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Economic and Social Factors Affecting Spending on Animal Protein in Egypt.

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ABSTRACT
The study aimed to study the most important factors influencing expenditure on animal protein in rural and urban Egypt during the years 2017/2018 and 2019/2020. These factors were represented by the income level of the head of the household, his educational status, the sector in which he works, his professional status, and the number of family members. The study revealed that urban residents spend more on animal protein than rural residents, and that there is an increase in the average per capita expenditure on animal protein with the increase in income categories and education levels, while the average per capita expenditure on animal protein decreases with the increase in the number of individuals during the study period. The study concluded that the percentage of expenditure on animal protein in rural and urban Egypt, during the study period, was estimated at about 40% of the total expenditure on food and drink, meaning that there is about 60% for food and drink, which is represented by expenditure on (cereals and bread, oils and fats, fruits, vegetables, sugar and sugary foods, foods not classified under another item, and non-alcoholic beverages).

Keywords: Income levels, rural, urban, head of household, consumer spending

I. INTRODUCTION

Individuals' consumption spending is affected by some factors that may positively or negatively affect consumption spending on goods and services. This section studies some economic and social factors, which are (average income of individuals in pounds/year, number of individuals in the family, educational status of the head of the family, and the main sector in which the head of the family works) (Yahaya & Bakar, 2020) in urban and rural Egypt. These factors affect each other on the one hand and on spending on the animal protein group (meat, fish, milk, cheese and eggs) (Mynaříková & Pošta, 2023)on the other hand,. The following is a statement of these factors.

II. MATERIAL AND METHODS

Study Area

The study was conducted in the Arab Republic of Egypt, and included a comprehensive report representing the rural and urban populations during two consecutive years: 2017/2018 and 2019/2020.

Study Design and Sampling.

The experiences and data were analyzed using SPSS v16.0 Quantitative analysis was used, using two-way analysis of variance, to determine the R coefficient and F coefficient for the model as a whole. Per capita averages were calculated for all variables over the study period.

III. RESULTS

1. **The impact of income levels:** (Figure 1, 2) Individuals were divided according to income levels during the years 2017/2018 and 2019/2020 into four categories. The first is the low-income category, where the individual in this category receives a net annual income of less than 10,000 pounds. The second category is the middle-income category, where the individual receives an annual net income ranging between 10,000 and 50,000 pounds. The third category is the wealthy category, where the individual's annual income ranges between 15,000 and 55,000 pounds. The fourth category is the richest category, where the individual in this category receives a net annual income greater than 200,000

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pounds(Carson, 2002; Fisher, 1952) . (Table 1) shows the increase in the average per capita share of spending on animal protein in both urban and rural areas during the years 17/18 and 19/20 according to income categories. The percentages of spending on animal protein for these categories were as follows:

A. Urban: (Table 1) shows that the percentage of spending on animal protein during the year 2017/2018 reached its lowest level in the first category, at a rate of about 41.39% of spending on food and drink, and reached its maximum level in the fifth richest category, at a rate of about 55.74%. The percentage of spending on animal protein in the year 2019/2020 reached its lowest level in the second middle-income category, and its maximum level in the fifth category, at a rate of about 43.44% and 52.62% of spending on food and drink(Abdelfatah, Othman, Barghash, & Hassan, 2016) (Soliman & Eid, 1995a), respectively. The table shows a decrease in spending on animal protein in the year 2019/2020 compared to the year 2017/2018 in all income categories, and the highest percentage of decrease was in the first category, “low-income”, at a decrease rate of about 16.76% of spending on animal protein groups in the year 2017/2018.

B. Rural: (Table 1) shows that the percentage of expenditure on animal protein during the year 2017/2018 reached its lowest level in the second category, at a rate of about 41.63% of expenditure on food and drink, and reached its maximum level in the fifth category, at a rate of about 51.44%. The percentage of expenditure on animal protein in the year 2019/2020 reached its lowest level in the first category, and its maximum level in the fifth category, at a rate of about 38.83% and 48.13% of expenditure on food and drink, respectively (Soliman & Eid, 1995a) (Abdelfatah et al., 2016) . The table also shows a decrease in the average per capita share of expenditure on animal protein in the year 2019/2020 compared to the year 2017/2018 in all income categories, and the highest percentage of decrease was in the first category, at a rate of about 9.68% of expenditure on animal protein in the year 2017/2018,(Shehata, 2013).

By analyzing the variance (Table 3),(S. D. Dawoud, 2014) it is clear from the table that there are statistically significant differences at a significance level of 0.01% between income groups in the average per capita expenditure on animal protein, as well as between the groups of meat, fish, dairy, cheese, and eggs. It was found that the average per capita expenditure on animal protein was not affected by differences in place or time, meaning that the average per capita expenditure on animal protein did not differ significantly in urban areas compared to rural areas, nor in 2017/2018 compared to 2019/2020. The significance of the model as a whole was proven at a significance level of 0.01%, and the value of the coefficient of determination indicates that the income levels of individuals and the differences in animal protein groups are responsible for about 77% of the changes in the average per capita expenditure on animal protein during the study period ,(Ali, 2018; S. Dawoud, 2005) .

From the above, it can be said that there is a convergence in the rates of spending on animal protein between income groups in urban and rural areas during the years 17/18 and 19/20. This is demonstrated by the results of the analysis of variance, which show that there are no statistically significant differences between the average per capita spending on animal protein in rural and urban areas, and that the low-income groups are the groups that spend the least on food and drink, which is reflected in the reduction in spending on animal protein, and that the average per capita spending on animal protein groups is not affected by place or time.(El-Shennawy & Abdou, 1983).

