present in the dataset:

- Education. Lower educated (completed primary education, secondary school or lower vocational education) or higher educated (completed higher vocational education or university).
- Self-reported health. Good health (describes own health as *excellent* or *very good*) or poor health (describes own health as *good*, *moderate* or *poor*).
- Health knowledge. This is being tested by 12 questions. Panel members have good knowledge (scores above median) or bad knowledge (scores below median).
- Income. High income (above median) or a low income (below median).
- Future orientation. Panel members have a high future orientation or a low future orientation.

- Diet. Follows a diet or does not follow a diet.
- Dietary habits. Panel members have good dietary habits or bad dietary habits.

3.2 Setting of the research

The setting of the research was as follows. Each panel member got 18 questions. In every question two dinners were being described. The description of a dinner was a composition of each of the following characteristics:

- Price - 2 Euro, 6 Euro, 10 Euro
- Time to prepare the meal - 10 minutes, 30 minutes, 50 minutes
- Tastiness - OK, good, very good
- Calories - 800 calories, 1100 calories, 1400 calories
- Saturated fat - 10 gram, 20 gram, 30 gram
- Sodium - 900 milligram, 1200 milligram, 1500 milligram

The members had to indicate which meal they would choose to eat twice a week.

We do not know what the health knowledge of people includes. People may not know that sodium is bad. Therefore, the knowledge of the panel members has been tried to make equal. The panel has been divided into three groups. One group got the questions as above (Scenario 1). The second group got the same questions, but the health attributes were supplemented with some information about the health consequences and the recommended daily allowances for dinner (Scenario 2). The third group did not see the health attributes calories, sodium and saturated fat, bot one attribute describing whether the meal was healthy, health neutral or unhealthy (Scenario 3).

3.3 Sampling on age

To verify whether there exist age differences in how people value the a meal, we sample on three different age groups. The figure on the right shows the part of the meals that is healthy, health neutral or unhealthy, for every tens of age years. It indicates that there are indeed differences: elderly people seem to choose for healthy meals more often.

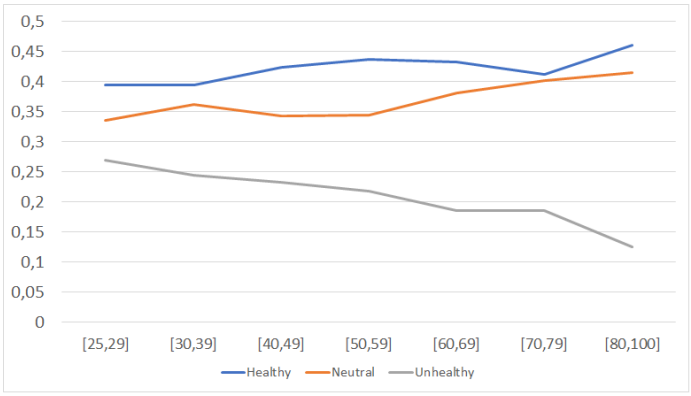

Figure 1: Percentage of meals that has the label 'Healthy', 'Health neutral' and 'Unhealthy'

There are no clear break points for differences. Therefore, we have to choose break points. We choose to divide the sample into three categories. This is not to few; the result should say something. It is not too much as well, the samples have to be large enough to get reliable results. We decide to divide the sample into age categories 25 to 39, 40 to 64 and above 65. This is somewhat random. However, we take this categorization because below 40, people are usually seen as young, between 40 and 65, people are middle-aged and above 65, people are referred to as elderly.

3.4 Data characteristics

Members younger than 18 years did not participate, because they normally live with their parents and so do not have much to choose for their dinner. There were 3,547 respondents, including the respondents that filled in part of the survey. There were 1,206 respondents for scenario 1, 1,186 for scenario 2 and 1,155 for scenario 3.

All observations with missing elements are being left out from the sample. People which didn't fill in the survey of the continuation of the research of the paper we replicate (Koç & van Kippersluis, 2015), are not taken into account, as well. Furthermore, there is a data set with general data of the panel members, like age and education level. One respondent is not in this data set. He is also left out of the sample. In the end, it results in 968 observations for scenario 1, 918 for scenario 2 and 973 for scenario 3.

