



Hult International Business School
Master's in Business Analytics (MBAN)

A1: SQL Analysis Assessment
Do dietary preferences affect price?

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Business Analysis with Structured Data

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I. Introduction

As a business analyst for Whole Foods, my task is to answer the business question that the stakeholders want to know, which is, do dietary preferences effect price?

Before answering this question, we will define “dietary preferences” and “price” as:

- *Dietary preferences:* According to Lang (2021) “Food allergies or sensitivities, religious practices, and ideological beliefs are some of the main reasons people rely on specific diets or follow dietary restrictions”. There are many different dietary preferences, but in Whole Foods' case, these are Vegan, Gluten Free, Keto-friendly, Vegetarian, Organic, Dairy-free, Sugar-conscious, Paleo-friendly, Whole Foods Diet, Low-sodium, Kosher, Low-fat, and Engine2.
- *Price:* “Is the amount of money given or set as consideration for the same of a specific thing” (Merriam-Webster, 2022). In this case, we will take the “new_price” as the metric for the final price for the complete product.

II. Do dietary preferences affect the price?

According to the t-test performed with the price and the total score of dietary preferences, the P value is less than 0.5, therefore it confirms that there is a significant relationship between dietary preference and price (*appx 1*). However, by comparing these results with the regression analysis and the comparative table (*appx 2 & 3*), the results are the opposite and they show no significant relationship between the variables.

Nonetheless, there is enough research that confirms the relationship between dietary preferences with higher costs. According to Koebert (2022) “Since 2019, the average cost for foods essential to popular diets has risen by 11.64% on average. The overall inflation rate in that same time frame is just 9.05%”. According to Harvard (2013), The healthiest diets cost about \$1.50 more per day than the least healthy diets; and according to (Drewnowski, 2005), added sugars and added fats are far more affordable than the recommended “healthful” diets based on lean meats, whole grains, and fresh vegetables and fruit.

Therefore, we can conclude that dietary preferences do effect the price. The reason why we are getting contradictory results is because each category is very different, and it is very difficult to compare one to the other, as many other variables come into play.

III. Three actionable insights

Actionable insight #1: Direct efforts in marketing towards Keto-friendly. This will not only help to reach more potential customers but maintain their brand positioning, as a high-quality supermarket and increase revenue.

Based on the comparative table (*appx 3*), we can identify that Keto is the Dietary Preference that on average has the highest price. This is because Keto is based on fresh meat, fish, leafy greens, and expensive snacks that are made with high-quality ingredients low in carbohydrates.

Furthermore, there is a lot of demand for keto-friendly products, as according to Koebert (2022) “in a survey made by Finance Buzz, “the highest percentage of respondents are currently trying the keto diet”. Plus, the market is expected to continue growing as, according to MarketWatch (2022), “Keto Diet market size was valued at USD 7881.73 million in 2021 and is expected to expand at a CAGR of 5.95% during the forecast period, reaching USD 11150.0 million by 2027.”

Actionable insight #2: Invest in SEO keywords related to dairy-free products to increase traffic to the website through this popular dietary preference. Furthermore, invest in research on how actual dairy-free products are selling and if there is a demand for a more variety of dairy-free / dairy alternative products.

Based on the comparative table (*appx 3*), we can also identify that dairy-free is the Dietary Preference with the greatest number of products. According to Children’s Hospital (2022), 30 to 50 million Americans are lactose intolerant, however, there are also people who even though they are not lactose intolerant, choose to follow this dietary preference.

Fortune Business Insights (2022) mentions that “The global dairy alternatives market size was valued at USD 22.25 billion in 2021. The market is projected to grow from USD 25.19 billion in 2022 to USD 61.43 billion by 2029, exhibiting a CAGR of 13.58% during the forecast period”.

Actionable insight #3: Invest in data collection about how the dietary preferences are performing. Identify the ones that are selling the most, the least, and the one that attracts the most customers to Whole Foods.

This data is giving us the relationship between price and dietary preference. However, it is not giving us how well they are performing in relation to sales. In the case of Whole

Foods' customers, the price is not the primary factor for the product purchase, according to Reuter (2022) "Whole Foods' typical shopper is a West Coast millennial woman between 25 and 34 years old, with a graduate degree and an annual income of more than \$80,000".

These customers are looking for high-quality products that fit their lifestyles. Drake (2022) mentions that according to a study made by Deloitte in 2022, "55% of the consumers that were surveyed, said they are still willing to pay a premium for food that contributes to their health and wellness".

Therefore, it is important to identify what the customers are buying the most, and which dietary preferences are related to the keywords that attract the most traffic to the website.