2- The effect of the number of individuals in the family: The data in (Table 1) (Figure 3, 4) indicate that there was a decrease in the average per capita share of expenditure on animal protein with the increase in the number of individuals in the family during the years 17/18 and 19/20 in both urban and rural areas.(Abdelfatah et al., 2016; Shehata, 2013) The per capita share of expenditure on animal protein in the family of one person in urban areas amounted to about 5408 and 4996 pounds, and decreased in the family of 8 or more individuals to about 1368 and 1481 pounds, respectively, during the years 17/18 and 19/20. The per capita share of expenditure on animal protein in the family of one person in rural areas amounted to about 4209 and 4491 pounds, and decreased in the family of 8 or more individuals to about 1337 and 1418 pounds, respectively, during the years 17/18 and 19/20. The percentages of expenditure on animal protein were as follows:

A. **Urban**: (Table 1) shows that spending on animal protein as a percentage of total

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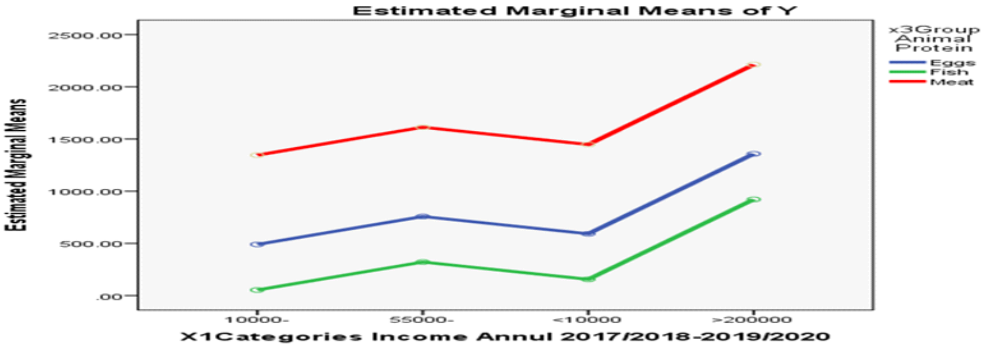
spending on food and drink during the years 2017/2018 and 2019/2020 reached its lowest level in the family of 8 or more individuals, with a spending rate of about 47.02% and 45.52%, respectively, of spending on food and drink, and reached its highest level in the family of two individuals, with a rate of about 50.93% and 48.84%, respectively, during 2017/2018 and 2019/2020. (Soliman & Eid, 1995b) (Kavle, El-Zanaty, Landry, & Galloway, 2015)The percentage of change in spending between 2017/2018 and 2019/2020 shows a decrease in spending on animal protein in the family of one individual, with a decrease rate of about 7.63% compared to 2018/2017, while there was an increase in spending on animal protein in 2019/2020 in the family of 8 or more individuals, and the percentage of increase reached about 8.24% compared to 2017/2018.(Fabiosa, 2008) .

B. **Rural**: (Table 1) shows that the percentage of expenditure on animal protein during the years 2017/2018 and 2019/2020 reached its lowest level in the family of 8 or more individuals, and the percentage of expenditure reached about 44.00% and 42.64%, respectively, of the total expenditure on food and drink, and reached its maximum level in the family of two individuals, at a rate of about 45.90% and 47.06%, respectively, during the years 2017/2018 and 2019/2020. The percentage of change in expenditure between the years 2017/2018 and 2019/2020 shows a decrease in expenditure on animal protein in the family of one individual, by a decrease of about 6.29% compared to the year 2017/2018, while there was an increase in expenditure on animal protein in the year 2019/2020 in the family of 8 or more individuals, and the percentage of this increase reached about 6.02% compared to 2017/2018(Agriculturalists' Club; Galal, 2002) .

It is evident that there are statistically significant differences at a significance level of 0.01% (Table 3), and that the average per capita expenditure on animal protein is affected by the number of individuals in the family, the difference in the quality of animal protein, and the difference in location. It is evident that there are no significant differences at a significance level of 0.05% for the average per capita expenditure on animal protein according to time, meaning that the average per capita expenditure on animal protein does not differ significantly in 2017/2018 from 2019/2020. The significance of the model as a whole was proven at a significance level of 0.01%, and the value of the coefficient of determination indicates that the number of individuals in the family, the difference in animal protein groups, and the difference in urban and rural areas are responsible for about 89% of the changes in the average per capita expenditure on animal protein during 2017/2018 and 2019/2020.

From the above, it can be said that there is a decrease in the average per capita share of spending on animal protein with the increase in the number of individuals in families in general, and it was found that there is a relative stability in spending on animal protein among rural families during the years 17/18 and 19/20, and that there is a difference between urban and rural families in spending on animal protein in favor of urban families, and this is confirmed by the analysis of variance, as it was found that there are statistically significant differences between urban and rural areas in the average per capita share of spending on animal protein.



Source: Data from Table No. 1.

Figure 1 : Annual income of the categories.

Table 1: Average per capita expenditure on animal protein groups (in pounds) according to annual income categories and number of family members in urban and rural Egypt during the years 2017/2018 and 2019/2020.

