Capstone Project - The Battle of Neighborhoods (London)

Topic: Finding the best place to open an Indian Restaurant in London

Author: Subbarayudu T

1. Description of the Problem

The idea of this study is to help people planning to open a new Indian restaurant in London to chose the right location by providing data about the income and population of each neighborhood as well as the competitors already present on the same regions.

One of the big concerns for any Entrepreneur is the competition that already present in the market. So, he has to study the market to finalize the location where he intended to open a new business. Therefore in this project, I intend to **explore different neighborhoods of London and find the best area to build a new Indian Restaurant in London** to solve this persistent problem and to find a new business opportunity. This research is expected to benefit the entrepreneurs looking for a profitable location for opening a business (Indian Resturant in this project) in London.

2. Data Acquisition and Preprocessing

In this project, I will be using the following datasets to help solve my problem - List of London Boroughs (from Wikipedia page), and Foursquare API.

Let's have a look at them.

List of London Boroughs

- Information on boroughs and their population & coordinates
 - -Population can be used to calcuate the ratio of reported crime to population for better comparison.
 - -Coordinates can be used to get neighborhood data from Foursquare.
- · source: Wikipedia
- url: https://en.wikipedia.org/wiki/List_of_London_boroughs)

In [5]:

```
import pandas as pd
import numpy as np
import requests
import lxml
from bs4 import BeautifulSoup
```

In [6]:

```
# Obtaining data from Wikipedia
URL="https://en.wikipedia.org/wiki/List_of_London_boroughs"
source = requests.get(URL).text
soup = BeautifulSoup(source, 'lxml')
soup.encode("utf-8-sig")
```

Out[6]:

b'\xef\xbb\xbf<!DOCTYPE html>\n<html class="client-nojs" dir="ltr" lang="e n">\n<head>\n<meta charset="utf-8-sig"/>\n<title>List of London boroughs -Wikipedia</title>\n<script>document.documentElement.className="client-js"; RLCONF={"wgBreakFrames":!1,"wgSeparatorTransformTable":["",""],"wgDigitTra nsformTable":["",""],"wgDefaultDateFormat":"dmy","wgMonthNames":["","Janua ry", "February", "March", "April", "May", "June", "July", "August", "September", "O ctober", "November", "December"], "wgMonthNamesShort": ["", "Jan", "Feb", "Ma r","Apr","May","Jun","Jul","Aug","Sep","Oct","Nov","Dec"],"wgRequestId":"X g208gpAICsAAD7IX8kAAABG","wgCSPNonce":!1,"wgCanonicalNamespace":"","wgCano nicalSpecialPageName":!1,"wgNamespaceNumber":0,"wgPageName":"List_of_Londo n_boroughs","wgTitle":"List of London boroughs","wgCurRevisionId":93168006 8,"wgRevisionId":931680068,"wgArticleId":28092685,"wgIsArticle":!0,"wgIsRe direct":!1,"wgAction":"view","wgUserName":null,"wgUserGroups":["*"],"wgCat egories":["Use dmy dates from August 2015", "Use British English from Augus t 2015", "Lists of coordinates", "Geographic coordinate lists", "Articles wit h Geo", "London boroughs", "Lists of places in London"], \n"wgPageContentLang uage":"en","wgPageContentModel":"wikitext","wgRelevantPageName":"List_of_L ondon_boroughs","wgRelevantArticleId":28092685,"wgIsProbablyEditable":! 0,"wgRelevantPageIsProbablyEditable":!0,"wgRestrictionEdit":[],"wgRestrict ionMove":[],"wgMediaViewerOnClick":!0,"wgMediaViewerEnabledByDefault":! 0,"wgPopupsReferencePreviews":!1,"wgPopupsConflictsWithNavPopupGadget":! 1,"wgVisualEditor":{"pageLanguageCode":"en","pageLanguageDir":"ltr","pageV ariantFallbacks":"en"},"wgMFDisplayWikibaseDescriptions":{"search":!0,"nea rby":!0,"watchlist":!0,"tagline":!1},"wgWMESchemaEditAttemptStepOversampl e":!1, "wgULSCurrentAutonym": "English", "wgNoticeProject": "wikipedia", "wgWik ibaseItemId":"Q6577004","wgCentralAuthMobileDomain":!1,"wgEditSubmitButton LabelPublish":!0};RLSTATE={"ext.globalCssJs.user.styles":"ready","site.sty les":"ready", "noscript": "ready", "user.styles": "ready", "ext.globalCssJs.use r":"ready", "user": "ready", "user.options": "ready", "user.tokens": "loadin g"\n,"ext.cite.styles":"ready","mediawiki.legacy.shared":"ready","mediawik
i.legacy.commonPrint":"ready","jquery.tablesorter.styles":"ready","jquery. makeCollapsible.styles":"ready","mediawiki.toc.styles":"ready","wikibase.c lient.init":"ready","ext.visualEditor.desktopArticleTarget.noscript":"read y","ext.uls.interlanguage":"ready","ext.wikimediaBadges":"ready","mediawik i.skinning.interface":"ready","skins.vector.styles":"ready"};RLPAGEMODULES
=["ext.cite.ux-enhancements","site","mediawiki.page.startup","mediawiki.pa ge.ready","jquery.tablesorter","jquery.makeCollapsible","mediawiki.toc","m ediawiki.searchSuggest","ext.gadget.teahouse","ext.gadget.ReferenceTooltip s","ext.gadget.watchlist-notice","ext.gadget.DRN-wizard","ext.gadget.chari nsert","ext.gadget.refToolbar","ext.gadget.extra-toolbar-buttons","ext.gad get.switcher","ext.centralauth.centralautologin","mmv.head","mmv.bootstra p.autostart","ext.popups","ext.visualEditor.desktopArticleTarget.init","ex t.visualEditor.targetLoader",\n"ext.eventLogging","ext.wikimediaEvents","e xt.navigationTiming", "ext.uls.compactlinks", "ext.uls.interface", "ext.cx.ev entlogging.campaigns","ext.quicksurveys.init","ext.centralNotice.geoIP","e xt.centralNotice.startUp", "skins.vector.js"];</script>\n<script>(RLQ=windo w.RLQ||[]).push(function(){mw.loader.implement("user.tokens@tffin",functio n(\$,jQuery,require,module){/*@nomin*/mw.user.tokens.set({"patrolToken":"+ \\\","watchToken":"+\\\","csrfToken":"+\\\"});\n});});</script>\n<link href="/w/load.php?lang=en&modules=ext.cite.styles%7Cext.uls.interlangu age%7Cext.visualEditor.desktopArticleTarget.noscript%7Cext.wikimediaBadge s%7Cjquery.makeCollapsible.styles%7Cjquery.tablesorter.styles%7Cmediawiki. legacy.commonPrint%2Cshared%7Cmediawiki.skinning.interface%7Cmediawiki.to c.styles%7Cskins.vector.styles%7Cwikibase.client.init&only=styles& skin=vector" rel="stylesheet"/>\n<script async="" src="/w/load.php?lang=en</pre> &modules=startup&only=scripts&raw=1&skin=vector"></script> \n<meta content="" name="ResourceLoaderDynamicStyles"/>\n<link href="/w/lo ad.php?lang=en&modules=site.styles&only=styles&skin=vector" re l="stylesheet"/>\n<meta content="MediaWiki 1.35.0-wmf.11" name="generato

