

## INFLUENCE OF SOME DEMOGRAPHIC AND SOCIO-ECONOMIC FEATURES ON BEHAVIOUR OF THE CONSUMERS OF SEASONAL FRUIT

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### A B S T R A C T

The aim of this article was to understand the relationships between demographic and socio-economic features of consumers and their preferences for consumption and purchase of seasonal fruit such as strawberries, sour and sweet cherries, plums, raspberries and currants. The relationship, its strength and character was studied. The analysis was based on the results of a survey conducted in 2006 among citizens of Lublin. It has been proved that there is a significant influence of some features such as gender, age, education, income, a source of income and, type of a family on the preferences of the consumers for sources of purchase of seasonal fruit, places of purchase, size of a single purchase and frequency of fruit consumption.

**Key words:** seasonal fruit, purchase, consumption, preferences

### INTRODUCTION

Seasonal fruit which include soft fruit (strawberries, raspberries, currants, gooseberries and others) as well as sour and sweet cherries and plums are of great importance in Poland. They are produced in over three

hundred and sixty thousand farms and make an important source of extra income for farmers. Most of fruit are processed but some are consumed fresh. The research shows that these ones are liked and consumed by people not only in Poland, but also in Lithuania and

other countries (Babicz-Zielińska, 1999; Czernyszewicz, 2004; Kubiak et al., 2000; Petkeviciene and Kriaucioniene, 2005; Erzeugung und Verbrauch von Nahrungsmitteln, 2006). Contrary to the consumption of apples, the consumption of seasonal fruit is much lower and fluctuates between years. This is caused by changes in the crop volume and, consequently, supply and prices (Rynek owoców i warzyw, 2005). The crop of these species and the quality of fruit, depend to a large extent on the weather conditions during the growing season. The consumption of these fruits also fluctuates largely during a year, between 0.02 in winter and early spring months up to 1.40 kg per capita monthly in May and June (Piekut, 2006b).

Development of fruit processing promotes reduction in the seasonal character of consumption. A wide range of goods offered by fruit processing companies is faced with an income barrier. An increase in consumption of processed fruit is promoted by a high level of consumers' income. The research shows that these products are characterized by high income elasticity of demand, which means high sensibility of consumption of processed fruit to changes in consumers' income (Gulbicka and Kwasek, 2001). Apart from these, the consumption of seasonal fruit is also influenced by demographic and socio-economics features of consumers. Therefore the research was undertaken to estimate the relationships between the features of consumers and their preferences in purchase and consum-

ption of different species of seasonal fruits. Understanding these relationships will help to adjust the fruit supply to changing consumers' needs which, consequently, can lead to an increase in consumption.

The aim of the research was to analyze the relationships between the preferences of consumers of different seasonal fruits and their demographic and socio-economic features.

## MATERIAL AND METHODS

The analysis was based on the survey conducted in 2006 among the residents of Lublin. The surveyed group (502 persons) was a quota sample reflecting the age structure of Lublin residents. The variables used in the analysis were: the gender of consumers, their age (5 groups), education (4 groups), monthly income per capita in a family (4 income groups), the main source of family maintenance (5 groups) and the biological type of the family (8 groups). The variables concerning consumers' behaviour included the importance of fruit in nutrition, the frequency of consumption of strawberries, sweet cherries and plums, the source of supply of plums, sour cherries, sweet cherries, strawberries, raspberries, currants, the place of purchase of seasonal fruit and the size of a single purchase of strawberries, sour cherries, sweet cherries and plums.

The analysis was carried out on the base of the Pearson correlation coefficient ( $r$ ), the V-Cramer coefficient and the Chi-square statistics as a mea-

sure of correlation of the features. The linear regression analysis was used to describe the relationship between the variables, using the stepwise choice of a model. The analysis was performed at three significance levels of the test  $\alpha=0.05$ ;  $\alpha=0.01$  and  $\alpha=0.001$ . The statistical calculations were performed in SAS System, version 9.1.

In order to present the consumption of berries in Poland in groups of households, the data from household budget surveys by the Central Statistical Office were used, which make the most frequently used source of information about food consumption in Poland. They mainly concerned the consumption in the years 2000-2005 in socio-economic groups and dependency on the size of a family.