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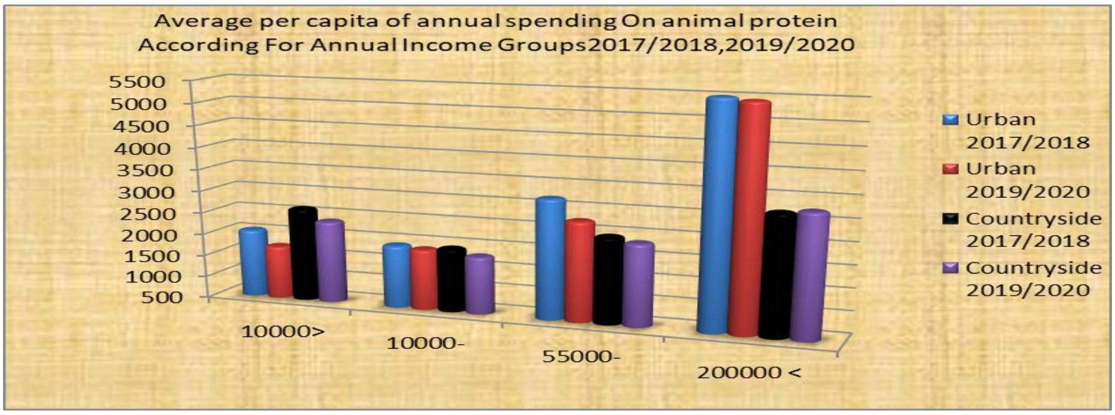
% change from year 2018/2017	2020/2019 Value of spending on			2018/2017 Value of spending on			statement
	%of food and drink	Food and drink	Animal Protein	%of food and drink	Food and drink	Animal Protein	
	Urban						Income categories
-16.76	45.48	3765.90	1712.90	41.38	4972.20	2057.70	>10000
-2.39	43.44	4330.30	1881.00	45.59	4227.10	1927.02	10000-
-14.13	49.51	5565.20	2755.20	51.79	6195.07	3208.73	55000-
-10.23	52.62	10347.30	5444.40	55.74	10881.10	6064.70	200000 <
	Rural						Income categories
-9.68	38.83	6120.40	2376.30	46.22	5692.50	2630.90	>10000
-6.92	42.10	4292.60	1807.30	41.63	4663.80	1941.60	10000-
-4.02	43.94	5354.00	2352.80	47.86	5122.02	2451.34	55000-
1.93	48.13	6771.70	3259.20	51.44	6216.70	3197.60	200000 <
	Urban						Number of family members
-7.63	47.49	10520.50	4996.00	49.83	10853.50	5408.80	1 person
-4.18	48.84	7837.30	3827.90	50.93	7843.00	3994.70	2 people
-3.72	48.27	6065.00	2927.60	50.26	6050.00	3040.80	3 people
-3.13	47.89	5189.70	2485.40	49.85	5147.20	2565.70	4 people
0.30	47.63	4471.40	2129.70	49.28	4308.80	2123.30	5 people
5.46	46.17	3933.30	1816.20	48.05	3584.10	1722.10	6-7 people
8.24	45.52	3253.50	1481.10	47.02	2910.00	1368.40	8 people or more
	Rural						Number of family members
-6.29	44.92	9369.8	4209.10	45.85	9795.50	4491.50	1 person
0.23	47.06	6896.7	3245.90	45.90	7055.30	3238.50	2 people
-1.43	44.58	5567.7	2482.00	44.88	5610.10	2518.00	3 people
-1.73	44.04	4681.9	2061.80	44.44	4721.20	2098.20	4 people
0.55	43.13	4230.5	1824.50	44.31	4095.40	1814.60	5 people
-0.06	42.65	3705.4	1580.50	44.40	3561.80	1581.40	6-7 people
6.02	42.64	3326.7	1418.40	44.00	3040.80	1337.90	8 people or more

Source: Collected and calculated from data from the Egyptian Central Agency for Public Mobilization and Statistics, Income, Expenditure and Consumption Survey 2017/2018, 2019/2020, Volume IV.



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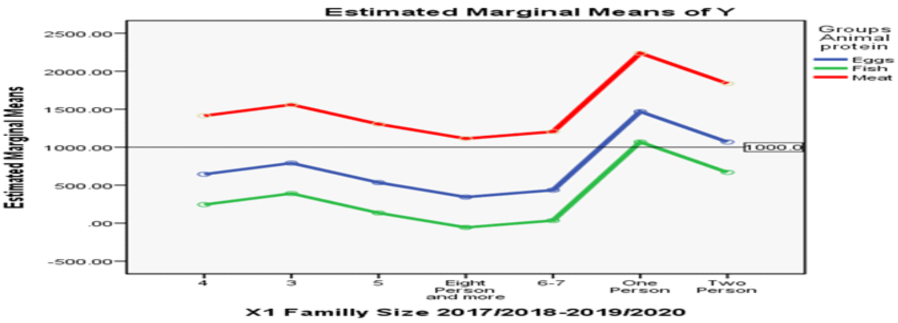
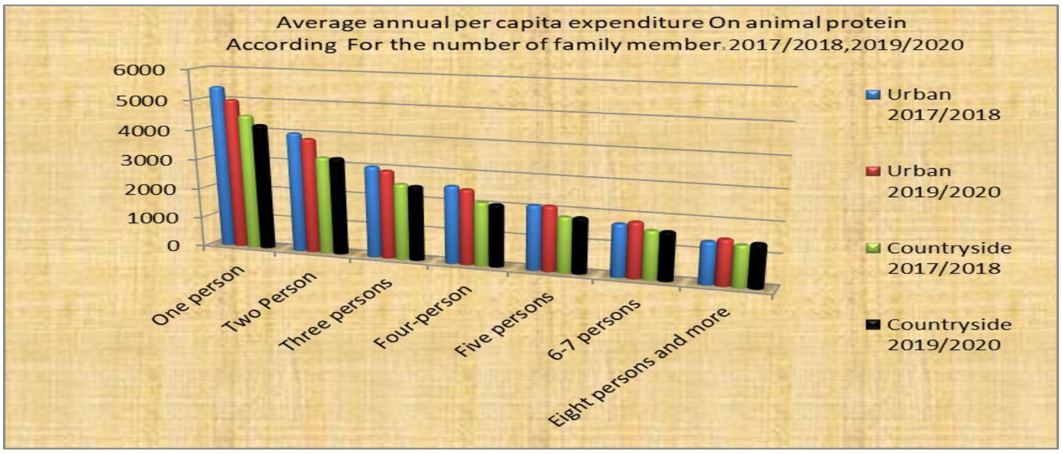
Source: Data from Table No. 1.
Figure 2 : Income groups and average expenditure on animal protein



Source: Data from Table No. 1.
Figure 3 : familly size .