r"/>\n<meta content="origin" name="referrer"/>\n<meta content="origin-when -crossorigin" name="referrer"/>\n<meta content="origin-when-cross-origin" name="referrer"/>\n<link href="android-app://org.wikipedia/http/en.m.wikip</pre> edia.org/wiki/List_of_London_boroughs" rel="alternate"/>\n<link href="/w/i ndex.php?title=List of London boroughs&action=edit" rel="alternate" ti tle="Edit this page" type="application/x-wiki"/>\n<link href="/w/index.ph p?title=List_of_London_boroughs&action=edit" rel="edit" title="Edit th is page"/>\n<link href="/static/apple-touch/wikipedia.png" rel="apple-touc h-icon"/>\n<link href="/static/favicon/wikipedia.ico" rel="shortcut icon"/ >\n<link href="/w/opensearch_desc.php" rel="search" title="Wikipedia (en)"</pre> type="application/opensearchdescription+xml"/>\n<link href="//en.wikipedi</pre> a.org/w/api.php?action=rsd" rel="EditURI" type="application/rsd+xml"/>\n<1</pre> ink href="//creativecommons.org/licenses/by-sa/3.0/" rel="license"/>\n<liin</pre> k href="https://en.wikipedia.org/wiki/List_of_London_boroughs" rel="canoni cal"/>\n<link href="//login.wikimedia.org" rel="dns-prefetch"/>\n<link hre</pre> f="//meta.wikimedia.org" rel="dns-prefetch"/>\n<!--[if lt IE 9]><script sr c="/w/resources/lib/html5shiv/html5shiv.js"></script><![endif]-->\n</head> \n<body class="mediawiki ltr sitedir-ltr mw-hide-empty-elt ns-0 ns-subject mw-editable page-List_of_London_boroughs rootpage-List_of_London_boroughs skin-vector action-view">\n<div class="noprint" id="mw-page-base"></div>\n <div class="noprint" id="mw-head-base"></div>\n<div class="mw-body" id="co</pre> ntent" role="main">\n\n<div class="mw-body-content" id="si teNotice"><!-- CentralNotice --></div>\n<div class="mw-indicators mw-bodycontent">\n</div>\n<h1 class="firstHeading" id="firstHeading" lang="en">Li st of London boroughs</h1>\n<div class="mw-body-content" id="bodyContent"> \n<div class="noprint" id="siteSub">From Wikipedia, the free encyclopedia </div>\n<div id="contentSub"></div>\n<div id="jump-to-nav"></div>\n<a clas s="mw-jump-link" href="#mw-head">Jump to navigation\nJump to search\n<div class="mw-content-ltr" di</pre> r="ltr" id="mw-content-text" lang="en"><div class="mw-parser-output"><p cl ass="mw-empty-elt">\n\n<div class="thumb tright"><div class="thumbinne r" style="width:302px;"><img alt="" class="thumbimage" data-file-height="386" data-file-width</pre> ="489" decoding="async" height="237" src="//upload.wikimedia.org/wikipedi a/commons/thumb/2/29/London-boroughs.svg/300px-London-boroughs.svg.png" sr cset="//upload.wikimedia.org/wikipedia/commons/thumb/2/29/London-boroughs. svg/450px-London-boroughs.svg.png 1.5x, //upload.wikimedia.org/wikipedia/c ommons/thumb/2/29/London-boroughs.svg/600px-London-boroughs.svg.png 2x" wi dth="300"/> <div class="thumbcaption"><div class="magnify"></div>M ap of the 32 London boroughs and the City of London.</div></div></div>\n<p >This is a list of local authority districts within Greater London, including 32 <a href="/wik</pre> i/London_boroughs" title="London boroughs">London boroughs and the City of London. The London boroughs were all created on 1 April 1965. Upon creation, twelve we re designated Inner Lond on boroughs and the remaining twenty were designated Outer London boroughs. The Office for National Statistics has amended the designations of thre e boroughs for statistics purposes only. Three boroughs have been granted the designation royal borough and one has city status . For planning purposes, in addition to the boroughs and City there ar e also two active development corporations, the London Legacy Development Corporation and <a href="/wiki/Old Oak and P ark_Royal_Development_Corporation" title="Old Oak and Park Royal Developme