In the second part of the research, when we split the respondents of scenario 3 into three different groups. The group aged 25 till 39 counts 177 respondents. There were 482 respondents in the ages 40 till 64. Finally, 309 respondents were older than 65.

4 Methodology

4.1 Logit model representation

Suppose we have N individuals and each individual choice tasks $t = 1, \ldots, 18$. At each choice task, an individual can choose between 2 alternatives. We denote these as j_c, which is the chosen alternative, and j_n, which is the non-chosen alternative. Each alternative is described by H attributes. We refer to the draws as draw r, with $r = 1, \ldots, R$.

We assume that the utility individuals experience from using consumption goods depends on the taste, price, preparation time and healthiness, as the data is restricted to these factors. These factors will be called *product attributes* from now on. Translated into a Random Utility Framework, this implies that the utility that individual i derives from meal j at choice situation t can be written as

$$U_{ijt} = \mathbf{x}'_{ijt}\beta + \epsilon_{ijt}. \tag{1}$$

Here $\mathbf{x}$ is the matrix with the values of all product attributes j for individuals i at choice situations t. Every choice situation of every individual is seen as a different observation in this matrix, so the dimensions of the matrix are $18N \times H$. The corresponding coefficient vector is represented by β and all error terms ϵ_{ijt} are distributed by the type I extreme value distribution.

The individuals optimize their utility, so in every question they choose the meal on which they have the highest utility. We use a mixed binary logit model to estimate the role of these attributes when it comes to choosing a meal. The mixed logit model stems from the standard logit model. Then the probability of choosing y_{ijt} is being modelled in the standard binary logit model as follows:

$$\mathbb{P}(Y_{ij_ct} = 1) = \Lambda(x'_{ijt}\beta) = \frac{\exp((x_{ij_ct} - x_{ij_nt})'\beta)}{1 + \exp((x_{ij_ct} - x_{ij_nt})'\beta)} = \frac{1}{1 + \exp((x_{ij_nt} - x_{ij_ct})'\beta)}, \tag{2}$$

where x_{ij_ct} is the chosen meal and x_{ij_nt} the non chosen meal for individual i in choice situation t.

However, in this specification the vector β is the same for everyone: it is assumed that everyone generates his utility exactly in the same way from the product attributes. On the ground this is not realistic. Therefore, we do not performe a standard logit model, but a mixed logit model.

4.2 Mixed logit model representation

In the mixed logit represenation, for individual i, we use an individual specific coefficient vector β_i to calculate his utility generated for meal j:

$$U_{ijt} = \mathbf{x}'_{ijt}\beta_i + \epsilon_{ijt}. \tag{3}$$

Evaluated at β_i, the probability function can now be defined as

$$\Lambda(x'_{ijt}\beta_i) = \frac{1}{1+\exp((x_{ij_nt} - x_{ij_ct})'\beta_i)}, \tag{4}$$

for $i = 1, \ldots, N$, where β_i is taken from a probability distribution $f(\beta|\mu, \sigma)$ to be specified later. As a consequence, the mixed logit probability function takes the form

$$\mathbb{P}(Y_{ijt} = 1|\beta_i) = \Lambda(x'_{ijt}\beta_i) = \frac{1}{1+\exp((x_{ij_nt} - x_{ij_ct})'\beta_i)}, \tag{5}$$

The goal of the model in the end is to estimate the distribution function of β_i.

4.3 Estimation

We use maximum likelihood estimation to estimate the likelihood that individual i makes the observed sequence of choices. The likelihood function for the mixed logit model is the product of the choice probabilities, that is,

$$L(\beta|\theta) = \prod_{i=1}^{N}\left[\int \prod_{t=1}^{18}\left(\frac{1}{1+\exp((x_{ij_nt} - x_{ij_ct})'\beta_i)}\right) f(\beta_i|\theta)d\beta_i\right] \tag{6}$$

and the log-likehood function is equal to $\ln L(\beta|\theta)$.

