



RELOCATION DILEMMA

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BACKGROUND

John's profile:

- health enthusiast
- outgoing
- pro-diversity
- young and enjoys convenience

John has been offered a job as Process Engineer at Worley Stockton-on-Tees

John needs to decide which neighbourhood in Stockton-on-Tees to move to.

PROJECT AIM AND OBJECTIVES

AIM

To determine the most suitable neighbourhood in Stockton-on-Tees that John should live based on his profile and distance from his workplace.

STAKEHOLDER INTEREST

- John
- John's employer (Worley)
- John's family

OBJECTIVES

- To determine the neighbourhoods in Stockton-on-Tees Borough.
- To determine the venues in the neighbourhoods in Stockton-on-Tees.
- To cluster the neighbourhoods based on similarity in venues.
- To determine the cluster with the most suitable neighbourhoods for John to live in.
- To determine the most suitable neighbourhood for John to live in

METHODOLOGY



DATA ACQUISITION AND WRANGLING

List of Neighbourhoods in Stockton-on-Tees

- List of neighbourhoods in Stockton-on-Tees retrieved from Wikipedia and scrapped into a data frame using beautifulsoup.
- neighbourhood coordinates added to data frame.
- 13 neighbourhoods retrieved in total.

Worley Offices Coordinates

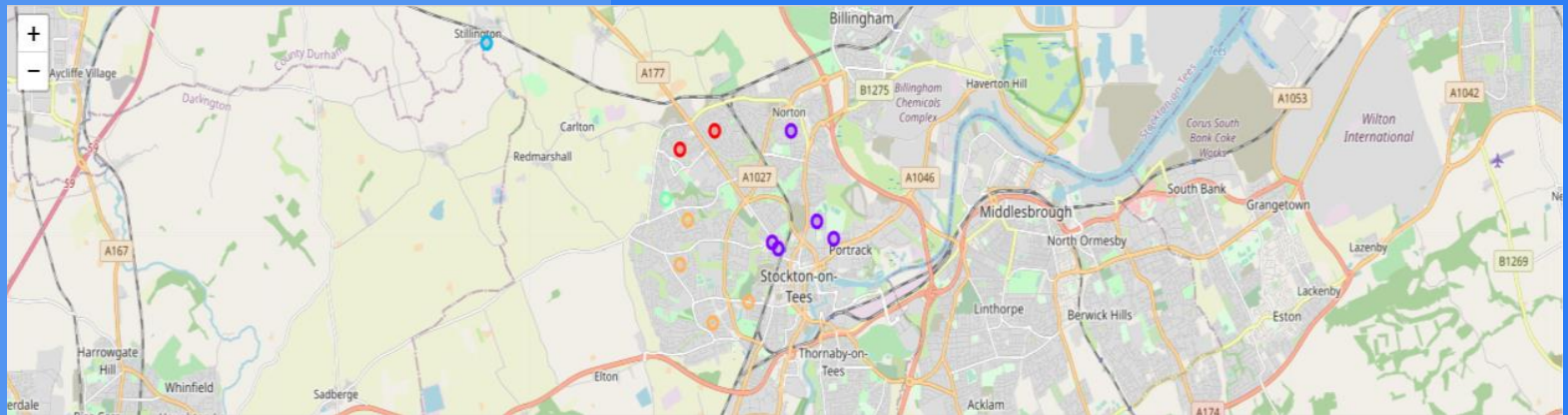
- Obtained using Worley Offices address and geocoder via the Foursquare agent.

