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UNCONSUMED FOOD CONCERNS:
THE CASE OF THE UNITED ARAB EMIRATES

Key words: United Arab Emirates, survey, ordered logit regression, education, transient resident, food waste

ABSTRACT. The article identifies factors influencing consumer attitudes with regard to unconsumed food in the wealthy economy of the United Arab Emirates (UAE), where the vast majority of the population are transient residents. The estimated regression coefficients were used to calculate the marginal effects, which measure change in probability of attitude towards the unconsumed food. The study applied the survey data collected from 1,542 UAE residents. The respondents included individuals representing 70 nationalities – transient residents of the UAE, mostly Filipinos (26%) and citizens of India (20%), and the UAE nationals (11%). Results show that persons showing most frequently concern about unconsumed food are women, older, college educated, and high income. Additionally, those concerned were also the long-term residents of the UAE as well as the supporters of investment in renewable energy. The sole factor that was associated with lower probability of being concerned about unconsumed food was the number of owned cars (on average 2.7 cars per household).

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INTRODUCTION

Unconsumed food is waste that encompasses food that was edible when prepared, but was not eaten. There are multiple reasons contributing to unconsumed food including loss of sensorial quality, spoilage (including expiration date [Bilska et al. 2015]), or replacement by freshly prepared food, among others. Unconsumed food is generated in food service, for example Saraswathy Kasavan et al. [2019] and households [Secondi et al. 2015]. Both sources have been researched for ways to reduce the amount of wasted food. However, food waste is only the end product of a process that involves a decision not to eat the available food whether served at a food service outlet or at home. Food waste studies' recommendations include educating consumers [Wojciechowska-Solis, Śmiglak-Krajewska 2020] about such issues as the loss of resources, potential to feed others, reduction of landfill disposal, and possible environmental threats [Gruber et al. 2016].

The current study differs from earlier research that often focused on policy solutions, for example Carmen Priefer et al. [2016] and examines consumer attitudes towards food waste, by exploring factors associated with personal perceptions of wasting unconsumed food. Consumer perceptions and their relevance for food waste has been stressed [Seo, Yoon 2022]. Presumably, concerns about unconsumed food could lead to change in behavior ultimately limiting the amount of wasted food. Households have been shown to waste a large volume of food and changes in attitudes could make a meaningful difference in addressing food waste. Knowledge of factors influencing the concerns about unconsumed food will strengthen efforts by targeting individuals' views with messages about how to prevent wasting food. Changing those individual attitudes affects behavior at home and, likely, away from home, reducing the burden of food waste.

This study expands the existing literature by generating knowledge of influential factors affecting the opinion of consumers about unconsumed food. The study narrows food waste to the category of unconsumed food, pre-supposing that personal concerns induce a sustained food waste avoidance. At a household level, avoidance is a superior solution to the composting unconsumed food, disposal at landfills, or feeding biogas production by reducing risk of surface water pollution, greenhouse gas emission, or even easing food availability for others countering food insecurity. The focus on the United Arab Emirates (UAE) allows extending the results to other countries of the Gulf Region, many of which display a comparable level of wealth and cultural similarities.

The UAE is a well-off country (ranked 7th in the world in terms of PPP in 2022) with a relatively small population located in one of the hottest areas of the globe. The need to protect food from environmental factors such as high temperatures and relative humidity is intense. On the other hand, relatively high incomes weaken the budget constraint that could otherwise limit food purchase or waste. Since the Gulf Region is a net food importer, less food waste could potentially make additional quantities available for other food deficit areas.

BACKGROUND

The current study explores factors that focus on behavior associated with unconsumed food. Unconsumed food is one of the categories of food waste and considered avoidable, in distinction from unavoidable waste [Secondi et al. 2015]. Jessica Aschemann-Witzel et al. [2015] listed appearance, taste expectations, and health misconceptions about leftovers as contributing to unconsumed food. Carmen Priefer et al. [2016] list a number of factors contributing to household food waste, including poor meal planning and preparation of oversized meals. Luca Secondi et al. [2015] found that concerns about food waste are associated with the individual's behavior.