nt Corporation">Old Oak and Park Royal Development Corporation.\n \n<div class="toc" id="toc"><input class="toctogglecheckbox" id="toctoggle</pre> checkbox" role="button" style="display:none" type="checkbox"/><div class</pre> ="toctitle" dir="ltr" lang="en"><h2>Contents</h2><label class="toctogglelabel" for="toctogglecheckbox"></label></ div>\n\n1 List of boroughs and local authorities\nclass="to clevel-1 tocsection-2">2 City of London\n<li class="t oclevel-1 tocsection-3">3</spa n> See also\n ocsection-4">4 Notes\n<a h ref="#References">5 R eferences\nclass="toclevel-1 tocsection-6">6 Exte rnal links\n\n</div>\n<h2><span class="mw-headline" i</pre> d="List_of_boroughs_and_local_authorities">List of boroughs and local auth orities[<a href="/w/index.php?title=List of London boroughs&acti</pre> on=edit& section=1" title="Edit section: List of boroughs and local aut horities">edit]</h2 >\n \n\nBorough\n\nInner\n\nStatus\n\n</t h>Local authority\n\nPolitical control\n\nHeadquarters\n \nArea (sq mi)\n\nPopulation (2013 est)<sup class="refer</pre> ence" id="cite_ref-1">[1]</sup>\n\nCoordinates\n\n Nr. in map \n\nBarking and Dagenham</ a> ^{[note 1] }\n\n\n\n\n\and href="/wiki/Barking an d_Dagenham_London_Borough_Council" title="Barking and Dagenham London Boro ugh Council">Barking and Dagenham London Borough Council\n\ a href="/wiki/Labour_Party_(UK)" title="Labour Party (UK)">Labour\n</t d>\n<a class="new" href="/w/index.php?title=Barking_Town_Hall&acti</pre> on=edit& redlink=1" title="Barking Town Hall (page does not exist)">Tow n Hall, 1 Town Square $\n<$ td>\n13.93\n\n194,352\n\n\n<t d><a class="external text" href</pre> ="//tools.wmflabs.org/geohack/geohack.php?pagename=List of London boroughs ¶ms=51.5607_N_0.1557_E_region:GB_type:city&title=Barking+and+D agenham">51 \xc2\xb033\xe2\x80\xb239\xe2\x80\xb3N 0\xc2 \xb009\xe2\x80\xb221\xe2\x80\xb3E\xef\xbb\xbf / \xef\xbb\xbf<spa n class="vcard">51.5607\xc2\xb0N 0.1557\xc2\xb0E\xef\xbb\xbf / 51.5607; 0.1557 \xef\xbb\xbf (Barki ng and Dagenham)\n\n\n\10>\n< td>\n\nBarnet\n\n\n\n\n\n f="/wiki/Barnet_London_Borough_Council" title="Barnet London Borough Counc il">Barnet London Borough Council\n\a href="/wiki/Conservat ive_Party_(UK)" title="Conservative Party (UK)">Conservative\n\n<</td> td>North London Business Park, Oakleigh Road South\n\n 33.49\n\n369,088\n\n<span class="plainlinks nourlexpansi