To estimate this function, we need to specify $f(\beta_i|\theta)$. We choose it to be specified by the normal distribution. We use Monte Carlo integration to approximate the integral in $LL(\beta|\theta)$. Therefore, the standard logit probabilities are calculated R times with R values from this distribution. The simulated log-likelihood function is therefore equal to

$$SLL(\beta|\theta) = \sum_{i=1}^{N} \ln\left(\frac{1}{R}\sum_{r=1}^{R}\left[\prod_{t=1}^{18}\left(\frac{1}{1+\exp((x_{ij_nt} - x_{ij_ct})'\beta_i^r)}\right)\right]\right), \tag{7}$$

where β_i^r is the $\mathrm{r}^{th}\beta_i$ that is draw from the distribution $f(\beta_i|\theta)$ for individual i. We maximize this function and find a consistent estimator θ. The distribution $f(\beta_i|\theta)$ which follows is our result and we hope to approach the real distribution with it.

We use Matlab to simulate this loglikelihood function. The standard errors are obtained by 100 bootstrap iterations.

4.4 Sampling on age

We sample on three different age groups and apply the mixed logit model. We do this for scenario 3 only. In the other scenarios, we would not know whether potential differences are due to health knowledge. It is reasonable to assume that older people know more about health. However, in scenario 3, everyone has the same knowledge about the healthiness of the meal, so that we can extract age differences.

5 Results

5.1 General mixed logit model

The results of the mixed logit models are shown in Tables 3 until 5 in Appendix 1. In Table 1, the coefficients of the means of these models are displayed. We take $R = 1000$ draws.

Table 1: Mixed logit model coefficients of the means of all scenarios, compared to the results of Koç and Van Kippersluis

		Scenario 1		Scenario 2		Scenario 3	
		Our estimate	Estimate K&K	Our estimate	Estimate K&K	Our estimate	Estimate K&K
Price	6 Euros	-0,515	-0,516	-0,495	-0,483	-0,649	-0,682
		(0,036)	(0,031)	(0,036)	(0,032)	(0,038)	(0,033)
	10 Euros	-1,381	-1,341	-1,180	-1,121	-1,783	-1,797
		(0,076)	(0,068)	(0,075)	(0,068)	(0,081)	(0,074)
Preparation time	30 minutes	-0,063	-0,087	-0,133	-0,134	-0,296	-0,306
		(0,032)	(0,029)	(0,035)	(0,031)	(0,034)	(0,031)
	50 minutes	-0,557	-0,537	-0,537	-0,535	-0,984	-0,987
		(0,057)	(0,051)	(0,060)	(0,054)	(0,059)	(0,055)
Taste	Good	0,751	0,661	0,559	0,524	0,442	0,404
		(0,036)	(0,032)	(0,036)	(0,033)	(0,035)	(0,032)
	Very good	1,197	1,066	0,923	0,848	0,967	0,908
		(0,052)	(0,043)	(0,050)	(0,043)	(0,046)	(0,041)
Calories	1100 calories	-0,497	-0,447	-0,676	-0,632		
		(0,031)	(0,028)	(0,034)	(0,030)		
	1400 calories	-1,115	-0,967	-1,327	-1,179		
		(0,045)	(0,041)	(0,052)	(0,044)		
Natrium	1200 milligram	-0,415	-0,330	-0,565	-0,508		
		(0,031)	(0,030)	(0,033)	(0,031)		
	1500 milligram	-0,836	-0,695	-1,123	-0,971		
		(0,043)	(0,031)	(0,045)	(0,034)		
Saturated fat	20 gram	-0,257	-0,210	-0,297	-0,239		
		(0,033)	(0,028)	(0,034)	(0,030)		
	30 gram	-0,582	-0,488	-0,711	-0,629		
		(0,038)	(0,035)	(0,039)	(0,037)		
Healthiness	OK					2,871	2,611
						(0,073)	(0,061)
	Healthy					3,960	3,771
						(0,107)	(0,093)

The coefficients have the signs we expected. The higher the price, preparation time, amount of calories, amount of natrium or amount of fat, the less attractive a meal is. On the other hand, when a meal is tastier or healthier the attractiveness increases. Plus, all standard deviations of the coefficients are significant, from which we conclude that a mixed logit model has been a good choice.

The coefficients that we estimate are near the coefficients estimated in the paper we replicate (Koç & van Kippersluis, 2015). We see that price and preparation time coefficients are estimated nearly the same. Taste coefficients are in the neighbourhood of the ones that were estimated by Koç and Van Kippersluis. The health attributes in all scenarios differ somewhat. Especially the variable which counts the amount of natrium, differs a lot.

