Statistical relationships between price level and glass volume at drinking establishments on Vasagatan

Master's thesis, Department of Spectral Sciences, University of Helsinki

Author:
Jonas Westerlund
Co-author:
Ruben G. Lindqvist

Supervisor:
Michael Lindell

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1 Introduction and research question

The drinking establishments on Vasagatan in the district of Åshöjden are widely regarded as the finest drinking establishments on Vasagatan. The cultural diversity and variance in characteristic locals bring the lonely street some much deserved prestige. In spite of this fact there have been a depressingly low number of scholarly endeavours completed with the goal of unravelling the central identity of Vasagatan. How are the beverage prices kept so low? What are the underlying variables? With this Master's thesis we are set on finding a relationship between the price level and the ratio of empty air served when ordering a refreshing malt based drink, thus hopefully concluding that a relationship between the prices and serving glasses is relevant. There have been studies on the impact of glass form and size on variables not including price (see [Punsch] for a thorough study). The research question of this thesis is thus the following: *what is the relationship between the price level of a drinking establishment on Vasagatan and the ratio of air versus malt beverage served at said drinking establishment?*

2 Methodology

2.1 Methods

To investigate the research question this thesis limits its methods to two variables: the price level (PL) which is represented by the price of the cheapest tap beer by volume standardised to a volume of 0,4 litres, and the ratio of air versus malt beverage served (RAVMBS) for said cheapest tap malt beverage. In the absence of tap beers the RAVMBS will be calculated based on the cheapest bottled or canned malt beverage. When calculating RAVMBS the total volume of the glass was defined as the point when more liquid could not comfortably be added without the chance of overflow.

2.2 Data collection

Between the dates 11.3-16.3.2016 the author completed the field research on location by personally visiting the establishments on Vasagatan. Measurement of the total glass volume was done either in person with a measuring cup or with the help of the bartenders. Current pricing information and beer selection was recorded on location after the volume measurements were completed. The author sampled random malt beverages on location to make sure the measurements were accurate and reliable.

2.3 Hypothesis

The hypothesis of the author is that the relationship between price and RAVMBS will be negative, or in other words, that the more expensive establishments will be serving less air with one serving of malt beverage.

3 Data

Table 1 and Table 2 summarise the data collected from the different drinking establishments.

Table 1. Price and volume of the cheapest tap beer by volume.

Name	Price (euros)	Beverage volume (l)
Apollo	4,5	0,5 (can)
Kustaa Vaasa	4,2	0,4
Bar Kalliohovi	3,3	0,4
Kallion B12 Cafe & Bar	4,5	0,5
Viva la Vida	3,3	0,4
Ravintola Iltakoulu	3,5	0,4
Olutravintola Hilpeä Hauki	6	0,5
Solmu Pub	4,5	0,5
Siima Baari	-	-
Bar Molotow	4,5	0,5
Pub Heinähattu	-	-
Street Gastro	6	0,33 (bottle)

Table 2. Glass volume measurements by volume of served beverage.

Name	0,4 litres	0,5 litres	Other volume
Apollo		0,7 l	
Kustaa Vaasa	0,6 l		
Bar Kalliohovi	0,6 l		
Kallion B12 Cafe & Bar		0,68 l	
Viva la Vida	0,6 l		
Ravintola Iltakoulu	0.58 l		
Olutravintola Hilpeä Hauki		0,6 l	
Solmu Pub		0,68 l	
Siima Baari	-	-	-
Bar Molotow	0,58 l	0,58 l	
Pub Heinähattu	-	-	-
Street Gastro			Small water glass

There is no data for Siima Baari or Pub Heinähattu. Data from the former was inaccessible due to safety concerns for the author, while the latter was inaccessible due to a truly inhospitable research environment. The latter is not a surprising reaction, see [Roger] for a

similar account. The data from Street Gastro is of particular interest since it distinguishes itself from all other establishments both qualitatively and quantitatively.

4 Data calculation and analysis

Table 3 presents the calculations of PL and RAVMBS for the various drinking establishments. The calculations were carried out by four different calculators, pen and paper, the mental capabilities of the human brain, and a recursive floating point algorithm. The differences in the results of the calculation methods were not significant.