## RESULTS AND DISCUSSION

Monthly consumption of berries in socio-economic groups and dependency on the size of a family is presented in Table 1. The data show that in the years 2000-2005 the consumption of berries such as strawberries, raspberries, currants, gooseberries and others (except plums, sweet cherries and sour cherries) increased by 22% from 0.45 to 0.55 kg per capita a month. The dynamics of consumption in individual socio-economic groups of households differed. The consumption increased the most rapidly in the households of employees in manual labour positions as well as of the retirees and disability pensioners while it increased the least rapidly in the households of the

self-employed and farmers. In 2005, the largest amount of berries was consumed monthly by the families of the retirees and pensioners (0.69 kg per capita) while the smallest amount was consumed by employees in manual labour positions (0.42 kg per capita).

The number of persons in a household also influenced significantly the consumption of fruit. The data from Household Budget Surveys by Central Statistical Office show that the largest amount of berries is consumed by one-person families (0.91 kg per capita monthly), while the smallest amount is consumed by six and more person households (0.36 kg per capita). In the analysed period the most dynamic was the consumption of fruit in one-person households while the least dynamic in five and more person households.

Decisions of consumers are also influenced by other factors, among which important role is played by demographic and social features such as gender, age, education, the biological type of a family and others. It has also been confirmed by the research of Piekut (2006ab) and Padilla (2001). They also paid attention to the accessibility as an important barrier to consumption, especially in the countryside.

The data from survey conducted in 2006 among the residents of Lublin were used to determine the strength and the character of influence of some demographic and socio-economic features of the consumers on their behaviour in purchase and consumption of berries, sour cherries,

Table 1. Monthly consumption of berries in the years 2000-2005 (kg per capita)

Household Group	2000	2001	2002	2003	2004	2005	
						2000=100	
Total	0.45	0.58	0.46	0.36	0.51	0.55	122
Employees in manual labour positions	0.31	0.44	0.33	0.26	0.36	0.42	135
Employees in non-manual labour positions	0.53	0.62	0.46	0.39	0.57	0.64	121
Farmers	0.51	0.68	0.56	0.39	0.57	0.58	114
The self-employed	0.48	0.61	0.45	0.37	0.51	0.54	112
Retirees and pensioners	0.53	0.69	0.56	0.44	0.62	0.69	130
Standard deviation	0.09	0.10	0.10	0.07	0.10	0.10	x
One-person households	0.69	0.92	0.79	0.61	0.83	0.91	132
Two-person households	0.65	0.80	0.63	0.53	0.72	0.79	122
Three-person households	0.49	0.60	0.48	0.40	0.50	0.56	114
Four-person households	0.39	0.53	0.41	0.30	0.45	0.48	123
Five-person households	0.33	0.48	0.39	0.29	0.36	0.37	112
Six and more person households	0.32	0.42	0.30	0.23	0.35	0.36	113
Standard deviation	0.16	0.20	0.18	0.15	0.20	0.23	x

Source: Author's calculations based on data from Household Budget Surveys, the Central Statistical Office

Table 2. Descriptive statistics of total consumer's sample according to gender, age, education and income

Specification	Total number of persons	% of the total number of persons		
		total	women	men
Total	502	100	61	39
Age:				
20-29 years old	172	34	54	46
30-39 years old	79	16	65	35
40-49 years old	113	23	70	30
50-59 years old	77	15	69	31
Over 60 years old	61	12	49	51
Education:				
Elementary	22	4	64	36
Vocational	62	12	52	48
Secondary	251	50	67	33
University level	165	33	56	44
Monthly income in zlotys per capita in a family:				
Up to 300 PLN	34	7	68	32
301-500 PLN	103	21	72	28
501-1000 PLN	225	47	63	37
Over 1001 PLN	121	25	49	51

Source: Own research

sweet cherries and plums. Some of the features of the surveyed population of consumers are presented in Table 2. Among the respondents, women prevailed (61%), who are generally more health-conscious and take care of their own and their families' health. In the surveyed group of consumers, there were about 83% of people with at least secondary education, including 33% with higher education. About 47% of the respondents claimed a monthly income of 501-1000 PLN per capita in a family, 25% – over 1001 PLN, and only 7% – less than 300 PLN.

For about 55% of the respondents the main source of family maintenance was income from employment, for 21% – disability pension or retirement pension, and for 15% – self-employment. A little more than 3% of the respondents had an unearned source of maintenance, 6% – employment and work on a farm. The largest number of the respondents came from families with two or more children – 47% (31% – with 2 children, 12% – with 3 children and 4% – with 4 or more children). 16% of the respondents came from families with 1 child. Single persons without children constituted 18% while childless marriages made up 8% of the respondents. The other types of families were represented by about 10% of the respondents.