We see that the price, preparation time and taste have effect on the value that people attach to a dinner meal, but it is not that big. The healthiness, however, whether it is specified into three separate variables or not, has quite a big input.

The differences between the three scenarios are also important to investigate. Respondents in scenario 2 clearly choose healthier meals. Furthermore, people are willing to give in on the price of a meal, when they know hoe healthy the meal is.

5.2 Mixed logit model sampled on age

We run the same model again, but with three different groups. The results are in Table 2. For the price coefficient, we do not see big differences. The coefficients seem to say that older people care less about mediocre meal prices, but they do care about high meal prices. However, the standard errors have somewhat large values, so these differences are to coincidence. For preparation time, the thing that strikes most is that young people seem to find it terrible to spend a lot of time to prepare a meal.

Table 2: Mixed logit model output scenario 3 with three different samples. All coefficients are significant for $p < 0,001$.

		Full sample	Sample 25-39	Sample 40-64	Sample 65+
Price	6 Euros	-0,649	-0,712	-0,727	-0,501
		(0,038)	(0,087)	(0,054)	(0,070)
	10 Euros	-1,783	-1,753	-1,883	-1,872
		(0,081)	(0,197)	(0,116)	(0,144)
Preparation time	30 minutes	-0,296	-0,339	-0,320	-0,216
		(0,034)	(0,075)	(0,048)	(0,062)
	50 minutes	-0,984	-1,142	-0,902	-0,971
		(0,059)	(0,169)	(0,081)	(0,104)
Taste	Good	0,442	0,333	0,506	0,438
		(0,035)	(0,079)	(0,050)	(0,065)
	Very good	0,967	0,720	1,078	0,954
		(0,046)	(0,099)	(0,066)	(0,086)
Healthiness	OK	2,871	2,060	2,809	3,590
		(0,073)	(0,148)	(0,103)	(0,144)
	Healthy	3,960	3,148	4,156	4,738
		(0,107)	(0,222)	(0,153)	(0,202)

Middle-aged respondents find taste more important than young and old respondents. The coefficients are higher, as well for the taste 'Good', as for 'Very good'. The standard errors of these coefficients are not very large. The healthiness brings about the biggest differences. The differences between the different coefficients are big. Clearly older people care most about the healthiness of a meal. More specifically, old people care about this more than middle-aged people, and middle-aged people find it more important than young people.

6 Conclusions

In the research described above, we investigated the factors that influence people's dinner choice. We split this out in three different groups. Our research question therefore was: *What are the factors that involve people's meal choice and what are there differences between age groups?* To get an answer on this question, we performed a mixed logit model, as Koç and Van Kippersluis (2015) did. This model was performed for three scenario's and three different age groups.

It was useful to perform a mixed logit model, as it takes into account the differences between people. All standard deviations were significantly different from 0. We found out that there are four factors which influence dinner choice: price, preparation time, taste and the healthiness of the dinner. In two scenarios healthiness was described by three more precise factors: the amount of natrium, saturated fat and calories. All of them were of significant influence. People seemed to find the health of a meal the most important factor when making a choice.

We also split the group up into three different age groups: a group with all individuals aged between 25 and 39 years, one with all people of 40 to 64 years old, and a group with all people older than 65. People of different ages seem to find the price of a dinner equally important. The individuals between 25 and 39 find it dreadful to spend a lot of time in the kitchen, in comparison to individuals older than 40.

For taste there are no big differences, although middle-aged people find it more important than non-middle-aged people. The healthiness of a meal ensures the most distinction between age groups. The older one is, the more important he finds it that a meal is healthy.

A Results of the mixed logit model

*: $p < 0.1$, **: $p < 0.05$, ***: $p < 0.001$. Standard errors are in parentheses.