Source: Data from Table No. 1.
Figure 4 : Household categories average expenditure on animal protein.

2. **The impact of the educational status of the head of the household:** (figure 5, 6) The educational status of the head of the household in urban and rural Egypt during the years 2017/2018 and 2019/2020 was divided into four levels: illiterate, read and write, less than university, and university or higher.(Fan, Al-Riffai, El-Said, Yu, & Kamaly, 2006) The data in) Table 2) indicate an increase in the average per capita share of expenditure on animal protein with the increase in the educational status of the head of the household, as the average share of expenditure on animal protein in the household with an illiterate head of the household during the years 17/2018 and 19/2019 was approximately 1981 and 2030 pounds, respectively, in urban areas, and approximately 1901 and 1880 pounds, respectively, in rural areas. The average share of the head of the household with a university degree or higher in expenditure on animal protein was approximately 3400 and 3280 pounds, respectively, in urban areas during the years 17/2018 and 19/2019, while this average in rural areas was approximately 2279 pounds. 2307 pounds respectively, and the percentages of expenditure on animal protein were as follows:

A. **Urban:** (Table 2) shows that spending on animal protein as a percentage of total spending on food and drink during the years 2017/2018 and 2019/2020 reached its lowest level in the family with an illiterate head of household, at a rate of about 46.31% and 44.40% respectively of spending on food and drink, and reached its maximum level in the family with a university education level or higher for the head of household, and the percentage of spending on animal protein reached about 52.93% and 50.62%

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respectively of the total spending on food and drink. The percentage of change in spending on animal protein between the years 2017/2018 and 2019/2020 shows a decrease in spending in the family with an illiterate head of household, and the family with a university education level or higher, with a decrease rate of about 2.43% and 3.51% respectively compared to the year 2017/2018.(Abdelsalam, 2025; Fan et al., 2006).

B. **Rural**: (Table 2) shows that the percentage of expenditure on animal protein during the years 2017/2018 and 2019/2020 reached its lowest level in the family with an illiterate head of household, at a rate of about 43.31%, 42.20% of expenditure on food and drink, and reached its maximum level in the family with a university education level or higher for the head of household, and the percentage of expenditure on animal protein reached about 47.80%, 46.65% respectively, consisting of the total expenditure on food and drink. The percentage of change in expenditure on animal protein shows an increase in the average per capita share of expenditure on animal protein in the year 2019/20 compared to the year 17/18 at all levels of education for the head of household, and the maximum percentage of increase in expenditure on animal protein reached in the family with a head of household who can read and write, at a rate of increase of about 4.88% compared to the year 2019/20.

Table 2 : Average per capita expenditure on animal protein groups (in pounds) according to educational status and the main sector of the head of the household in urban and rural Egypt during the years 2017/2018 and 2019/2020.

% change from year2018/2017	2019/2020			2017/2018			Statement
	Value of spending on			Value of spending on			
	% of food and drink	Food and drink	Animal protein	% of food and drink	Food and drink	Animal protein	
	Urban						**Educational status**
-2.43	44.40	4461.40	1981.00	46.31	4384.40	2030.30	Illiterate
3.33	45.37	4611.20	2092.10	46.58	4346.70	2024.60	**Reads and** writes
0.55	47.07	4708.70	2216.50	48.83	4514.25	2204.45	Less than a university graduate
-3.51	50.62	6481.50	3280.70	52.93	6423.80	3400.10	University graduate or above
	Rural						**Educational status**
1.11	42.20	4504.30	1901.00	43.31	4341.10	1880.20	Illiterate
4.88	42.95	4533.70	1947.20	44.04	4215.80	1856.60	Reads and writes
1.99	43.79	4499.00	1970.10	44.78	4313.40	1931.60	Less than a university graduate
1.25	46.65	4946.80	2307.90	47.80	4768.80	2279.30	University graduate or above
	Urban						**Main Sector**
-2.92	48.58	5070.40	2463.40	50.44	5030.30	2537.50	Government
-2.56	47.54	4777.80	2271.40	49.77	4683.80	2331.03	Private
-7.83	48.91	5050.70	2470.10	52.68	5086.80	2679.90	Joint
-3.06	48.44	5391.90	2611.80	50.07	5380.60	2694.30	Cooperative
	Rural						**Main Sector**
3.55	44.90	4574.60	2053.90	45.72	4337.80	1983.40	Government

