Business Analysis with Structured Data - DAT-7470 - FMBAN1

SQL ANALYSIS ASSESSMENT

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SQL Analysis Assessment

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Analysis: Do healthier foods cost less?

Problem with defining "healthy" and "cost":

There are two major problems that need to be addressed before diving into the analysis.

First, since there is no uniform definition for what defines “healthy food”, the construct of “healthier foods” leaves room for interpretation. However, there are some guidelines that try to find a good explanation for which food is healthy. One of the most thoroughly formulated reports on guidelines for healthy eating in the US is the “Dietary Guidelines for Americans” published regularly by the United States Department of Agriculture (USDA) [1]. Focusing on fighting the causes of diet-related chronic diseases – such as cardiovascular disease, type 2 diabetes, obesity, and some forms of cancer – the **USDA suggests a diet consisting of a mix of vegetables of all types, fruits, grains, dairy, protein foods, and oils while limiting the consumption of added sugars, saturated fats, sodium, and alcoholic beverages**.

Second, comparing the cost of different products can also be challenging as products have different sizes and can contain a varying amount of unit within one product. Thus, **just comparing prices of products is not the best measurement of “cost” because this does not reflect how much of a product is consumed**. A good approximation for this is provided by the US Food & Drug Administration (FDA) in the form of “Serving sizes” [2]. So, as a heuristic of “cost” the price of each product is considered divided by the serving per product.

Do healthier foods cost less?

According to the definition of healthy foods introduced earlier as having low levels of added sugar, sodium, and fat, **the data shows that healthier foods do in fact cost less**. The analysis shows that there is a strong correlation between the cost per serving and the product being labeled healthy or unhealthy (see *Appendix 1*). The **average cost per serving of healthy products is $1.65** while the **average cost per serving of unhealthy products is $3.86**. Overall, the data contains **17 healthy products** and **176 unhealthy products**.

Furthermore, drinks are also categorized as being healthy or unhealthy on the basis whether they contain alcohol or not. Based on this assumption, **it cannot be concluded that healthier**

drinks are less expensive than unhealthy drinks. There is no significant correlation between the costs per serving for drinks and the product being labeled healthy or not (see *Appendix 2*). The **average cost per serving of healthy drinks is $2.53** while the **average cost per serving of unhealthy drinks is $3.40**. The dataset contains **22 healthy drinks** and **27 unhealthy drinks**.

Actionable insights:

First, **people commonly believe that it is more expensive to eat healthier** [3]. The Harvard School of Public Health also confirms this in one of their studies, stating that healthy diets on average cost $1.50 more per day [3]. Against this belief this analysis however shows that healthy foods are in fact less expensive if you consider the cost per serving. I suggest that **Whole Foods should make use of these findings by promoting healthier food options more actively** while also **showing that eating healthy and saving money do not necessarily contradict each other**. By doing this, Whole Foods would also be able to target consumers that want to be part of the **emerging trend of eating healthier** [4].

Second, the data shows that the proportion of healthy foods is small compared to the whole product range. According to the analysis **only about 8.8% of the food products** can be **considered as being healthy**. With **44.9% of drinks being considered as healthy**, the numbers for products in the drinks category are better. However, the unhealthy drinks still are in the majority. As healthier food consumption is trending, especially since the beginning of the Covid-19 pandemic [5], **Whole Foods should adapt to these new customer needs and introduce more healthy products into their assortment**.

Third, with these new insights, **Whole Foods should also specifically target consumer groups that struggle with healthy food consumption**. One consumer group that fits into this pattern are students. According to Arizona State University [6] **students struggle with eating healthy for mainly two reasons: lack of time and funds**. Whole Foods could monetize the issue this customer group faces by **promoting healthy, cheap, and quick recipes for students**. Since most students after finishing their studies have an income that is above average, Whole Foods could attract customers that in the future will be part of their target customer group [7].

Bibliography

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Appendices

Appendix 1: Result t-test cost per serving for healthy/unhealthy foods

t-Test: Two-Sample Assuming Unequal Variances

	healthy	*unhealthy*
Mean	165,0539866	385,523086
Variance	11946,738	1688514,555
Observations	17	176
Hypothesized Mean Difference	0	
df	190	
t Stat	-2,172707116	
P(T<=t) one-tail	0,015520114	
t Critical one-tail	1,652912949	
P(T<=t) two-tail	0,031040227	
t Critical two-tail	1,972528182	

Appendix 2: Result t-test cost per serving for healthy/unhealthy drinks

t-Test: Two-Sample Assuming Unequal Variances

	healthy	*unhealthy*
Mean	252,9598169	340,4477407
Variance	51999,24222	208979,1835
Observations	22	27
Hypothesized Mean Difference	0	
df	40	
t Stat	-0,870383495	
P(T<=t) one-tail	0,194642234	
t Critical one-tail	1,683851013	
P(T<=t) two-tail	0,389284468	
t Critical two-tail	2,02107539	