on">51\xc2\xb037\xe2\x80\xb231\xe2\x80\xb3N 0\xc2\xb009\xe2\x80\xb206\xe2\x80\xb3W< $span class = "geo-multi-punct" > \xef\xbb\xbf / \xef\xbb\xbf < span class$ ="geo-default">51.6252\xc2\xb0N 0.1517\xc2\x b0W\xef\xbb\xbf / 51.6 252; -0.1517\xef\xbb\xbf (Barnet)\n\n3 1\n\n\nBexley\n\n\n\n\n <a href="/wiki/Bexley_London_Borough_Council" title="Bexley London Borough</pre> Council">Bexley London Borough Council\n\a> href="/wiki/Cons ervative_Party_(UK)" title="Conservative Party (UK)">Conservative\n</t d>\n<a class="new" href="/w/index.php?title=Civic Offices&action=e</pre> dit& redlink=1" title="Civic Offices (page does not exist)">Civic Offic es, 2 Watling Street\n\n23.38\n\n236,687\n\n<td ><a class="external text" href="//</pre> tools.wmflabs.org/geohack/geohack.php?pagename=List of London boroughs&am p;params=51.4549_N_0.1505_E_region:GB_type:city&title=Bexley">51\xc2\xb027\xe2\x80 $\xb218\xe2\x80\xb3N < span class="longitude">0\xc2\xb009\xe2\x80\xb2$ 02\xe2\x80\xb3E\xef\xbb \xbf / \xef\xbb\xbf<s</pre> pan class="geo-dec" title="Maps, aerial photos, and other data for this lo cation">51.4549\xc2\xb0N 0.1505\xc2\xb0E \xef\xbb\xbf / 51.4549; 0.1505<span style</pre> ="display:none">\xef\xbb\xbf (Bexley)</ span>\n\n23\n\n\nBrent\n</t d>\n\n\n\n\colongraphicd>\n\n\n\colongraphicd>\n cil" title="Brent London Borough Council">Brent London Borough Council \n\abour_Party_(UK)" title="Labour Party (UK)">L abour\n\address{abour\n\address{abour\n\address{abour c Centre">Brent Civic Centre, Engineers Way\n\n16.70\n\n 317,264\n\n51\xc2\xb033\xe2\x80\xb232\xe2\x80\xb3N $0\xc2\xb016\xe2\x80\xb254\xe2\x80\xb3W$ o-multi-punct">\xef\xbb\xbf / \xef\xbb\xbf51.5588\xc2\xb0N 0.2817\xc2\xb0W<s pan style="display:none">\xef\xbb\xbf / 51.5588; -0.2817 \xef\xbb\xbf (Brent)\n\n12\n >\n\n<a href="/wiki/London_Borough_of_Bromley" title="London Borou</pre> gh of Bromley">Bromley\n\n\n\n\n\n ="/wiki/Bromley_London_Borough_Council" title="Bromley London Borough Coun cil">Bromley London Borough Council\n\nConservative\n \nCivic Centre, Stockwell Close\n\n57.97\n\n317,89 9\n\n<a class="external t