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4.63	43.83	4357.10	1909.90	44.23	4126.70	1825.30	Private
16.41	45.87	4899.90	2247.50	45.28	4263.90	1930.60	Joint
-4.89	43.05	4860.40	2092.30	46.39	4741.70	2199.90	Cooperative
Urban							**Professional Status**
-2.14	50.79	6042.4	3068.80	51.85	6048.3	3135.90	Managers
-1.92	49.79	6076.4	3025.70	52.34	5893.9	3085.00	Scientific Professions
2.98	48.28	4976.9	2402.90	50.70	4602.1	2333.30	Technicians
-3.86	48.17	4670.6	2249.90	50.01	4679.3	2340.30	Clerks
-2.97	46.70	4662.1	2177.10	49.19	4561.7	2243.80	Services
-4.18	44.00	4366.1	1920.90	46.49	4311.7	2004.60	Agriculture
1.84	44.74	4021.1	1799.00	46.01	3839	1766.50	Crafts
1.93	45.43	4274.4	1941.90	47.25	4032.5	1905.20	Factories
-2.14	43.21	3674.1	1587.50	44.24	3577.5	1582.70	Primary Professions
Rural							**Professional Status**
4.70	46.70	5059.8	2363.00	48.22	4680.4	2256.9	Managers
4.25	46.33	4826.6	2236.00	46.91	4572.3	2144.9	Scientific Professions
5.07	45.57	4622.1	2106.20	46.45	4315.4	2004.6	Technicians
1.71	45.19	4653.1	2102.60	46.22	4472.9	2067.2	Clerks
4.50	43.39	4380.8	1900.70	44.32	4103.6	1818.9	Services
-0.44	42.43	4338.2	1840.50	43.96	4205.4	1848.6	Agriculture
4.71	42.34	3988.3	1688.60	43.04	3746.7	1612.6	Crafts
5.30	42.86	4281.2	1835.10	43.32	4022.8	1742.8	Factories
7.64	42.10	3973.4	1673.00	42.24	3679.2	1554.2	Primary Professions

Source: Collected and calculated from data from the Egyptian Central Agency for Public Mobilization and Statistics, Income, Expenditure and Consumption Survey 2017/2018, 2019/2020, Volume IV.

IV. DISCUSSION:

Table. 3, shows that there are statistically significant differences at a significance level of 0.01%, and that the average per capita expenditure on animal protein during the years 17/18 and 19/20 in rural and urban Egypt is affected by both the educational status of the head of the household, the difference in the type of animal protein (meat, fish, milk, cheese and eggs), and the difference in location (urban or rural). It was found that there are no significant differences at a significance level of 0.05% for the average per capita expenditure on animal protein according to time (17/18 and 19/20). That is, the average per capita expenditure on animal protein does not differ significantly in 2017/2018 from 2019/2020. The model's significance as a whole was proven at a significance level of 0.01%, and the value of the coefficient of determination indicates that the educational status of the head of the household, the difference in animal protein groups, and location are responsible for about 82% of the changes. Average per capita expenditure on animal protein during 17/18 and 19/20.

Table 3 : Results of the two-way analysis of variance for the differences in expenditure on animal protein groups according to the status of families in urban and rural Egypt during the years 2017/2018 and 2019/2020.

(F) For the Model	R2	Calculated F-value	Average Sum of Squared Deviations	Sum of Squared Deviations	Degrees of Freedom	Source of Variance	Statement
20.10**	0.77	12.826**	1807916	5423750	3	Income effect	**Annual income**
		3.746	528068	528068	1	Spatial effect	

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		48.969**	6902548	13805096	2	Among animal protein groups	**categories**
		0.528	74457	74457	1	Time effect	
		-	140957	5638305	40	Experimental error	
		-	-	25469678	47	Total	
63.0**	0.89	37.648**	1883439	11300635	6	Effect of family size	**Family size**
		8.525**	426488	426488	1	Effect of location	
		197.716**	9891263	19782527	2	Among animal protein groups	
		0.159	7961	7961	1	Effect of time	
		-	50027	3652014	73	Experimental error	
		-	-	351696	83	Total	
82.11**	0.93	14.818**	225132	675398	3	Effect of educational status	**Educational status of household head**
		13.657**	207487	207487	1	Spatial effect	
		258.322**	3924618	7849237	2	Among animal protein groups	
		0.011	166	166	1	Time effect	
		-	15192	607709	40	Experimental error	
		-	-	9339998	47	Total	
309.45**	0.98	6.024**	24526	73580	3	Sector effect	**Primary sector of household head**
		74.530**	303472	303472	1	Spatial effect	
		1036.782**	4221593	8443186	2	Among animal protein groups	
		0.019	79	79	1	Time effect	
		-	4071	162872	40	Experimental error	
		-	-	8983191	47	Total	
115.62**	0.93	15.079**	193469	1547758	8	Occupational Effect	**Primary occupation of household head**
		24.064**	308759	308759	1	Spatial Effect	
		621.282**	7971527	15943055	2	Among Animal Protein Groups	
		0.160	2057	2057	1	Time Effect	
		-	12830	1218922	95	Experimental Error	
		-	-	19020553	107	Total	

Source: Collected and calculated from data from the Egyptian Central Agency for Public Mobilization and Statistics, Income, Expenditure and Consumption Survey 2017/2018, 2019/2020, Volume IV.

From the above, it can be said that spending on animal protein increases with the rise in the educational level of the head of the household in urban and rural areas alike during the years 17/18 and 19/20, and that there is a relative convergence in spending on animal protein among rural families, and that urban families spend more on animal protein than rural families, and this is confirmed by the analysis of variance, as it showed the presence of statistically significant differences between urban and rural areas in the average per capita spending on animal protein.(Shehata, 2013).