The food waste phenomenon is a complex socio-economic issue [Grainer et al. 2018] and numerous factors have yet to be discerned in researching drivers of household food waste [Roodhuyzen et al. 2017, Mattar et al. 2018]. The inclusion of overlooked cultural predispositions and attitudes have been suggested in addition to the use of socio-economic household characteristics in researching food waste causes [Chalak et al. 2016] as food waste behavior varies across cultures [Mattar et al. 2018]. Reduction of food waste, regardless of definitional differences of what constitutes avoidable food waste, calls for research on individual attitudes [Abdelradi 2018].

Food waste disposal methods are often regulated and various countries and even municipalities adopt a variety of voluntary and mandatory schemes to handle unconsumed food disposal. The adoption of mandatory regulations involves fees and possibly penalties for prohibited handling forms. EU countries individually undertook initiatives to increase public awareness of food waste [Secondi et al. 2015]. Mathew James Grainger et al. [2018] found that in several lower-income EU countries households have wasted more food than in higher income states although earlier evidence indicates that individuals with high-incomes waste more food [Secondi et al. 2015]. The EU proposed a regulatory framework that includes taxation of food waste [Priefer et al., 2016]. Ali Chalak et al. [2016] advocate well-defined regulations as more effective than fiscal measures in addressing household food waste. Institutional settings in the UAE differ from the EU and fiscal measures to impact food waste seem less likely.

Daphne Roodhuyzen et al. [2017] identified potential consumer food waste factors and categorized them into behavioral and personal. The leverage point is identifying consumers own attitudes and acting on it [Priefer et al. 2016, Block et al., 2016]. Lama Mattar et al. [2018] confirmed a link between the feeling of guilt and decreased food waste and stressed the effect of beliefs in food waste. Raquel Diaz-Ruiz et al. [2018] found that waste prevention habits and materialistic values are indirectly influenced by environmental values. Waste prevention habits take their origin in attitudes of waste avoidance. Materialistic values are a complex construct posing a challenge to measure empirically, but can be accounted for by proxy measures.

Food waste avoidance carries substantial environmental benefits, stressing the importance of environmental consciousness on the part of a consumer [Gruber et al. 2016]. The indirect environmental benefits include the reduction of energy and water use and less air pollution by limiting CO_2 generation, while some of the direct gains are associated with less use of electricity and other cooking fuels for food preparation in a household [Secondi et al. 2015, Gruber et al. 2016, Roodhuyzen et al. 2017]. The social implication of avoiding unconsumed food waste is the loss of caloric content, which could affect food security [Kasavan et al. 2021].

The current study focuses on the individual's concern about unconsumed food, as the power of consumer perception has been overlooked in food waste studies [Seo, Yoon 2020]. Earlier studies suggest the use of socio-demographic characteristics of individuals in the empirical search for a pathway to reduce food waste. Personal attributes include age, gender, education, and religion [Abdelradi 2018, Grainger et al. 2018, Mattar et al. 2018]. Household features include household size [Abdelradi 2018, Zhang et al. 2018], as larger households may generate more unconsumed and wasted food. The economic characteristics of a person included in previous studies are employment and income [Secondi et al. 2015, Abdelradi 2018, Zhang et al. 2018]. Another set of variables in examining food waste are pro-environmental variables [Secondi et al. 2015]. Pro-environment variables are quite diverse since they can refer to direct environmental consequences of wasting food and the views and opinions about broader environmental issues and what harms or benefits environmental quality.

The current study expands territorial variability in identifying countries with similar food waste behaviour for public policy interventions [Secondi et al. 2015] by focusing on the UAE. Earlier studies examined household food waste in the less developed Middle Eastern countries of Egypt [Abdelradi 2018] and Lebanon [Mattar et al. 2018].

EMPIRICAL APPROACH TO MODEL UNCONSUMED FOOD CONCERN DETERMINANTS

The study focuses on wasting unconsumed food and examines the degree to which an individual is bothered by it. The measurement of perceptions poses a challenge and applied economic studies commonly borrow tools from other social sciences to quantify intangible feelings. In this study, the dependent variable uses responses to options selected along a multi-step balanced Likert-type scale as attitudes change from "strongly disagree" to "strongly agree" that a respondent is bothered by unconsumed food. The scale implicitly assumes equal distance among all possible states of agreement. That particular feature allows the application of econometric methods to move beyond the qualitative assessment to the quantification of the measure.