ext" href="//tools.wmflabs.org/geohack/geohack.php?pagename=List_of_London _boroughs¶ms=51.4039_N_0.0198_E_region:GB_type:city&title=Brom ley"><span class="geo-dms" title="Maps, aeria</pre> l photos, and other data for this location">51\xc2 \xb024\xe2\x80\xb3N 0\xc2\xb0 01\xe2\x80\xb211\xe2\x80\xb3E\xef\xbb\xbf / \xef\xbb\xbf<span cl</pre> ass="vcard">51.4039\xc2\xb0N 0.0198\xc2\xb0E\xef\xbb\xbf / 51.4039; 0.0198</s pan>\xef\xbb\xbf (Bromley)\n\n20\n\n \nCamden\n\in\ing alt="\xe2\x98\x91" data-file-height="60"$ 0" data-file-width="600" decoding="async" height="20" src="//upload.wikime dia.org/wikipedia/en/thumb/f/fb/Yes check.svg/20px-Yes check.svg.png" srcs et="//upload.wikimedia.org/wikipedia/en/thumb/f/fb/Yes_check.svg/30px-Yes_ check.svg.png 1.5x, //upload.wikimedia.org/wikipedia/en/thumb/f/fb/Yes che ck.svg/40px-Yes_check.svg.png 2x" width="20"/>Y \n\n\n\camden_London_Borough_Coun cil" title="Camden London Borough Council">Camden London Borough Council/ a>\n\nLabour\n\a href="/wiki/Camden_Town_Hall" title="Camden Town Hall">Camden Town Hall, Judd Street\n\n8.40\n\n1 229,719\n\n<span class="geo-dms" title="Maps, a</pre> erial photos, and other data for this location">51 \xc2\xb031\xe2\x80\xb244\xe2\x80\xb3N 0\xc2 \xb007\xe2\x80\xb232\xe2\x80\xb3W\xef\xbb\xbf / \xef\xbb\xbf<spa n class="vcard">51.5290\xc2\xb0N 0.1255\xc2\xb0W\xef\xbb\xbf / 51.5290; -0.1255 \xef\xbb\xbf (Camde n)\n\1\n\n \n<a href="/wiki/London_Borough_of_Croydon" title="London Borough of C</pre> roydon">Croydon\n\n\n\\n\\n\\n\\n roydon_London_Borough_Council" title="Croydon London Borough Council">Croy don London Borough Council\n\a> href="/wiki/Labour Party (U K)" title="Labour Party (UK)">Labour\n\a<a class="new" href</p> ="/w/index.php?title=Bernard_Weatherill_House&action=edit&redlink= 1" title="Bernard Weatherill House (page does not exist)">Bernard Weatheri ll House, Mint Walk\n\n33.41\n\n372,752\n\n\n <a class="external text" href="//t</pre> ools.wmflabs.org/geohack/geohack.php?pagename=List of London boroughs& params=51.3714_N_0.0977_W_region:GB_type:city&title=Croydon">51\xc2\xb022\xe2\x80 \xb217\xe2\x80\xb3N 0\xc2\xb005\xe2\x80\xb2 52\xe2\x80\xb3W\xef\xbb \xbf / \xef\xbb\xbf<s</pre> pan class="geo-dec" title="Maps, aerial photos, and other data for this lo cation">51.3714\xc2\xb0N 0.0977\xc2\xb0W \xef\xbb\xbf / 51.3714; -0.0977<span style</pre> ="display:none">\xef\xbb\xbf (Croydon) \n\\n19\\n\\n\\nEaling \n\n\n\n\normale h_Council" title="Ealing London Borough Council">Ealing London Borough Cou

ncil\n\abour_Party_(UK)" title="Labour Party (UK)">Labour\n\a class="new" href="/w/index.php?title=Perce val House, Ealing&action=edit&redlink=1" title="Perceval House, Ea ling (page does not exist)">Perceval House, 14-16 Uxbridge Road\n \n\1.44\n\n\494\n\n\span class="plainlinks nourle xpansion"><span class</pre> ="geo-dms" title="Maps, aerial photos, and other data for this location">< span class="latitude">51\xc2\xb030\xe2\x80\xb247\xe2\x80\xb3N <span</pre> $class = "longitude" > 0 \xc2 \xb018 \xe2 \x80 \xb232 \xe2 \x80 \xb3W \$ an>\xef\xbb\xbf / \xef\xbb\xbf<span class="geo-dec" title="Maps,</pre> aerial photos, and other data for this location">51.5130\xc2\xb0N 0.3089\x c2\xb0W\xef\xbb\xbf / 51.5130; -0.3089\xef\xbb\xbf (<sp an class="fn org">Ealing)\n td>13\n\n\nEnfield\n\n\n\n</td >\n<a href="/wiki/Enfield_London_Borough_Council" title="Enfield Londo"</pre> n Borough Council">Enfield London Borough Council\n\nLabour\n d><a class="new" href="/w/index.php?title=Enfield_Civic_Centre&action=</pre> edit&redlink=1" title="Enfield Civic Centre (page does not exist)">Civ ic Centre, Silver Street\n\n31.74\n\n320,524\n \n<sp an class="geo-nondefault">51\xc2\xb039\x $e2\x80\xb214\xe2\x80\xb3N 0\xc2\xb004\xe2\x$ 80\xb248\xe2\x80\xb3Wclass="geo-multi-punct">\x ef\xbb\xbf / \xef\xbb\xbf51.6538\xc2\xb0N 0.0799\xc2\xb0W\xef\xbb\xbf / 51.6538; -0.0799<span</pre> style="display:none">\xef\xbb\xbf (Enfield)</s</pre> pan>\n\n30\n\n\n>\n>< f="/wiki/Royal_Borough_of_Greenwich" title="Royal Borough of Greenwich">Gr eenwich ^{ [note 2]}\n\n<img alt="\xe2\x98\x91" data-file-height="6</pre> 00" data-file-width="600" decoding="async" height="20" src="//upload.wikim edia.org/wikipedia/en/thumb/f/fb/Yes_check.svg/20px-Yes_check.svg.png" src set="//upload.wikimedia.org/wikipedia/en/thumb/f/fb/Yes_check.svg/30px-Yes check.svg.png 1.5x, //upload.wikimedia.org/wikipedia/en/thumb/f/fb/Yes ch eck.svg/40px-Yes_check.svg.png 2x" width="20"/> Y ^{[note 3]}\n\nRoyal\n\a href="/wi ki/Greenwich_London_Borough_Council" title="Greenwich London Borough Counc il">Greenwich London Borough Council\n\a href="/wiki/Labour Party (UK)" title="Labour Party (UK)">Labour\n\nWoolwich Town Hall, Wellington Street\n\n\18.28\n\n264,008\n\n51\xc2\xb029\xe2\x80\xb 221\xe2\x80\xb3N 0\xc2\xb003\xe2\x80\xb253 \xe2\x80\xb3E\xef\xbb\x