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Appendices

Appendix 1: T-test with new price and score to see the relationship between them.

t-Test: Two-Sample Assuming Unequal Variances		
	New price	Score
Mean	13.0204494	4.94756554
Variance	1446.7637	10.8919771
Observations	267	267
Hypothesized Mean Difference	0	
df	270	
t Stat	3.4550701	
P(T<=t) one-tail	0.00031936	
t Critical one-tail	1.65051675	
P(T<=t) two-tail	0.00063872	
t Critical two-tail	1.96878902	

Appendix 2: Regression analysis with each dietary preference

ANOVA								
	df	SS	MS	F	Significance F			
Regression	13	16593.6377	1276.43367	0.87696309	0.57805821			
Residual	253	368245.506	1455.51583					
Total	266	384839.144						

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
Intercept	21.69690374	5.52697122	3.9256408	0.00	10.8121706	32.5816369	10.8121706	32.5816369
vegan	6.591592289	8.60664987	0.76587202	0.44	-10.358213	23.5413977	-10.358213	23.5413977
glutenfree	2.008446675	5.82088874	0.34504124	0.73	-9.4551232	13.4720165	-9.4551232	13.4720165
ketofriendly	7.252976082	6.96542984	1.04128191	0.30	-6.4646356	20.9705878	-6.4646356	20.9705878
vegetarian	-7.203279985	8.16935937	-0.8817436	0.38	-23.291892	8.88533221	-23.291892	8.88533221
organic	-5.823713749	5.6982396	-1.0220198	0.31	-17.04574	5.39831274	-17.04574	5.39831274
dairyfree	-10.4909285	7.12704805	-1.4719879	0.14	-24.526829	3.54497163	-24.526829	3.54497163
sugarconscious	-2.008001546	6.3149906	-0.3179738	0.75	-14.444648	10.428645	-14.444648	10.428645
paleofriendly	2.613973139	6.63269573	0.39410418	0.69	-10.448357	15.6763033	-10.448357	15.6763033
wholefoodsdiet	-6.089866373	7.80895511	-0.7798568	0.44	-21.468704	9.28897115	-21.468704	9.28897115
lowsodium	-3.834558969	5.39087716	-0.7113052	0.48	-14.451271	6.78215259	-14.451271	6.78215259
kosher	9.612283998	5.60008677	1.71645269	0.09	-1.4164418	20.6410098	-1.4164418	20.6410098
lowfat	-0.5544797	6.67370572	-0.0830842	0.93	-13.697574	12.5886149	-13.697574	12.5886149
engine2	-3.019861625	9.37206884	-0.3222193	0.75	-21.477072	15.4373483	-21.477072	15.4373483

Appendix 3: Comparative table in excel

Dietary preferences	Avg price	Total # of products	Without the dietary preference	Avg price	Total # of products	Difference of price	Difference of # of products
vegan	\$ 9.98	130	non vegan	\$ 15.90	137	\$ (5.92)	-7
glutenfree	\$ 11.68	68	non glutenfree	\$ 13.48	199	\$ (1.80)	-131
ketofriendly	\$ 12.21	97	non ketofriendly	\$ 13.54	170	\$ (1.33)	-73
vegetarian	\$ 9.46	150	non vegetarian	\$ 17.81	117	\$ (8.34)	33
organic	\$ 7.78	85	non organic	\$ 15.55	182	\$ (7.77)	-97
dairyfree	\$ 10.54	205	non dairyfree	\$ 21.80	62	\$ (11.26)	143
sugarconscious	\$ 11.88	98	non sugarconscious	\$ 13.79	169	\$ (1.91)	-71
paleofriendly	\$ 10.06	93	non paleofriendly	\$ 14.72	174	\$ (4.65)	-81
wholefoodsdiet	\$ 7.47	78	non wholefoodsdiet	\$ 15.43	189	\$ (7.96)	-111
lowsodium	\$ 10.57	116	non lowsodium	\$ 15.01	151	\$ (4.45)	-35
kosher	\$ 8.68	80	non kosher	\$ 14.99	187	\$ (6.31)	-107
lowfat	\$ 8.91	74	non lowfat	\$ 14.70	193	\$ (5.80)	-119
engine-2	\$ 5.47	47	non engine-2	\$ 14.73	220	\$ (9.26)	-173

Appendix 3: Comparative table in SQL

	dietarypreferences	avg_price	total_num_of_products
	vegan	9.94	130
	nonvegan	15.90	137
▶	glutenfree	11.59	68
	nonglutenfree	13.48	199
	ketofriendly	12.61	97
	nonketofriendly	13.22	170
	vegetarian	9.60	150
	nonvegetarian	17.36	117
	organic	7.91	85
	nonorganic	15.37	182
	dairyfree	10.65	205
	nondairyfree	20.76	62
	sugarconscious	10.94	98
	nonsugarconscious	14.19	169
	paleofriendly	10.12	93
	nonpaleofriendly	14.53	174
	wholefoodsdiet	7.18	78
	nonwholefoodsdiet	15.40	189
	lowsodium	9.37	116
	nonlowsodium	15.79	151
	kosher	16.96	80
	nonkosher	11.30	187
	lowfat	7.42	74
	nonlowfat	15.14	193
	engine2	5.50	47
	engine2	14.60	220