Consumers highly value fruit as a component of a well-balanced diet. The research shows that almost 78% of consumers consider fruit as indispensable or very important element of a diet. Gender, education and

sources of family maintenance significantly influenced the respondents' answers about this issue (Tab. 3). Women and better educated persons as well as those getting income from employment valued the importance of fruit in a diet significantly higher. Consumers especially valued the health-promoting properties of fruit (32% of indications), but also their taste (21% of indications) and the fact that they are a natural source of vitamins and minerals (20% of indications).

The most preferred seasonal fruit were strawberries, sweet cherries and plums. There was a significant correlation between gender of consumers and the frequency of consumption of these fruits. In case of plums, there was also a significant correlation between the consumption and age of the consumers. The results of the analysis concerning the relationship between the frequency of consumption of strawberries, sweet cherries and plums are presented in Tables 3 and 4. The research showed that women consumed strawberries, sweet cherries and plums much more often than men. During the season, strawberries, sweet cherries and plums were consumed at least 4 times a week by 63, 36 and 26% of women respectively, but only by 48, 28 and 17% of men.

Daily consumption of plums was claimed significantly more often by older persons than the younger ones. Persons 20-29 years old more often than all the other respondents did not consume plums or consumed them once a month. Once to three times

Table 3. The Pearson linear correlation coefficient and Cramer's V and Chi-square statistics

Variables	Kind of statistics	P1 Gender	P2 Age	P3 Education	P4 Type of family	P5 Income in PLN per capita	P6 Source of income
Importance of fruit in nourishment N=458 (1-5)	A	0.104*	0.075	-0.106**	-0.003	-0.020	0.130**
	B	6.805	<b>18.880</b>	<b>23.911*</b>	<b>32.695</b>	<b>12.337</b>	<b>17.247</b>
	C	0.117	0.097	0.127	0.129	<b>0.093</b>	0.095
The frequency of strawberry consumption N=440 (1-7)	A	-0.152***	0.074	-0.041	-0.088	0.001	-0.015
	B	16.560*	<b>33.783</b>	<b>21.973</b>	<b>39.523</b>	<b>20.924</b>	<b>28.090</b>
	C	0.186	0.133	0.124	0.118	0.123	0.123
The frequency of sweet cherry consumption N=421 (1-7)	A	-0.107*	-0.072	0.012	-0.052	0.026	0.001
	B	7.354	24.443	<b>12.319</b>	<b>60.789*</b>	<b>16.684</b>	<b>25.358</b>
	C	0.127	0.116	0.095	0.149	0.112	0.120
The frequency of plum consumption N=420 (1-7)	A	-0.162***	0.277***	-0.083	-0.072	0.069	0.082
	B	13.127*	59.412***	<b>12.332</b>	21.574	<b>42.284</b>	<b>39.355*</b>
	C	0.170	0.180	0.095	0.128	0.125	0.149
Size of strawberry single purchase N=384 (1-5)	A	-0.139	-0.151**	0.068	-0.090	-0.046	-0.090
	B	3.392	35.904**	<b>19.196</b>	15.858	<b>39.962</b>	<b>25.520</b>
	C	0.090	0.147	0.124	0.115	0.155	0.126
Size of sour cherry single purchase N=289 (1-5)	A	-0.035	-0.036	0.062	0.067	0.057	-0.039
	B	8.373	<b>19.964</b>	<b>5.608</b>	<b>11.120</b>	<b>36.381</b>	<b>23.433</b>
	C	0.163	0.126	0.077	0.111	0.170	0.139
Size of sweet cherry single purchase N=345 (1-5)	A	-0.023	-0.162**	0.107*	-0.046	0.032	-0.021
	B	6.513	<b>33.044**</b>	<b>13.092</b>	<b>31.584</b>	13.928	<b>36.207**</b>
	C	0.132	0.149	0.108	0.146	0.114	0.158