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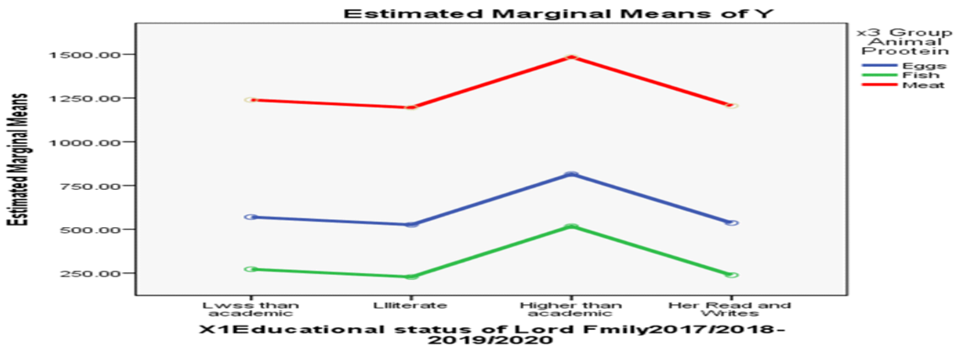
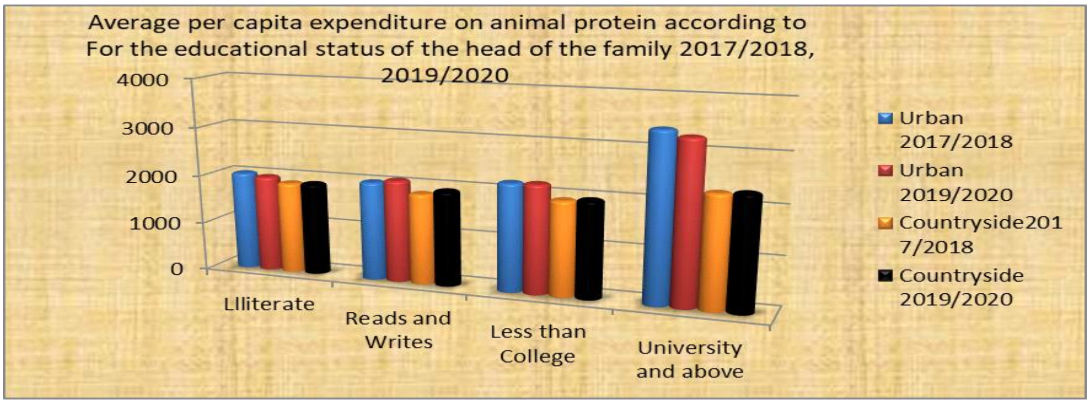


Source: Data from Table No.2
Figure 5 : Family educational status.



Source: Data from Table No.2
Figure 6: Protein expenditure according to educational status.

4- The impact of the main sector of the head of the household: (figure 7, 8) The main sector in which the head of the household works in urban and rural Egypt during the years 2017/2018 and 2019/2020 was divided into four sectors: the government sector, the private sector, the joint sector, and the cooperative sector. It is clear from the data in (Table 2): that the families with the least spending on animal protein are the families in which the head of the household works in the private sector, as the average per capita spending on animal protein during the years 17/2018 and 19/2019 amounted to about 2331 and 2771 pounds, respectively, in urban areas, and about 1825 and 1909 pounds, respectively, in rural areas. The percentages of spending on animal protein were as follows:

A- Urban: (Table 2) shows that the percentage of spending on animal protein during the years 2017/2018 and 2019/2020 reached its lowest level in families in which the head of the family works in the private sector, at a rate of about 49.77% and 47.54%, respectively, of spending on food and drink, and reached its maximum level in families in which the head of the family works in the joint sectors, and the percentage of spending on animal protein reached about 52.68% and 48.91%, respectively, of the total spending on food and drink, and the percentage of change in spending on animal protein between 2017/2018 and 2019/2020 shows a decrease in the average per capita share of spending on animal protein during 2019/2020 compared to 2017/2020 in all sectors in which the head of the family works, and that families in which the head of the family works in the joint sector are the families that reduced spending on animal protein the most in this year, with a reduction rate of about 7.83% compared to 2017/2020. 2017/2018.

B- Rural: (Table 2) shows that the percentage of expenditure on animal protein reached its lowest level in families where the head of the household works in the private sector during 17/18, at a rate of about 44.23%, and in families where the head of the household works in the cooperative sector during 19/20, at a rate of about 43.05% of expenditure on food and drink, and reached its highest level in 17/18 in families where the head of

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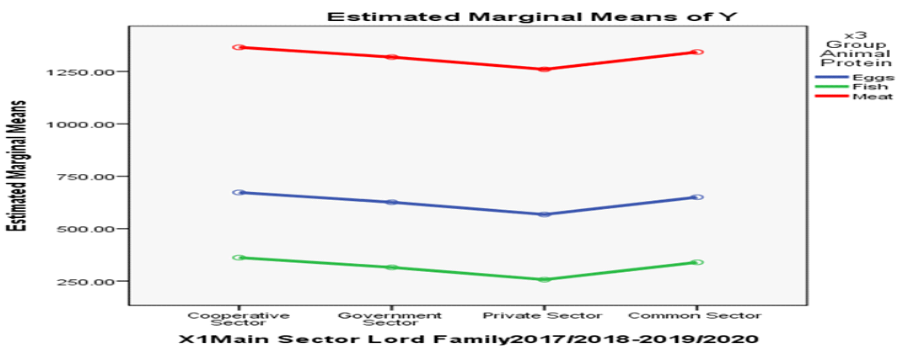
the household works in the cooperative sector, and the percentage of expenditure on animal protein in this year reached about 46.39% of the total expenditure on food and drink, and in families where the head of the household works in the joint sector during 19/20, at a rate of about 45.87% of expenditure on food and drink, and the percentage of change in expenditure on animal protein shows an increase in the average per capita share of expenditure on animal protein during 19/20 compared to 17/18 in all sectors where the head of the household works, with the exception of families where the head of the household works in the cooperative sector, where Average per capita expenditure on animal protein decreased by approximately 4.89% in 2019/20 compared to 2017/2018. Households with heads of households working in the joint sector saw the highest increase in expenditure on animal protein this year, at approximately 16.41% compared to 2017/2018.