Stockton-on-Tees Neighbourhood Venues

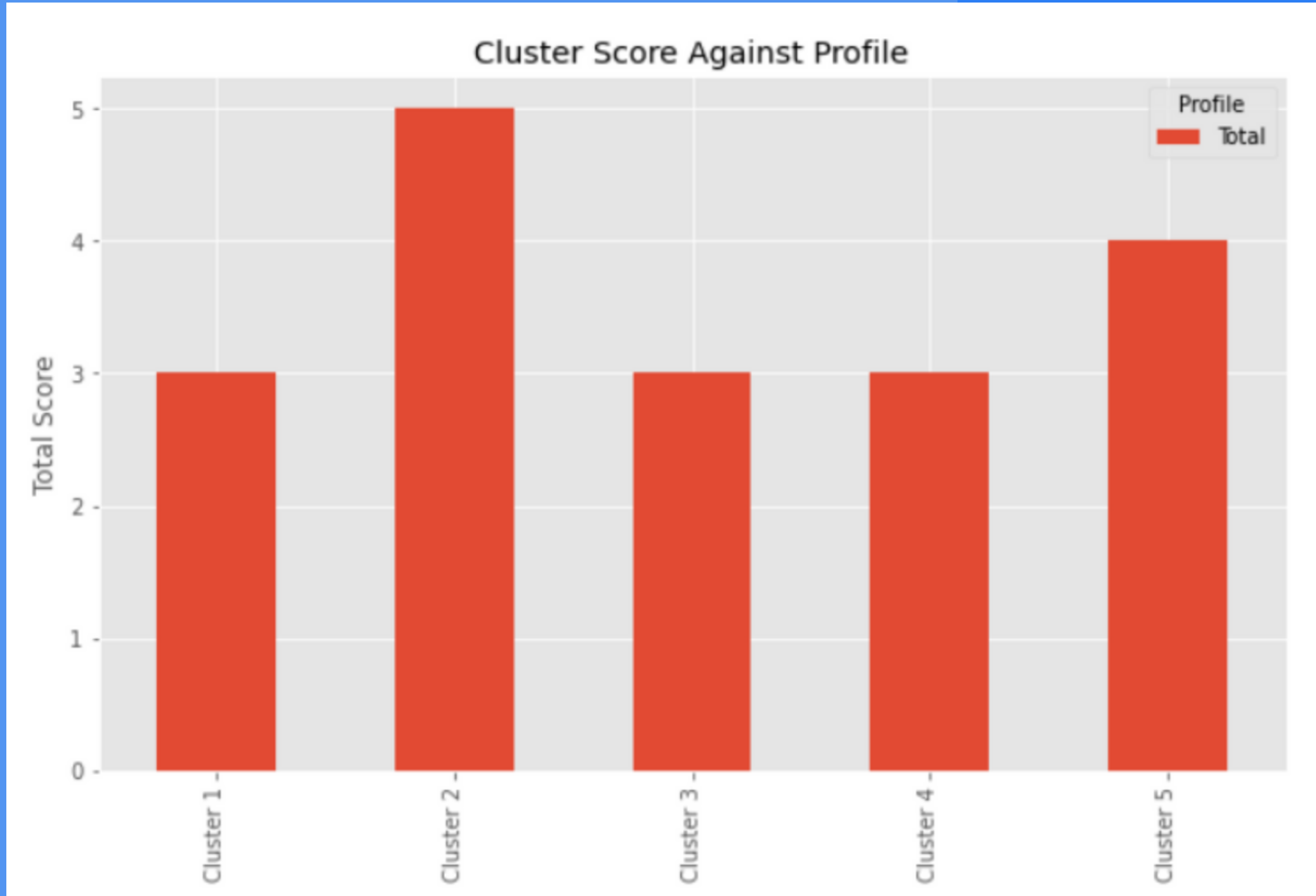
- 317 venues and 37 unique venue categories in the 13 neighbourhoods retrieved from Foursquare database.

EXPLORATORY DATA ANALYSIS

- Kmeans used to cluster neighbourhoods based on their 10 most common venue categories.
- 5 clusters created from the 13 neighbourhoods.



