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Continous Assignement 2

Irish agricultural case study

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# Abstract

Irish Agriculture…

# Introduction

According to …

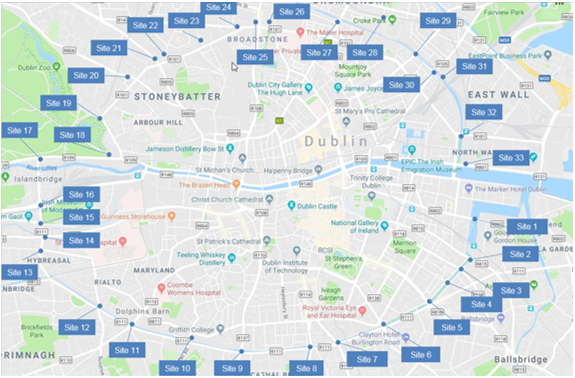


Figure 1 Cordons

Figure 1 (Dublin Cordon Points)

# Analysis

Organic food

# Conclusion

By using this dataset, we can build machine learning models to…

# References

1. Adèr, H.J. (2008). Advising on Research Methods: A Consultant’s Companion. [online] Google Books. Johannes van Kessel Publishing. Available at: https://books.google.ie/books?hl=en&lr=&id=LCnOj4ZFyjkC&oi=fnd&pg=PA333&dq=data+analysis+process+steps&ots=L2tblTW3jw&sig=fF-7Ya76YUUG4idfBW9yEbLKkLA&redir\_esc=y#v=onepage&q=data%20analysis%20process%20steps&f=false [Accessed 2 Apr. 2022].

# Appendices

**Appendix 1.***Mood’s Median Test*

Null Hypothesis H0: The medians of the populations all are equal

Alternative Hypothesis H1: The medians of the population are not all equal

Known values:

Overall Median =0.02829999999999977 (Jupyter notebook )  
Critical value of χ2 (0.05, 1) = 3.841

Observed values (Jupyter notebook)

|  |  |  |  |
| --- | --- | --- | --- |
| Observed | USA | IRL | Totals |
| > median | 151 | 148 | 299 |
| <= median | 148 | 151 | 299 |
| Totals | 299 | 299 | 598 |

Expected values = (Column total \* Row Total) / N

|  |  |  |  |
| --- | --- | --- | --- |
| Observed | USA | IRL | Totals |
| > median | 149.5 | 149.5 | 299 |
| <= median | 149.5 | 149.5 | 299 |
| Totals | 299 | 299 |  |

(Column total \* Row Total) / N

All Values = 299\*299/588=149.5

Critical value of χ2 (0.05, 1) = **3.841**  
Calculated **=0.194**

Since 0.194 is less than 3.841 , we accept the Null Hypothesis. We can conclude that the Medians are the same for the differences in monthly price changes for USA and IRL data.

**Appendix 2.***Kruskal-Wallis Test*

Null Hypothesis H0: the medians (mean on ranks) are equal across the samples

Alternative Hypothesis H1: at least one median is different

Known values:

Critical value of χ2 (0.05, 2) = 5.99  
N=36  
k=3  
Ri=97,211,358  
ni=12,12,12

Observed values (Jupyter notebook)

|  |  |  |  |
| --- | --- | --- | --- |
| Observed | 2019 | 2020 | 2021 |
| Sum of Ranks | 97 | 211 | 358 |

Calculate test statistic H:

H=12N(N+1)∑ki=1R2ini−3(N+1)H=12N(N+1)∑i=1kRi2ni−3(N+1)=

H=\*[ +] – 3(18-1)=

\*[ +] – 3(18-1)=

\*[ + – 51)=

0.009\*15123.499=**136.111**

As **H=136.111** is greater than **χ2(0.05,2)=5.99** we will **reject** ourNull Hypothesis (H0) and we can say that medians are **not same** in 3 selected years and at least one of them is different.

**Appendix 3.**

Null Hypothesis H0:

Alternative Hypothesis H1: The mean prices are same or greater in IRL

Known values:

α = 0.05

Results: If z is less than -1.96, or greater than 1.96, reject the null hypothesis.

|  |  |  |
| --- | --- | --- |
| Observed | IRL | USA |
| Sum of Ranks | 598 | 677 |
| Population | 25 | 25 |

U = -∑= - 598= -598 =**352**

U’ = -∑= - 677= -677 =**273**

U = 352 U’ = 273 MIN(U ; U’) = 273

Calculate Z:

Z= = = = -0.766

Results: Z = -0.766 and it is greater than -1.96 and is less than 1.96. We can accept Null Hypothesis H0.