Size of plum single purchase N=318 (1-5)	A	-0.061	-0.002	0.061	-0.096	0.018	-0.015
	B	10.878*	<b>32.945**</b>	<b>7.845</b>	<b>23.677</b>	<b>13.186</b>	<b>38.829**</b>
	C	0.178	0.155	0.087	0.132	0.115	0.171
Purchase places of seasonal fruits N=410 (1-8)	A	0.045	0.007	-0.019	-0.053	0.078	-0.056
	B	16.445*	<b>44.900*</b>	<b>18.969</b>	<b>20.110</b>	<b>54.212</b>	62.608***
	C	0.192	0.159	0.119	0.125	0.133	0.190
The source of supply: Plum N=381 (1-3)	A	0.057	-0.046	-0.080	0.029	-0.039	0.077
	B	<b>6.495*</b>	<b>32.945**</b>	<b>7.845</b>	<b>23.677</b>	<b>13.186</b>	<b>38.829**</b>
	C	0.126	0.155	0.087	0.132	0.115	0.171
Sour cherry N=387 (1-3)	A	0.019	-0.081	-0.027	0.026	-0.027	0.021
	B	1.831	<b>10.452</b>	<b>4.005</b>	<b>33.413**</b>	<b>7.183</b>	<b>12.849</b>
	C	0.066	0.112	0.069	0.200	0.094	0.126
Sweet cherry N=400 (1-3)	A	0.044	-0.076	-0.034	0.023	-0.061	-0.021
	B	<b>2.450</b>	<b>16.792*</b>	<b>3.803</b>	<b>32.886**</b>	<b>13.318*</b>	<b>22.243**</b>
	C	0.075	0.139	0.067	0.196	0.126	0.163
Strawberry N=436 (1-3)	A	0.044	-0.084	-0.036	0.058	-0.062	0.027
	B	<b>1.442</b>	<b>9.521</b>	<b>4.554</b>	<b>37.845***</b>	<b>7.877</b>	<b>30.847***</b>
	C	0.055	0.100	0.069	0.201	0.093	0.184
Raspberry N=401 (1-3)	A	0.020	-0.082	-0.013	0.051	-0.067	-0.045
	B	1.759	<b>8.149</b>	<b>3.290</b>	<b>28.870*</b>	<b>6.213</b>	<b>22.869**</b>
	C	0.064	0.097	0.062	0.184	0.086	0.165
Currant N=361 (1-3)	A	0.020	-0.092	0.013	0.029	-0.100	0.015
	B	0.331	<b>7.996</b>	4.743	<b>37.206***</b>	<b>9.461</b>	<b>16.380*</b>
	C	0.029	0.101	0.078	0.220	0.122	0.147

A – Pearson's coefficient; B – Chi-Square ; C – Cramer's V coefficient;  $p=0,05^*$ ;  $p=0,01^{**}$ ;  $p=0,001^{***}$

**Bold** means, that chi-square test could not be used to examine independence because more than 25 percent of data in the table had an expected quantity lower than 5.

In such a case the right measure of variable connections should be the Cramer's V statistics

Source: Own research

Table 4. Results of linear regression analyses based on the stepwise choice of model

Variables	Step 1		Step 2		Step 3	
The frequency of plums consumption N=420 (1-7)	R <sup>2</sup> =0.076		R <sup>2</sup> =0.099		R <sup>2</sup> =0.108	
	$\beta$	P-values	$\beta$	P-values	$\beta$	P-values
Age	0.337	0.000	-0.545	0.001	-0.538	0.001
Gender			0.331	0.000	0.338	0.000
Type of family					-0.080	0.037
Size of single purchase of strawberry N=384 (1-5)	R <sup>2</sup> =0.026		R <sup>2</sup> =0.035			
Gender	-0.126	0.001	-0.124	0.002		
Type of family			-0.048	0.060		
Fruits importance in nourishment N=458 (1-5)	R <sup>2</sup> =0.019		R <sup>2</sup> =0.026			
Source of income	0.094	0.006	0.088	0.006		
Gender			0.159	0.077		
The frequency of strawberry consumption N=440 (1-7)	R <sup>2</sup> =0.027		R <sup>2</sup> =0.037			
Gender	-0.553	0.001	-0.546	0.001		
Type of family			-0.076	0.037		
The source of plum supply N=381 (1-3)	R <sup>2</sup> =0.008		R <sup>2</sup> =0.016			
Source of income	0.035	0.075	-0.035	0.082		
Age			0.050	0.021		
The source of currant supply N=361 (1-3)	R <sup>2</sup> =0.011		R <sup>2</sup> =0.018			
Income	-0.069	0.051	-0.065	0.066		
Age			-0.036	0.095		



