**A PROPOSAL TO THE ASSOCIATED PRESS UNION USA FOR THE LOCATION OF A NEW BOOKSHOOP TO BE LOCATED WITHIN THE NEIGBORHOOD OF EXISTING UNIVERISTIES IN MANHANTTAN BOROUGH, NEW YORK, UNITED STATES OF AMERICA (USA).**

**BY**

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**Data**

**Location information and student population**

Location information was obtained from foursquare, student population form online source, and information on population and income of Manhanttan Borough from the Kaggle. Foursquare has a large data information about location and places of interest, and this information were assessed using foursquare API. Student population information were obtained from the different school websites. Kaggle is a subsidiary of google LLC, and online community of data scientist and store of data on different things.

**New York University:** The New York University student population is 51, 123, and the campuses of New York university are located in two boroughs namely Manhattan and Brookyln.

**City University of New York :** City University New York, USA, is the largest urban university system in the United States of America, comprising of 25 campuses located in the 5 boroughs of New York state. The university enrolls over 275, 000 students and offers different varieties of courses.

**Columbia University:** This is the oldest institution in New York state and is one of the colonial colleges founded pre-independence, and has a student population is 33,143.

The location address and coordinates of the 25 colleges of city university New York, USA are

1. Baruch College: Located in 55 Lexington Avenue, Manhattan, New York, USA. The coordinates are 40.74019335, -73.98332973364073
2. Borough of Manhattan Community College: Located in MANHATTAN**– 199 Chambers Street, New York, USA. The coordinates are** 40.7172487, -74.0121804
3. Bronx community college: Located in BRONX**– 2155 University Avenue, New York, USA. The coordinates are** 40.857684649999996, -73.91289615614554
4. Brookyln College: Located in the BROOKLYN**– 2900 Bedford Ave, New York, USA. The coordinates are** 40.63175995, -73.95348121612278
5. College of Staten Island: Located in the STATEN ISLAND**– 2800 Victory Boulevard, New York, USA. The coordinates are** 40.60758, -74.159282.
6. Craig Newmark Graduate School of Journalism: Located in the MANHATTAN**– 219 W 40th Street, New York, USA. The coordinates are** 40.7553245, -73.9889879
7. CUNY graduate Center: located in MANHATTAN**– 365 Fifth Avenue, New York, USA. The coordinates are** 42.70965401010101, -73.71083494949495.
8. CUNY Graduate School of public Health and Health Policy: Located in the MANHATTAN**– 55 W 125th Street, New York, USA. The coordinate are** 40.8073215, -73.9439667
9. CUNY School of labor and Urban Studies: Located in MANHATTAN**– 25 West 43rd Street, New York, USA. The coordinate is** 40.754875, -73.9817101
10. CUNY School of Law: Located in QUEENS**– 2 Court Square, New York, USA. The coordinates are** 40.746246, -73.942895
11. CUNY School of Professional Studies: Located in MANHATTAN**– 119 W 31st Street, New York, USA. The coordinates are** 40.7483872 -73.990094
12. Guttman Community College: Located in MANHATTAN**– 50 W 40th St, New York, USA. The coordinates are** 40.752949, -73.9840106
13. Hostos Community College: Located in BRONX**– 500 Grand Concourse, New York, USA. The coordinate are** 40.8180719, -73.9268413875
14. Hunter College: Location in MANHATTAN**– 695 Park Ave, New York, USA. The coordinates are** 40.7683107, -73.9644059567109
15. John Jay College of Criminal Justice: Located in MANHATTAN**– 524 W 59th St, New York, USA. The coordinates are** 40.7710723, -73.9888429
16. Kingsborough Community College: Located in BROOKLYN**– 2001 Oriental Blvd, New York, USA. The coordinates are** 40.578191849999996, -73.93496554856793
17. LaGuardia Community College: Located in QUEENS**– 31-10 Thomson Ave, New York, USA. The coordinates are** 40.7438487 -73.935166587143
18. Lehman College: Located in BRONX**– 250 Bedford Park Blvd West, New York, USA. The coordinates are** 40.8722825 -73.8948917141949
19. Macaulay Honors College: Located in MANHATTAN**– 35 W 67th St, New York, USA. The coordinates are** 40.7740627 -73.98005097388125
20. Medgar Ever College: Located in BROOKLYN**– 1650 Bedford Ave, New York, USA. The coordinates are** 40.6662941 -73.95836331384717
21. New York City College of Technology: Located in BROOKLYN**– 300 Jay St, New York, USA. The coordinates are** 40.6952788 -73.9873073
22. Queen College: Located in QUEENS**– 65-30 Kissena Boulevard, New York, USA. The coordinates are** 40.7359546 -73.81588506522962
23. Queensborough Community College: Located in QUEENS**– 222-05 56th Avenue, New York, USA. The coordinates are** 40.75602515 -73.7565401216789
24. The City College of New York: Located in MANHATTAN**– 160 Convent Avenue, New York, USA. The coordinates are** 40.81819805, -73.95100897933364.
25. York College: Located in QUEENS**– 94-20 Guy R. Brewer Boulevard, New York, USA. The coordinates are** 40.7017824 -73.7952695