Table 3: Mixed logit model output scenario 1

		Coefficient		Std.deviation	
Price	6 Euros	-0.5153***	(0.0355)	0.5660***	(0.0468)
	10 Euros	-1.3814***	(0.0758)	1.3613***	(0.0676)
Preparation time	30 minutes	-0.0627***	(0.0321)	0.2371*	(0.1088)
	50 minutes	-0.5569***	(0.0567)	1.0057***	(0.0526)
Taste	Good	0.7511***	(0.0362)	0.3091***	(0.0666)
	Very good	1.1974***	(0.0516)	0.9929***	(0.0514)
Calories	1100 calories	-0.4968***	(0.0309)	0.1176*	(0.0933)
	1400 calories	-1.1153***	(0.0488)	0.9142***	(0.0471)
Natrium	1200 milligram	-0.4153***	(0.0310)	0.0694	(0.0715)
	1500 milligram	-0.8362***	(0.0433)	0.7753***	(0.0451)
Saturated fat	20 gram	-0.2566***	(0.0327)	0.0325	(0.0651)
	30 gram	-0.5819***	(0.0373)	0.4802***	(0.0455)

Table 4: Mixed logit model output scenario 2

		Coefficient		Std.deviation	
Price	6 Euros	-0.4952***	(0.0358)	0.4679***	(0.0528)
	10 Euros	-1.1802***	(0.0749)	1.2070***	(0.0643)
Preparation time	30 minutes	-0.1332***	(0.0354)	0.4221***	(0.0586)
	50 minutes	-0.5368***	(0.0602)	1.0806***	(0.0539)
Taste	Good	0.5586***	(0.0357)	0.0974	(0.0882)
	Very good	0.9228***	(0.0495)	0.8331**	(0.0468)
Calories	1100 calorieën	-0.6761***	(0.0335)	0.2676***	(0.0716)
	1400 calorieën	-1.3273***	(0.0518)	0.9346***	(0.0498)
Natrium	1200 milligram	-0.5649***	(0.0327)	0.0791	(0.0775)
	1500 milligram	-1.1234***	(0.0450)	0.7906***	(0.0465)
Saturated fat	20 gram	-0.2969***	(0.0339)	0.0781	(0.0742)
	30 gram	-0.7107***	(0.0392)	0.4885***	(0.0443)

Table 5: Mixed logit model output scenario 3

		Coefficient		Std.deviation	
Price	6 Euros	-0.6489***	(0.0381)	0.5013***	(0.0545)
	10 Euros	-1.7832***	(0.0805)	1.6217***	(0.0649)
Preparation time	30 minutes	-0.2964***	(0.0335)	0.1806*	(0.1037)
	50 minutes	-0.9843***	(0.0592)	1.2190***	(0.0510)
Taste	Good	0.4422***	(0.0347)	0.0661	(0.0937)
	Very good	0.9673***	(0.0459)	0.6633***	(0.0483)
Healthiness	OK	2.8709***	(0.0727)	0.6386**	(0.0637)
	Healthy	3.9598***	(0.1067)	1.2527***	(0.0647)

B Results of the mixed logit model sampled on age

*: $p < 0.1$, **: $p < 0.05$, ***: $p < 0.001$. Standard errors are in parentheses.

Table 6: Mixed logit model output scenario 3 sampled on ages 25 to 39

		Coefficient		Std.deviation	
Price	6 Euros	-0,7117***	(0,0865)	0,5240***	(0,1252)
	10 Euros	-1,7531***	(0,1968)	1,7199***	(0,1581)
Preparation time	30 minutes	-0,3393***	(0,0752)	0,1397	(0,4276)
	50 minutes	-1,1416***	(0,1685)	1,5209***	(0,1300)
Taste	Good	0,3327***	(0,0786)	0,1441	(0,1644)
	Very good	0,7202***	(0,0987)	0,4882***	(0,1119)
Healthiness	OK	2,0596***	(0,1475)	0,4667***	(0,1457)
	Healthy	3,1481***	(0,2217)	1,0176***	(0,1570)

Table 7: Mixed logit model output scenario 3 sampled on ages 40 to 64

		Coefficient		Std.deviation	
Price	6 Euros	-0,7268***	(0,0542)	0,4521***	(0,0827)
	10 Euros	-1,8834***	(0,1158)	1,5797***	(0,0918)
Preparation time	30 minutes	-0,3201***	(0,0481)	0,2521**	(0,0959)
	50 minutes	-0,9022***	(0,0812)	1,1204***	(0,0713)
Taste	Good	0,5056***	(0,0495)	0,0998	(0,1170)
	Very good	1,0782***	(0,0659)	0,6876***	(0,0689)
Healthiness	OK	2,8089***	(0,1030)	0,6685***	(0,0865)
	Healthy	4,1563***	(0,1534)	1,4112***	(0,1046)