Accordingly, the meaningful order of response options suggests the use of the ordinal logit or probit technique. There may be practical reasons for favouring logit or probit in some cases, but it is difficult to justify the choice on theoretical grounds [Greene 2008]. Therefore, the choice of the logit model in the current study is based on the values of the Akaike's Information Criterion (AIC) and Bayesian Information Criterion (BIC).

The test results show that the positive effects shift the relative frequency distribution toward the higher categories (i.e., towards "strongly agree = 5"), while the negative effects shift the relative frequency distribution toward the lower values (i.e., towards "strongly disagree = 1") of the dependent variable. Accordingly, if effects are positive, specific factors will be concentrated in the highest category (scale option 5) and negative effects suggest the associated factors will be concentrated in the lowest category (scale option 1).

The observed ordinal dependent variable is represented by y_i and expressed as a function of a continuous variable y_i^*:

$$y_i = \begin{cases} 1 \text{ if } y_i^* < \alpha_1 \\ 2 \text{ if } \alpha_1 \le y_i^* < \alpha_2 \\ 3 \text{ if } \alpha_2 \le y_i^* < \alpha_3 \\ \vdots \\ J \text{ if } \alpha_{J-1} \le y_i^* \end{cases} \tag{1}$$

where: J is the number of discrete outcomes of y_i, and $\alpha_1, \dots, \alpha_{J-1}$ are threshold values between $-\infty$ and ∞. The probability of being in a particular outcome or income category for $1 \le i \le J$ is given by the following equation:

$$P(y_i = j | x_i) = P(\alpha_{j-1} \le y_i^* \le \alpha_j)$$
$$= P(\alpha_{j-1} - x_i\beta \le \varepsilon_i \le \alpha_j - x_i\beta) \tag{2}$$
$$= F(\alpha_j - x_i\beta; \theta) - F(\alpha_{j-1} - x_i\beta; \theta)$$

Here, F is the cumulative distribution function (CDF) of ε_i, and allows the use of the maximum likelihood estimation framework. The log of likelihood function can be expressed as:

$$\log L = \sum_{i=1}^{N} \sum_{j=1}^{J} z_{ij} \log[F(\alpha_j - x_i\beta; \theta) - F(\alpha_{j-1} - x_i\beta; \theta)] \tag{3}$$

and z_{ij} is defined as:

$$z_{ij} = \begin{cases} 1 \text{ if } y_i = j \\ 0 \text{ else} \end{cases} \tag{4}$$

The conversion of the estimated coefficients measures probability changes of falling into one of the concerns about the unconsumed food categories in response to changes in the explanatory variable. The quantification of the explanatory variable effects provides insights into the attitude of the UAE population towards unconsumed food, a category of food waste.

SURVEY AND SAMPLE DATA

Data used in the study was collected by a survey company in 2021, following a non-probabilistic quota sampling from the UAE. The survey was conducted online between June and July 2021 using a market research company (YouGov), with survey invitations sent via email to potential participants from the target population. The international market research company creates nationally representative samples in numerous countries in which it operates and applied non-probability quota sampling from among the residents of the UAE. The survey consisted of several parts and one part contained questions about concerns regarding unconsumed food. Another set of questions concerned the transient status of the respondent, while another part asked for socio-demographic characteristics and income information. Quotas on age, gender, and nationality groups were set to be in line with the target population: UAE residents aged 18 or older. Respondents could choose to complete the survey in English or Arabic.

A total of 1,542 respondents completed the questionnaire. However, 184 respondents omitted responses to some questions and subsequent calculations use a smaller number of observations (see Table 2). Representatives of 70 different nationalities (the transient residents of the UAE) took part in the survey, mostly Filipino (26%) or transients from India (20%). UAE nationals accounted for 11%. The diverse origin of respondents allows for comparison of views about unconsumed food in terms of nationality.

To define the segment of transient residents, we asked the respondents how long they have been living in the country (Table 1). The responses allowed placement of respondents into one of four categories: a transient residing less than two years in the UAE, a transient residing from two to ten years, a transient residing longer than ten years, and the UAE citizen. About 6.5% of respondents resided for less than two years, slightly over 40% fell into the second group, and about 42% into the longest-residing transients. Overall, transient residents constitute almost 89% of the total sample and are in line with the population structure of the country, where citizens account for about 11%.