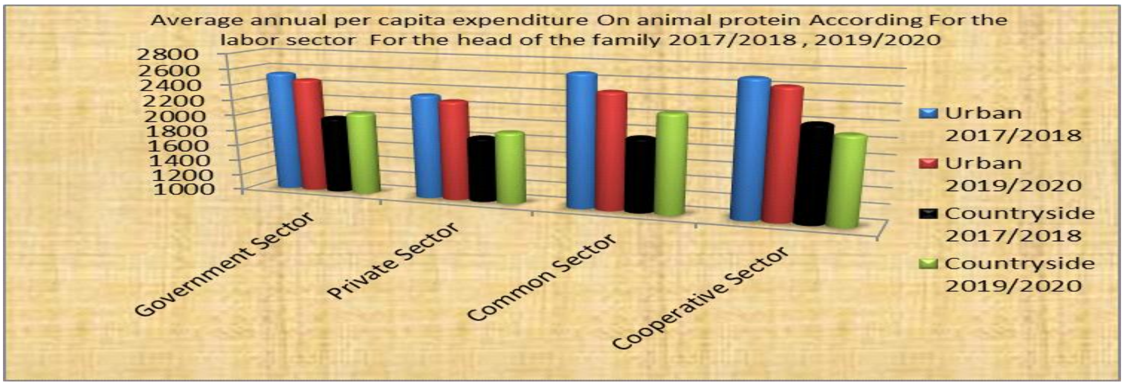
Table .3) shows that there are statistically significant differences at a significance level of 0.01%, and that the average per capita expenditure on animal protein during the years 17/18 and 19/20 in rural and urban Egypt is affected by both the sector in which the head of the household works, the difference in the type of animal protein (meat, fish, dairy, cheese and eggs), and the difference in location (urban or rural). It was found that there are no significant differences at a significance level of 0.05% for the average per capita expenditure on animal protein according to time, meaning that the average per capita expenditure on animal protein does not differ much in 2017/2018 from 2019/2020. This is evident from the decrease in the rates of change in expenditure on animal protein during 2019/2020 compared to 2017/2018. The significance of the model as a whole was proven at a significance level of 0.01%, and the value indicates The coefficient of determination indicates that the primary sector in which the household head works, differences in animal protein groups, and location account for approximately 98% of the changes in average per capita expenditure on animal protein during 2017/18 and 2019/20.

From the above, it is clear that the average per capita expenditure on animal protein decreased in both urban and rural areas during 2017/18 and 2019/20 in households where the household head worked in the joint sector. Urban households spend more on animal protein than rural households, and statistically significant differences were found between urban and rural areas in average per capita expenditure on animal protein.



Source: Data from Table No.2

Figure 7: Business sectors for the head of the household



Source: Data from Table No.2

Figure 8 : Expenditures according to the work sector of the head of the household.

5- The impact of the main occupation of the head of the household: (figure 9, 10) According to the income, expenditure and consumption survey data for the years 2017/2018 and 2019/2020, the occupational status of the head of the household in urban and rural Egypt was divided into nine occupations: managers, scientific professionals, technicians, clerks, service workers, agricultural workers, craftsmen, factory workers, and primary professions.(Assaad, 2006) The data in (Table 2) shows that the families with the lowest expenditure on animal protein are the families in which the head of the household works in primary professions. The average per capita expenditure on animal protein during the years 18/17 and 20/19 amounted to approximately 1582 and 1587 pounds, respectively, in urban areas, and approximately 1554 and 1673 pounds, respectively, in rural areas. The percentages of expenditure on animal protein were as follows:

A. **Urban: (**Table 2) shows that the percentage of expenditure on animal protein during the years 2017/2018 and 2019/2020 reached its lowest level in families in which the head of the family works in primary professions, and the percentage of expenditure on animal protein reached about 44.24%, 43.21% of expenditure on food and drink, respectively, and reached its maximum level in families in which the head of the family is a scientific profession, and the percentage of expenditure on animal protein reached about 52.34% of the total expenditure on food and drink during the year 17/18, while the percentage of expenditure reached its maximum level in the year 19/20 in families in which the head of the family is a manager, at a rate of about 50.79% of the total expenditure on food and drink, and the percentage of change in expenditure on animal protein between the years 17/2018 and 19/2020 shows an increase in the average per capita expenditure on animal protein during the year 19/2020 compared to the year 18/17 in three families, namely families with heads of household (technicians, craftsmen, and factory workers), with an increase rate of about 2.98%, 1.84%, and 1.93%, respectively, while the average per capita share of expenditure on animal protein decreased during 2019/20 compared to 18/17 in the remaining families.(Abd Elzaher & El-Sayed, 2024)

B. **Rural:** (Table 2) shows that spending on animal protein during the years 2017/2018 and 2019/2020, as a percentage of total spending on food and drink, reached its lowest level in families in which the head of the household works in primary professions, and the percentage of spending on animal protein reached about 42.24% and 42.10% respectively, and reached its maximum level in families in which the head of the household is a manager, and the percentage of spending on animal protein reached about 48.22% and 46.7% respectively, of the total spending on food and drink during the years 17/18 and 19/20. The percentage of change in spending on animal protein between the years 17/18 and 19/20 shows an increase in the average per capita spending on animal protein during the year 19/20 compared to the year 17/18 in all families, with the exception of families in which the head of the household is an agricultural worker, and that most families The highest per capita expenditure on animal protein in 2019/20 compared to 2017/18 was in households with primary occupations as the head of household, with an increase of approximately 7.64%.(Abdelfatah et al., 2016).