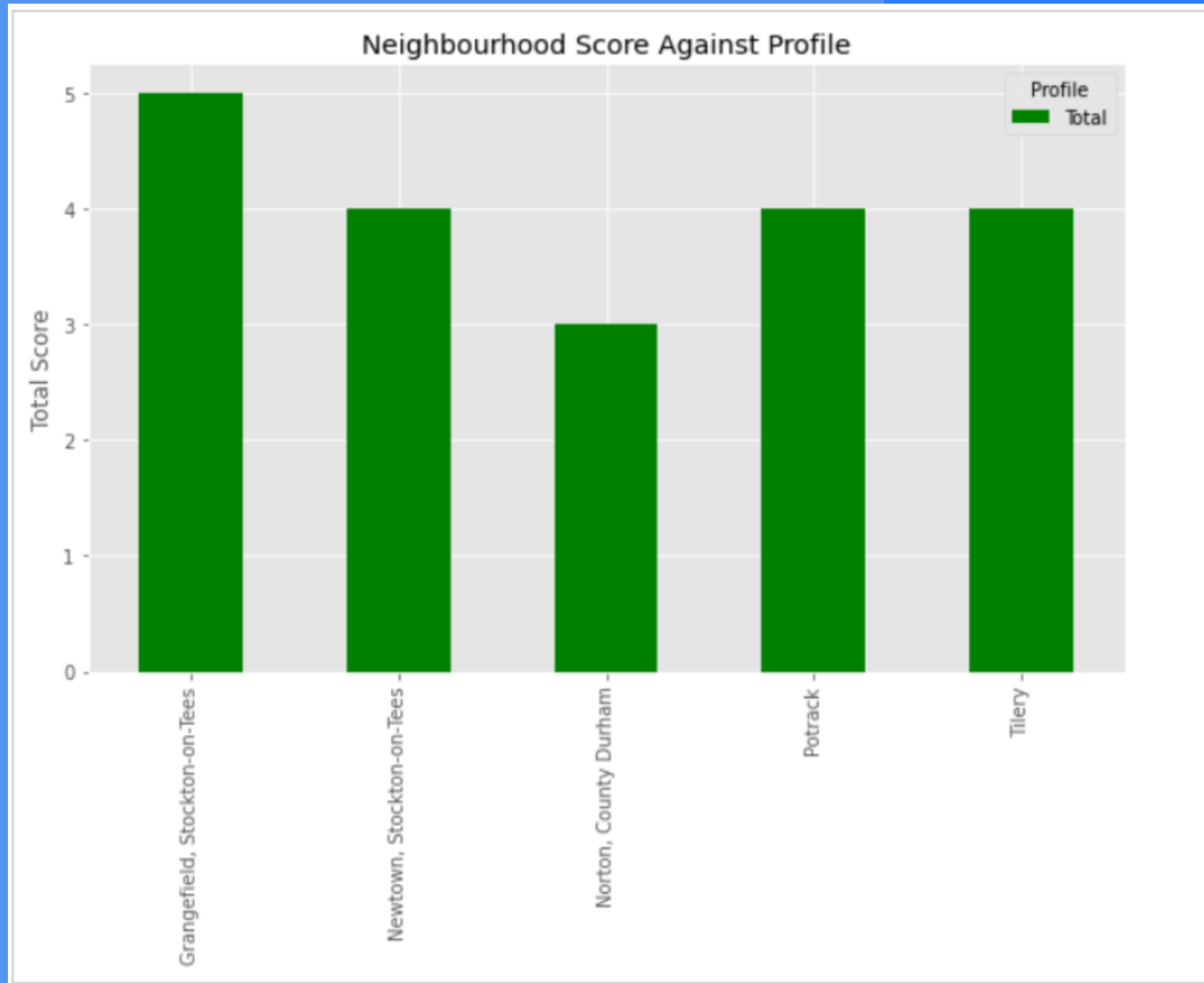
EXPLORATORY DATA ANALYSIS



Cluster Selection

- Cluster 2 had the highest mark, therefore, best suits John's Profile.
- Cluster 2 selected for further analysis in next stage.