Size of single purchase of sour cherry N=289 (1-5)	R <sup>2</sup> =0.006	
Type of family	-0.041	0.195
Size of single purchase of sweet cherry N=345 (1-5)	R <sup>2</sup> =0.027	
Age	-0.119	0.002
Size of single purchase of plum N=318 (1-5)	R <sup>2</sup> =0.012	
Type of family	-0.054	0.050
Purchase places of seasonal fruits N=410 (1-8)	R <sup>2</sup> =0.005	
Income	0.161	0.145
The source of sour cherry supply N=387 (1-3)	R <sup>2</sup> =0.006	
Age	-0.029	0.134
The source of sweet cherry supply N=400 (1-3)	R <sup>2</sup> =0.010	
Age	-0.037	0.046
The frequency of sweet cherry consumption N=421 (1-7)	R <sup>2</sup> =0.014	
Sex	-0.414	0.016
The source of strawberry supply N=436 (1-3)	R <sup>2</sup> =0.008	
Age	-0.033	0.065
The source of raspberry supply N=401 (1-3)	R <sup>2</sup> =0.007	
Age	-0.032	0.104

R-square – percentage of explained variance

P-values – derived from linear regression analyses

Source: Own research

$\beta$  – standardized regression coefficient

a week plums were consumed by 50% of respondents at 20-29 age bracket, 30% – by those 30-39 years old, 59% – 40-49 years old, 46% – 50-59 years old and 47% of the respondents over 60. Roininen et al. (2004) noticed, on the basis of research conducted in Finland and England, that some fruits such as raspberries, strawberries and grapes are easy to eat, while some others such as currants, pineapples, oranges or kiwi are more difficult to eat. This is especially important for older people.

The research on consumption of seasonal fruits in different age groups in Lublin partly confirmed that conclusion. The performed analyses indicated that other correlations, if they occurred, did not have a linear character. Biing-Hwan Lin (2004) estimated that in the U.S. between 2000 and 2020 the total consumption of fruit is likely to increase by 24-27% while of other species of fruit (except apples, bananas, grapes and citrus fruit) by 26%. It will cause an increase in consumption per capita by 7%. Income, age, race and education of consumers will have the greatest influence on consumption.

The main source of supply of seasonal fruit (except currants) is purchase. According to the data of Central Statistical Office, the share of self-supply in consumption of fresh and processed fruit in households in Poland constitutes about 18.4%, while in families of farmers it is 56.4% (Popyt na żywność, 2005). An analysis of the relationship between features of consumers and sources of

supply of fruit showed that such relationship is best described by the Cramer's V coefficient, which took values between 0.029 and 0.220.

Seasonal fruit, contrary to citrus fruit, are usually purchased at marketplaces (52% of indications). Fewer respondents purchased fruit at greengrocers (14%), street stalls (12%), and supermarkets (4%) or directly from a producer (8%). An analysis of the correlation proved, at a critical significance level  $\alpha=0.05$ , a relationship between the place of a purchase of seasonal fruit and the gender of consumers as well as the source of family maintenance.

Women, more frequently than men, purchased seasonal fruit at town marketplaces or neighbourhood marketplaces (56 and 43% of indications, respectively) and men more frequently purchased fruit at supermarkets and greengrocers (respectively 6 and 15% of men's indications and 3 and 13% of women's indications). Retirees and pensioners usually purchased fruit at marketplaces (60% of indications), while the self-employed usually chose greengrocers and producers of fruit (15 and 9% of indications, respectively). The other demographic and socio-economic features of consumers were not correlated linearly with a place of purchase of seasonal fruit. The Cramer's V coefficient fluctuated between 0.119 and 0.159.

The results of the analysis of a relationship between the size of a single purchase of different species of fruits and the features of the respondents are presented in Tables 3

and 4. The analysis of the data showed that the consumers usually purchased at a time from 1 to 2 kg of strawberries (37%), 0.5-1 kg of sour cherries, sweet cherries and plums (36, 42 and 41% of indications, respectively). The amount of more than 2 kg of these fruits, except strawberries, was purchased by significantly fewer respondents (below 15%). These results reflect the data obtained by Licznar-Malańczuk et al. (2001) based on the research conducted among residents of Wrocław.