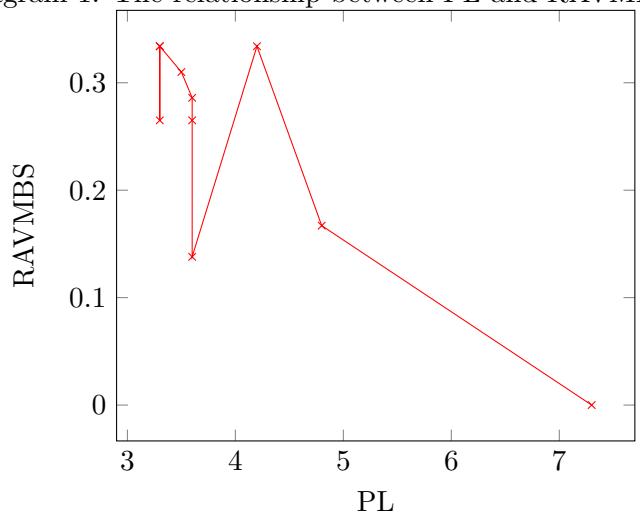
Table 3. Price level (PL) and ratio of air versus malt beverage served (RAVMBS)

Name	PL (euros)	RAVMBS
Apollo	3,6	0,286
Kustaa Vaasa	4,2	0,334
Bar Kalliohovi	3,3	0,334
Kallion B12 Cafe & Bar	3,3	0,265
Viva la Vida	3,3	0,334
Ravintola Iltakoulu	3,5	0,310
Olutravintola Hilpeä Hauki	4,8	0,167
Solmu Pub	3,6	0,265
Siima Baari	-	-
Bar Molotow	3,6	0,138
Pub Heinähattu	-	-
Street Gastro	7,3	0

Diagram 1 represents the relationship between PL and RAVMBS. The relationship was first estimated by free-hand drawing, after which the resulting graph was analysed with state of the art probabilistic models to verify the integrity of the graph. A sigma-randomised clustering method was then used to produce the final diagram.

The linear pathing between the data points is not to be considered as an indication of a specific pattern, but instead as a general visual guideline. The red color on the other hand is used to symbolise the historical urgency of the residents and visitors of Vasagatan that this investigation aims to shed light on.

Diagram 1. The relationship between PL and RAVMBS.



There seems to be a negative trend in the data points, mostly due to the extreme outlier of the data point from Street Gastro. By excluding the outlying data point it becomes clear that a statistically significant relationship is nigh impossible to deduce. But since it is widely recognised that scientific fraud and misconduct are virtues of the highest order in scientific community (see [Stankovic] for a thorough reflection), we will ignore this fact and move on to the evaluation.

5 Conclusion and evaluation

The virtuous analysis of the results gives a strong indication of a negative relationship between PL and RAVMBS at the drinking establishments of Vasagatan. Because science does not choose sides, we will also admit to the possibility that relationship cannot in fact be deduced due to the extreme outlier of the data point for Street Gastro. In light of future funding and scientific glory, we will adopt the former position.

One observation that the author made during field research was that some of the establishments with low PL used the same glass for both servings of 0,4l and 0,5l. As the 0,5l serving was chosen to be the representative of the price level, it resulted in low-PL establishments receiving low ratings of RAVMBS. Case on point was Bar Molotow, where the bartender explained that the glass was chosen to minimise the number of glass varieties.

Olutravintola Hilpeä Hauki had the most predictable outcome from the perspective of the author, resulting in both a high PL and low RAVMBS. In addition to the glass analysed in this thesis, the bartender demonstrated the properties of numerous other glasses. It was apparent that the number of glasses available to the establishment could also be a factor in the PL-rating. Estblishments with lower PL-ratings tend to save costs by investing in fewer multipurpose malt beverage containers.

The low number of data points, especially since only one glass was accounted for in the calculation of RAVMBS, resulted in a less-than informative data collection, although error margins caused by measuring cups and such are not of significance. The author cannot remember making any measuring errors, although this fact could be brought into question with greater emphasis.

During this investigation the author encountered many new variables that could be researched in further investigations. The most prominent of these was that the more expensive drinking establishments appeared to have a greater selection of different glasses and beverage holders. This question could be, if needed, expanded to cover all beverages and not just malt based beverages. Furthermore, while conducting the measurements the author noticed a significant variance in the amount of customers visiting the establishments at a certain time. Whether this has a direct correlation with the PL-rating (or a similar price level measurement) of a drinking establishment would pose an interesting follow-up study.

References

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