Table 1 presents summary of descriptive statistics of the sample. The average respondent is around 35 years old and the average household includes 4.2 persons. The majority of respondents, 77%, have at least a bachelor's degree. About a third, 34%, are single, and 55% are females. The majority, 66%, is fully employed. Transient residents

Table 1. Selected descriptive statistics of the sample and units of measurements

Variable	Units	Mean	Standard dev.	Min.	Max
Concerned about unconsumed food	Scale*	4.1518	0.9855	1	5
Age	Years	34.9643	8.2810	17	70
Household size	No of persons	4.2601	1.7602	1	7
Education	1 = bachelor or higher	0.7730	0.4190	0	1
Female**	1 = female	0.5499	0.4977	0	1
Single**	1 = single	0.3385	0.4734	0	8
Full employment**	1 = fully employed	0.6550	0.4755	0	1
Number of cars owned	No of cars	2.7075	1.4769	1	7
RE supporter	1 = supporter	0.2302	0.4211	0	1
Transient	Scale***	2.5778	0.7736	1	4
Income	Scale****	3.9389	2.4992	1	11

Note: the number of observations for the calculation of the statistics is 1,542, except for income where the response was obtained from 1,358 persons

* question: I am bothered by wasting unconsumed food; response options: 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree,

** binary variable that assumes value of 1 or 0,

*** 1 = shorter than 2 years, 2 = 2 to 10 years, 3 = 10 years or longer, 4 = nationals,

**** $1 \leq 2{,}500$ AED, 2 = 2,501-5,000 AED, 3 = 5,001-10,000 AED, 4 = 10,001-20,000 AED, 5 = 20,001-30,000 AED, 6 = 30,001-40,000 AED, 7 = 40,001-50,000 AED, 8 = 50,001-60,000 AED, 9 = 60,001-70,000 AED, 10 = 70,001-80,000, 11 > 80,000 AED

Source: own calculation

account for 89% and 11% are Emiratis (UAE citizens). Nearly a quarter of respondents, 23%, support increased investment in renewable energy (RE) in the UAE. Support for RE is a proxy measure for public attitudes regarding environmental issues in a country where the key economic sector is fossil fuel production. On average, the respondent household owns 2.7 cars powered, predominantly, by gasoline or diesel. Car ownership is a proxy implying the consumption style of UAE residents where it is common for families to own multiple cars, with one vehicle often an SUV-type car. The proxy measures possibly conspicuous consumption that may include wasteful behaviour.

As could be expected in a typical survey of households, some chose not to indicate household income, although the question offered 11 various income categories rather than requesting that a respondent specify an amount. The categories ranged from the lowest, indicating a monthly household income of less than 2,500 AED, to the highest category where the monthly income exceeded 80,000 AED. The UAE dirham is pegged to the US dollar (fixed at a rate of AED 3.68 = USD 1) since 1997, therefore the monthly income AED 5,001-10,000 is equivalent to USD 1,360-2,720. When comparing citizens versus transient residents, the average income seems to be higher for citizens. The mean income category is 5.98 for Emiratis and 3.02 for transients. Many transients work in the service sector, involving menial jobs where the pay scale is low.

ORDERED LOGIT ESTIMATION RESULTS

Estimation results show that older respondents are more likely to be concerned about unconsumed food (Table 2). Female respondents are more likely to show concern than males. Those with college education are more likely to be concerned about unconsumed food than those with less education. Similar effects were often confirmed in earlier food

Table 2. Ordered logit estimation results of the relationship between concerns about unconsumed food, socio-demographic features, income, and environmental issues, n = 1,358

Variable name	Coefficient	Std. error	z
Age	0.0209***	0.0072	2.90
Female	0.2375**	0.1097	2.17
Education	0.2452*	0.1339	1.83
Single	-0.0201	0.1200	-0.17
Household size	0.0036	0.0316	0.12
Transient	0.1533**	0.0735	2.09
Fully employed	-0.1109	0.1207	-0.92
Income	0.0845***	0.0250	3.38
RE supporter	0.9100***	0.1365	6.67
Number of cars owned	-0.2272***	0.0396	-5.73

Note: RE = renewable energy
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$
Source: own calculation

waste studies. Those with higher monthly incomes are also more likely to admit they are concerned about unconsumed food. The surveyed transient residents in the UAE are more likely to be concerned about unconsumed food the longer they have resided in the country.