**Existing bookshop information**

A search query to get location and rating information about existing bookshop that may act as competitors. This required using the location coordinate of the different universities in the venue search on foursquare API. This gave location information of existing bookshops at a specified radius to the universities. This information was obtained in a Jason file. The header for the location information of bookshops around New York University is shown below.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Categories | Address | Latitude | Longitude | Distance | Id |  |  |
| 0 | Bookstore | ['2 Bond St', 'New York, NY 10012', 'United States'] | 40.72709 | -73.9945 | 282 | 5d34cf093fa42a0008f48c | | |
| 1 | Bookstore | ['80 E 11th St', 'New York, NY 10003', 'United States'] | 40.73051 | -73.9921 | 379 | 5259787611d240f393e11 | | |
| 2 | Bookstore | ['122 4th Ave (btwn 11th and 12th St)', 'New York, NY 10003', 'United States'] | 40.73305 | -73.99 | 674 | 3fd66200f964a520b4e41 | | |
| 3 | Bookstore | ['2 W 14th St (at 5th Avenue)', 'New York, NY 10011', 'United States'] | 40.73612 | -73.9939 | 789 | 4cfade2234c1a0932beb4e | | |

**Neighborhood information**

To explore areas around the different universities to know the business actives that thrive. The three universities are located in Manhanttan Borough USA and therefore neighborhood information was sort for this purpose. Manhanttan borough neighborhood information was obtained from foursquare and explored to business that thrive around this universities. Based on these neighborhoods, clusters were created. The extract of the neighborhood data is shown below

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Borough | Neighborhood | Latitude | Longitude |
| 0 | Manhattan | Marble Hill | 40.87655 | -73.9107 |
| 1 | Manhattan | Chinatown | 40.71562 | -73.9943 |
| 2 | Manhattan | Washington Heights | 40.8519 | -73.9369 |
| 3 | Manhattan | Inwood | 40.86768 | -73.9212 |
| 4 | Manhattan | Hamilton Heights | 40.8236 | -73.9497 |
| 5 | Manhattan | Manhattanville | 40.81693 | -73.9574 |
| 6 | Manhattan | Central Harlem | 40.81598 | -73.9432 |
| 7 | Manhattan | East Harlem | 40.79225 | -73.9442 |
| 8 | Manhattan | Upper East Side | 40.77564 | -73.9605 |
| 9 | Manhattan | Yorkville | 40.77593 | -73.9471 |
| 10 | Manhattan | Lenox Hill | 40.76811 | -73.9589 |
| 11 | Manhattan | Roosevelt Island | 40.76216 | -73.9492 |

**Student Population information**

This was obtained through a search on the three universities websites. The three universities are located in the same neighborhood and have different department, colleges and campus. City university has 25 campuses, 11 of which are located in the Manhanttan borough. A total of 28 campuses was noted with city university having the majority population amongst the three. Figure 1 summarizes the student population information.

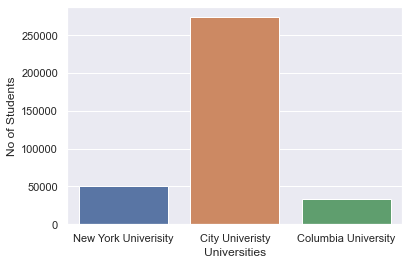


Figure 1: Number of student in the different universities

**Population and income of Manhanttan Borough New York, USA**

Information for this purpose was obtained from Kaggle in an excel file. Basic descriptive statistic was done and related information were obtained. Extract of the summary statistics of the Manhattan population and income information obtained from Kaggle is shown below.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | CensusTract | TotalPop | Men | Women | Hispanic | White |
| count | 288 | 288 | 288 | 288 | 283 | 283 |
| mean | 3.61E+10 | 5658.01 | 2671.646 | 2986.365 | 22.64629 | 48.19399 |
| std | 8313.542 | 3178.179 | 1476.606 | 1753.923 | 22.13912 | 29.41646 |
| min | 3.61E+10 | 0 | 0 | 0 | 0 | 0 |
| 25% | 3.61E+10 | 3172.25 | 1531.5 | 1735.25 | 6.3 | 17.05 |
| 50% | 3.61E+10 | 5329 | 2599 | 2791.5 | 12.9 | 56 |
| 75% | 3.61E+10 | 7770.5 | 3713 | 4175 | 32.45 | 74.1 |
| max | 3.61E+10 | 16231 | 8315 | 9337 | 92 | 100 |