A highly significant linear correlation (at  $\alpha=0.01$ ) was noticed between the variables describing the size of a single purchase of strawberries or sweet cherries and the consumers' age. The older respondents much more frequently purchased smaller portions of strawberries and sweet cherries compared to younger persons. It may be a result of a difficulty in delivering bigger portions home by older people or their lower income in comparison to other groups of consumers. At the confidence level  $\alpha=0.05$ , there was a significant relationship between the size of a single purchase of sweet cherries and the education level of respondents as well as between the size of a single purchase of plums and the gender of the respondents.

Consumers with secondary and higher education less frequently purchased smaller amounts of cherries (up to 1 kg), and more frequently 1-2 kg as compared to less educated respondents. The size of purchased portions of plums was correlated with the gender of the

respondents. Men more frequently purchased smaller amounts of plums (up to 0.5 kg) as compared to women who more frequently (26 and 14%, respectively) purchased portions from 0.5 to 1 kg (46 and 32%, respectively). Zmarlicki (1998) noticed that purchase decisions of consumers of plums are mostly influenced by taste, size and colour. The most popular varieties were purple plums like 'Węgierka Włoska', 'Węgierka Łowicka' and greengage fruits.

In the case of sour cherries, none of the analysed features of the consumers was correlated with the size of a single purchase of these fruits. The Chi-square statistics calculated for the null hypothesis, assuming the independence of two variables at a critical significance level  $\alpha=0.05$ , took values which allowed accepting the null hypothesis. Because of the fact that in the case of variables concerning the features of consumers (except gender) more than 25 percent of the theoretical values had an expected quantity lower than 5, the Cramer's V Statistics was used as a measure of the dependence of the variables. The values of Cramer's V coefficient fluctuated between 0.077 and 0.170.

## CONCLUSIONS

The performed analyses proved a significant relationship between some demographic and socio-economic features of the consumers and the frequency of consumption of selected species of seasonal fruit, places of the purchase and size of a single

purchase. There is a significant relationship between the frequency of consumption of strawberries, sour cherries, sweet cherries and the gender of the consumers. The consumption of plums was significantly related to the consumers' age, which meant higher consumption among the older persons. The main source of supply of seasonal fruit was purchase, although self-supply (home-grown fruit) was also high, higher than in the case of apples or pears.

The analysis of the correlation showed that there is a relationship between the place of a purchase of seasonal fruit and the gender of the consumers and the source of family maintenance. Women and retirees or pensioners more frequently purchased seasonal fruit at marketplaces, while men and the self-employed – at greengrocers. Consumers usually purchased from 1 to 2 kg of strawberries at a time, and 0.5-1 kg of sour cherries, sweet cherries and plums. A significant linear correlation was noticed between variables describing the size of a single purchase of strawberries and sweet cherries and the consumers' age. Older respondents more frequently purchased smaller portions of strawberries and sweet cherries compared to younger consumers. An essential relationship was noticed between the size of a single purchase of sweet cherries and the education level of the respondents, and between the size of a single purchase of plums and the gender of the consumers. In the case of sour cherries, none of the analysed features of the consumers was

correlated with the size of a single purchase of these fruits. Other relationships, if they occurred, did not have a linear character.

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## WPLÝW NIEKTÓRYCH CECH DEMOGRAFICZNYCH I SPOŁECZNO-EKONOMICZNYCH NA ZACHOWANIA KONSUMENTÓW OWOCÓW SEZONOWYCH

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### S T R E S Z C Z E N I E

Celem pracy było poznanie oraz ocena związków pomiędzy cechami demograficznymi i społeczno-ekonomicznymi konsumentów a ich preferencjami w spożyciu i zakupie owoców sezonowych, takich jak truskawki, wiśnie, czereśnie, śliwki, maliny i porzeczki. Analizowano występowanie współzależności oraz jej siłę i charakter. Analizę wykonano na podstawie wyników badań ankietowych przeprowadzonych w 2006 roku wśród mieszkańców Lublina.

Udowodniono statystycznie istotny wpływ niektórych cech, takich jak płeć, wiek, wykształcenie, dochody, źródła dochodów, typ rodziny na preferencje konsumentów w zakresie źródeł zaopatrzenia w owoce sezonowe, miejsc zakupu, wielkości jednorazowych zakupów oraz częstotliwości spożywania owoców.

**Słowa kluczowe:** owoce sezonowe, zakupy, spożycie, preferencje