A measure of general pro-environment attitudes is the support of RE investment. The supporters of RE investment are more likely to be concerned about unconsumed food than those who do not express such support. RE utilization is one of the many issues consistent with a pro-environment attitude and reducing unconsumed food, a form of food waste, is another. Finally, the larger the number of cars owned by the household, the less likely there is concern about unconsumed food.

FACTORS EFFECTING CONCERNS ABOUT UNCONSUMED FOOD

Table 3 shows the probability changes in being concerned about unconsumed food by the respondent selecting any of the five options in response to the change in the explanatory variable. Three socio-demographic attributes (age, gender, and marital status) show similar patterns of probability changes in the dependent variable. Specifically, the probability of selecting the first four options, from strongly disagree to agree, is decreasing and increases substantially the probability of strongly agreeing. The largest probability increase is associated with the person having at least a bachelor's degree: 6.13%. As the transient residence length in the UAE increases, so does the probability of being bothered by unconsumed food. The probability of strongly agreeing is 3.8%, while the choice of any other answer decreases the respective probabilities (Table 3). The change in the transient resident's attitude could reflect the possible improvement in well-being, including a higher level of consumption. A growing income increases the probability of being bothered by unconsumed food, but the effect is moderate (Table 3). In a pattern similar to the already discussed effects, the probability of choosing options other than "strongly agree" decreases as income increases.

The proxy for the respondent environmental concerns in general is the indication of support for investing in RE in the UAE. Supporters of RE investment have a whopping 22.8% probability of strongly agreeing that unconsumed food bothers them (Table 3). They also have a lower probability of choosing any other response option. Finally, the pattern of probability changes is reversed when considering the number of owned cars. The increase in probability of selecting the first four response options is quite small, except for the moderate increase of choosing the neutral option, with a relatively large probability decrease of strongly agreeing that one is bothered by unconsumed food. Clearly, the effect of the number of owned cars is important because it reflects broader behavior and suggests the need for further research.

Table 3. Effects of explanatory variables on the probability of being concerned about unconsumed food

Variable name	Marginal effect (dy/dx)				
	strongly disagree	disagree	neither agree nor disagree	agree	strongly agree
Age	-0.0003 (0.0001)*	-0.0006 (0.0002)*	-0.0029 (0.0010)*	-0.0014 (0.0005)*	0.0052 (0.0018)*
Female	-0.0029 (0.0015)*	-0.0074 (0.0035)	-0.0333 (0.0154)*	-0.0158 (0.0075)*	0.0594 (0.0274)*
Education	-0.0030 (0.0017)*	-0.0076 (0.0043)	-0.0343 (0.0189)*	-0.0163 (0.0091)*	.0613 (0.0335)*
Single	0.0002 (0.0015)	0.0006 (0.0037)	0.0028 (0.0168)*	0.0013 (0.0080)	-0.0050 (0.0300)
Household size	-0.0000 (0.0004)	-0.0001 (0.0010)	-0.0005 (0.0044)	-0.0002 (0.0021)	0.0009 (0.0079)
Transient	-0.0019 (0.0010)*	-0.0048 (0.0024)*	-0.0215 (0.0103)*	-0102 (0.0050)*	0.0383 (0.0184)*
Fully employed	0.0013 (0.0015)	0.0035 (0.0038)	0.0155 (0.0169)	0.0074 (0.0081)	-0.0277 (0.0302)
Income	-0.0010 (0.0004)*	-0.0026 (0.0008)*	-0.0118 (0.0035)*	-0.0056 (0.0018)*	0.0211 (0.0063)*
RE support	-0.0111 (0.0029)*	-0.0283 (0.0055)*	-0.1275 (0.0196)*	-0.0606 (0.0113)*	0.2275 (0.0341)*
No of owned cars	0.0078 (0.0008)*	0.0071 (0.0015)*	0.0318 (0.0057)*	0.0151 (0.0031)*	-0.0568 (0.0099)*

* $p < 0.1$
Source: own calculation

The obtained results can be used to predict the choice of specific response options, especially the option of strongly agreeing with the statement about unconsumed food. Table 4 illustrates the predicted probability of the dependent variable having the value of 5 = strongly agree, indicating that a person is concerned by wasting unconsumed food. The predicted probabilities are calculated when the explanatory variables are at their mean values and show the probability is 1.23% for the dependent variable taking on value of 1 = strongly disagree. The predicted probability of the dependent variable taking on value 5 = strongly agree when the explanatory variables are at their means is 50.28% (Table 4). The predicted probability of the dependent variable equal 4 = agree is 25.52%.