Table 3) shows that there are statistically significant differences at a significance level of 0.01%, and that the average per capita expenditure on animal protein during the years 17/18 and 19/20 in rural and urban Egypt is affected by both the main occupation of the head of the household, the difference in the type of animal protein (meat, fish, dairy, cheese and eggs), and the difference in location (urban or rural). It was found that there were no significant differences at a significance level of 0.05% for the average per capita expenditure on animal protein according to time, meaning that the average per capita expenditure on animal protein does not differ much in 2017/2018 from 2019/2020. The significance of the model as a whole was proven at a significance level of 0.01%, and the value of the coefficient of determination indicates that the main occupation of the head of the household, the difference in animal protein groups, and location are responsible for about 93% of the changes in the average per capita expenditure on animal protein during the years 2017/2018. 18/17, 20/19.

From the above, it is clear that the average per capita expenditure on animal protein in both urban

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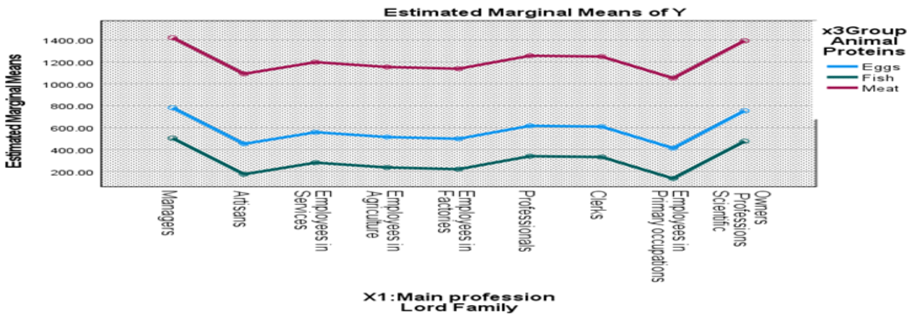
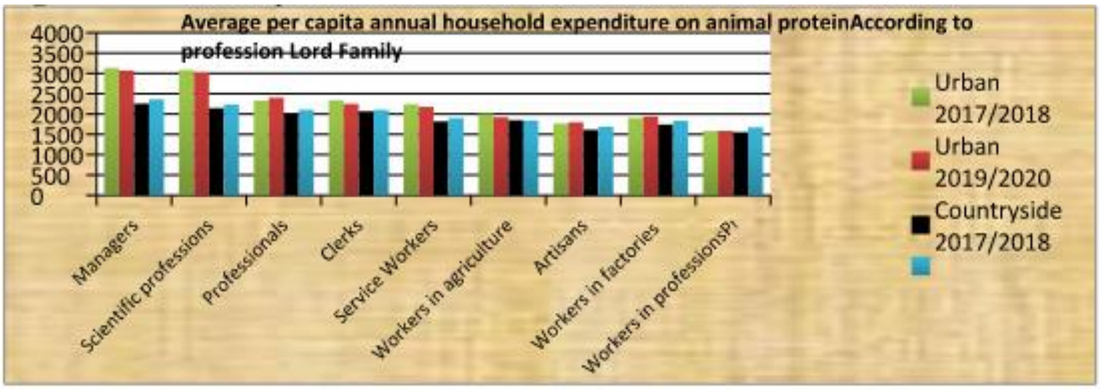
and rural areas decreased during 2017/18 and 2019/20 in households where the head of the household is a primary occupational worker, and that urban households spend more on animal protein than rural households, as it was found that there are statistically significant differences between urban and rural areas in the average per capita expenditure on animal protein, and that there is an increase in the average per capita expenditure on animal protein in 2019/2020 compared to 2017/2018 in most households.



Source: Data from Table No.2
Figure 9: Main occupations.



Source: Data from Table No.2
Figure 10 : Spending by occupation.

V. CONCLUSION

In conclusion, the research reached a set of important results, including:

1. Urban residents spent more on animal protein than rural residents during 2017/2018 and 2019/2020.

2. There was a decrease in the average per capita expenditure on animal protein during 2019/2020 compared to 2017/2018 in urban and rural Egypt.

3. The average per capita expenditure on animal protein increased with increasing income groups in urban and rural Egypt during 2017/2018 and 2019/2020.

4. The average per capita expenditure on animal protein decreased in urban and rural Egypt during 2017/2018 and 2019/2020 with each increase in the number of household members.

5- The average per capita expenditure on animal protein increased with increasing education levels in urban and rural Egypt during 2017/2018 and 2019/2020.

6- The average per capita expenditure on animal protein in urban and rural Egypt during 2017/2018 and 2019/2020 is affected by: income levels, number of household members, educational status of the household head, sector in which the household head works, primary occupation of the household head, differences in animal protein groups, and differences in location.

7- The percentage of animal protein expenditure in rural and urban Egypt during the years 2017/2018 and 2019/2020 was high, exceeding 40% of total food and beverage expenditure. This means that approximately 60% of the remaining food and beverage expenditures are allocated to (cereals and bread, oils and fats, fruits, vegetables, sugar and sugary foods, foods not classified under another category, and non-alcoholic beverages). Based on these percentages, it is possible to predict an individual's intake of the minimum nutritional requirements of animal protein.

The research reached the following recommendations:

1) The need to establish production and consumption policies for animal protein in Egypt, consistent with income levels, the number of individuals in the household, the educational status of the household head, the sector in which the household head works, the primary occupation of the household head, the differences in animal protein groups, and differences in location.

2) Work to achieve a continuous increase in individual incomes in rural areas, given the lower levels of animal protein expenditure compared to urban areas.

3) Raising awareness and advising on the need to reduce the number of individuals in families through birth control, to ensure that individuals receive their nutritional requirements of animal protein.

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