Table 8: Mixed logit model output scenario 3 sampled on ages above 65

		Coefficient		Std.deviation	
Price	6 Euros	-0,5007***	(0,0699)	0,5702***	(0,0991)
	10 Euros	-1,8720***	(0,1436)	1,6151***	(0,1136)
Preparation time	30 minutes	-0,2163***	(0,0622)	0,0540	(0,1650)
	50 minutes	-0,9708***	(0,1043)	1,1035***	(0,0839)
Taste	Good	0,4383***	(0,0646)	0,1490	(0,1459)
	Very good	0,9542***	(0,0861)	0,7476***	(0,0821)
Healthiness	OK	3,5897***	(0,1441)	0,5787***	(0,1115)
	Healthy	4,7384***	(0,2021)	1,3392***	(0,1199)

C Results of the mixed logit model performed by Koç and Kippersluis (2015)

*: $p < 0.1$, **: $p < 0.05$, ***: $p < 0.001$. Standard errors are in parentheses.

Table 9: The results of the mixed logit scenario 1 performed by Koç and Kippersluis

		Mean		Std.deviation	
Price	6 Euros	-0.516***	(0.031)	0.383***	(0.052)
	10 Euros	-1.341***	(0.068)	1.190***	(0.059)
Preparation time	30 minutes	-0.087***	(0.029)	0.133*	(0.069)
	50 minutes	-0.537***	(0.051)	0.935***	(0.048)
Taste	Good	0.661***	(0.032)	0.129**	(0.057)
	Very good	1.066***	(0.043)	0.744***	(0.039)
Calories	1100 calories	-0.447***	(0.028)	0.026	(0.049)
	1400 calories	-0.967***	(0.041)	0.753***	(0.040)
Natrium	1200 milligram	-0.210***	(0.030)	0.043	(0.043)
	1500 milligram	-0.488***	(0.031)	0.243***	(0.057)
Saturated fat	20 gram	-0.330***	(0.028)	0.016	(0.046)
	30 gram	-0.695***	(0.035)	0.561***	(0.044)

Table 10: The results of the mixed logit scenario 2 performed by Koç and Kippersluis

		Mean		Std.deviation	
Price	6 Euros	-0.483***	(0.032)	0.365***	(0.051)
	10 Euros	-1.121***	(0.068)	1.167***	(0.059)
Preparation time	30 minutes	-0.134***	(0.031)	0.187**	(0.076)
	50 minutes	-0.535***	(0.054)	0.967***	(0.049)
Taste	Good	0.524***	(0.033)	0.057	(0.053)
	Very good	0.848***	(0.043)	0.675***	(0.043)
Calories	1100 calories	-0.632***	(0.030)	0.013	(0.050)
	1400 calories	-1.179***	(0.044)	0.784***	(0.042)
Natrium	1200 milligram	-0.239***	(0.031)	0.054	(0.048)
	1500 milligram	-0.629***	(0.034)	0.323***	(0.052)
Saturated fat	20 gram	-0.508***	(0.030)	0.002	(0.045)
	30 gram	-0.971***	(0.037)	0.609***	(0.042)

Table 11: The results of the mixed logit scenario 3 performed by Koç and Kippersluis

		Mean		Std.deviation	
Price	6 Euros	-0.682***	(0.033)	0.189**	(0.088)
	10 Euros	-1.797***	(0.074)	1.511***	(0.056)
Preparation time	30 minutes	-0.306***	(0.031)	0.064	(0.069)
	50 minutes	-0.987***	(0.055)	1.152***	(0.046)
Taste	Good	0.404***	(0.032)	0.004	(0.057)
	Very good	0.908***	(0.041)	0.554***	(0.048)
Healthiness	OK	2.611***	(0.061)	0.168**	(0.067)
	Healthy	3.771***	(0.093)	1.182***	(0.056)

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