Table 4. Predicted probabilities for the response option "strongly agree" obtained using the delta method to the question "I am bothered by wasting unconsumed food"

Response option	Marginal effect	Standard error	z	$p > z$
Strongly disagree	0.0123	0.0028	4.46	0.000
Disagree	0.0331	0.0046	7.20	0.000
Neither agree nor disagree	0.1965	0.0109	17.99	0.000
Agree	0.2552	0.0123	20.71	0.000
Strongly agree	0.5029	0.0141	35.57	0.000

Source: own calculation

CONCLUSIONS

Unconsumed food is edible but is disposed of, becoming one of several food waste categories. To reduce the volume of such food waste, it is prudent to research what factors shape the concern about unconsumed food. Knowledge of such factors could help in designing solutions to minimize food waste. This study examines attitudes about unconsumed food in a wealthy economy where the majority of the population is transient, and used survey data collected from 1,542 respondents. Results portray the person bothered by unconsumed food as being female, older, college-educated, and having high income. The list of attributes is augmented in transient residents as their stay in the UAE lengthens and if they support investment in RE in the country. The only factor associated with lack of concern about unconsumed food is the number of owned cars. The latter variable served as a proxy characterizing a materialistic lifestyle and consumption pattern.

Obtained profiles suggest that in a country where a large segment of the population includes transient residents, the new residents may be targeted with a message about judicious purchasing of food and preparation of an amount that will be immediately consumed. Such choices will limit waste stemming from the loss of sensorial quality. Reaching out to females, who are the primary food shoppers, with messages at the point of shopping may temper excessive purchases leading to waste at home. Informing buyers about portion size can help older people buy and prepare food and avoid leftovers. General messaging about respecting the environment could also strengthen attitudes consistent with avoidance of disposing unconsumed food.

A future study may expand on data collection to overcome current study limitations. Food expenditure could affect attitudes about unconsumed food, or the share of food expenditure in total household expenditure. Additionally, the effect of car ownership warrants additional research to further discern the importance of unaccounted factors that weaken concerns about unconsumed food. The scope of data collection may have to be balanced against the costs of a survey.

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OBAWY O NIEKONSUMOWANĄ ŻYWNOŚĆ: PRZYPADEK KONSUMENTÓW W ZJEDNOCZONYCH EMIRATACH ARABSKICH

Słowa kluczowe: Zjednoczone Emiraty Arabskie, badanie ankietowe, uporządkowana regresja logitowa, wykształcenie, rezydent przejściowy, marnotrawstwo żywności

ABSTRAKT. Celem artykułu jest ocena czynników wpływających na postawy ludności względem marnowania nieskonsumowanej żywności w zamożnej gospodarce Zjednoczonych Emiratów Arabskich (ZEA), w której większość populacji jest rezydentami przejściowymi. Do realizacji celu zastosowano uporządkowaną metodę logtiową. Na podstawie współczynników regresji obliczono efekty krańcowe, które były miarami prawdopodobieństwa określonej postawy względem marnowania nieskonsumowanej żywności. Wykorzystano dane z badań ankietowych przeprowadzonych wśród 1542 mieszkańców ZEA. Byli to przedstawiciele 70 różnych narodowości – przejściowi rezydenci ZEA, głównie Filipińczycy (26%) i przybysze z Indii (20%) oraz obywatele ZEA (11%). Jak wynika z badań, osoby które wykazywały się największą troską o marnowanie nieskonsumowanej żywności, to najczęściej kobiety, osoby starsze, z wyższym wykształceniem oraz pracownicy z wysokimi dochodami. Dodatkowo, osoby te posiadały już wieloletni status rezydenta przejściowego w ZEA, a także chętnie popierały inwestowanie w odnawialne źródła energii. Natomiast jedynym czynnikiem, który powodował wśród badanych osób brak troski o marnowanie nieskonsumowanej żywności, była liczba posiadanych samochodów (średnio na gospodarstwo domowe 2,7).

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