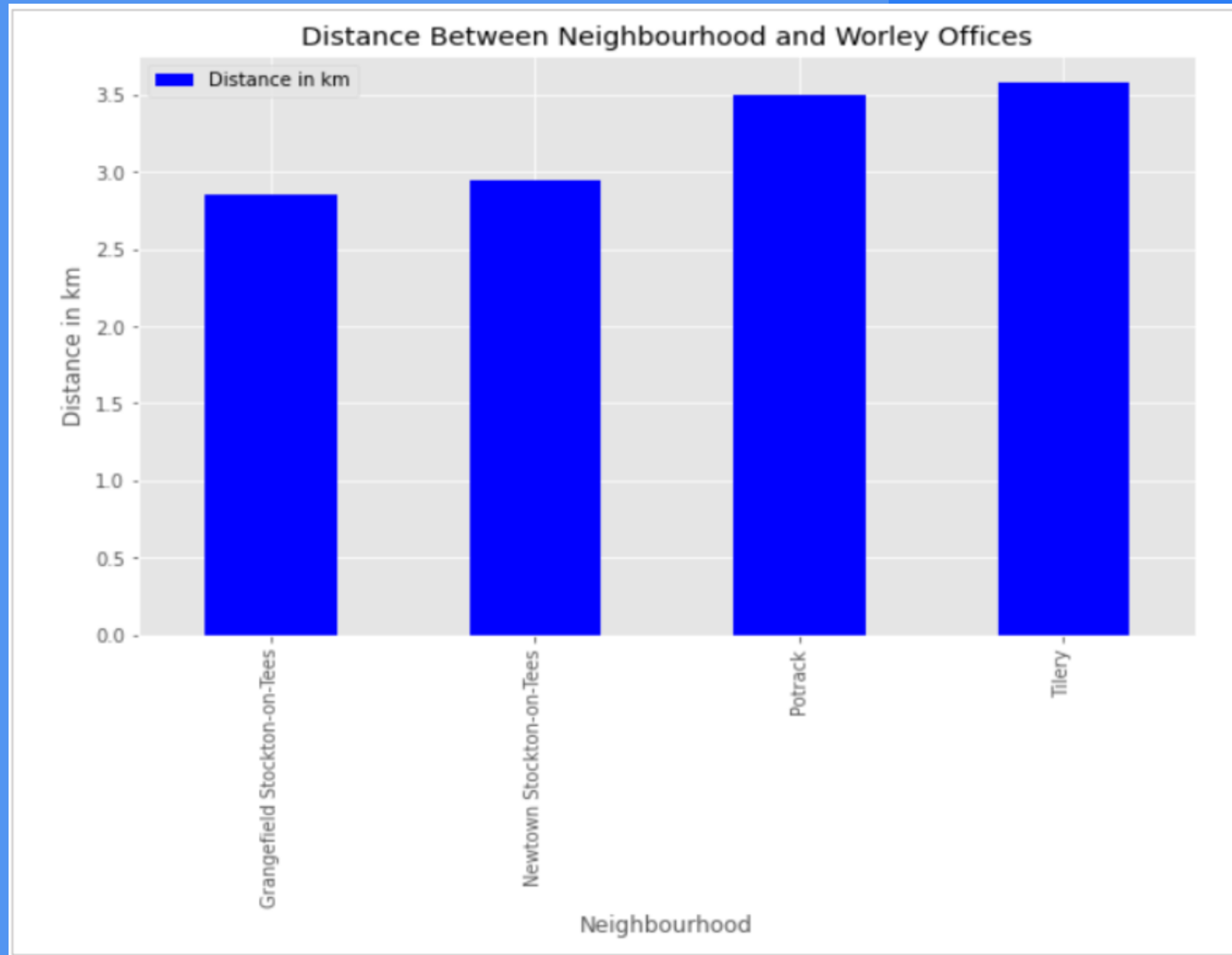
EXPLORATORY DATA ANALYSIS



Neighbourhood Selection

- Grange field has highest mark hence best suits John's profile compared to the other neighbourhoods in Cluster 2.
- Newtown, Potrack and Tilery also satisfy John's profile although they have slightly lower marks because of less cultural diversity.

EXPLORATORY DATA ANALYSIS



Neighbourhood Selection

- Grangefield Stockton-on-Tees is closest to the Worley Offices being 2.85km away from it.

RESULTS AND DISCUSSION

Of the 5 neighbourhood clusters, Cluster 2 best suits John's profile:

- Health enthusiast - gym/fitness centre
- Outgoing - coffeshop, restaurants, pub, casino, bowling alley, theatre etc
- Convenience - supermarkets, shopping malls, discount stores, bakery etc
- Prodiversity - Italian and American restaurants.

Of the 5 neighbourhoods in Cluster 2, Grangefield Stockton-on-Tees was selected as the one most suitable for John to stay in as it satisfies his profile the most and is the closest to his workplace being 2.85km away.





CONCLUSION

It is recommended that John resides in Grangefield Stockton-on-Tees as suits his profile the most and is within his preferred commuting distance to work being only 2.85km from Worley Offices.

REFERENCES



- [1] IBM, Composer, What is Data Science. [Sound Recording]. Coursera. 2021.
- [2] Worley, “Who we are,” Worley, [Online]. Available: <https://www.worley.com/who-we-are>. [Accessed 28 March 2021].
- [3] Wikipedia, “Category: Areas of Stockton-on-Tees,” Wikipedia, [Online]. Available: https://en.wikipedia.org/wiki/Category:Areas_of_Stockton-on-Tees. [Accessed 28 March 2021].