bf / \xef\xbb\xbf<spa</pre> n class="geo-dec" title="Maps, aerial photos, and other data for this loca tion"> $51.4892\xc2\xb0N 0.0648\xc2\xb0E\xvar{1}$ ef\xbb\xbf / 51.4892; 0.0648\xef\xbb\xbf (Greenwich)</ span>\n\n22\n\n\nHackney\n\n<img alt="\xe2\x98\x91" data-file-height="600" data-file-wid</pre> th="600" decoding="async" height="20" src="//upload.wikimedia.org/wikipedi a/en/thumb/f/fb/Yes_check.svg/20px-Yes_check.svg.png" srcset="//upload.wik imedia.org/wikipedia/en/thumb/f/fb/Yes_check.svg/30px-Yes_check.svg.png 1. 5x, //upload.wikimedia.org/wikipedia/en/thumb/f/fb/Yes_check.svg/40px-Yes_ check.svg.png 2x" width="20"/>Y\n\n \n\nCouncil" title="Hac kney London Borough Council">Hackney London Borough Council\n</rr> d>Labour\n \n Hackney Town Hall, Mare Street\n\n7.36\n\n257,379\n \n<a class="external tex</pre> t" href="//tools.wmflabs.org/geohack/geohack.php?pagename=List of London b oroughs¶ms=51.545_N_0.0553_W_region:GB_type:city&title=Hackne y">51\xc2\xb 032\xe2\x80\xb242\xe2\x80\xb3N 0\xc2\xb003 \xe2\x80\xb219\xe2\x80\xb3W\xef\xbb\xbf / \xef\xbb\xbf51.5450\xc2\xb0N 0.0553\xc2\xb0W\xef\xbb\xbf / 51.5450; -0.0553 \xef\xbb\xbf (Hackney</spa</pre> n>)\n\n\n\td>\tr>\n\n< a href="/wiki/London_Borough_of_Hammersmith_and_Fulham" title="London Boro ugh of Hammersmith and Fulham">Hammersmith and Fulham ^{[note 4]}\n td>Y\n\n\n \n<a href="/wiki/Hammersmith_and_Fulham_London_Borough_Council" title</pre> ="Hammersmith and Fulham London Borough Council">Hammersmith and Fulham Lo ndon Borough Council\n\a>\n\labour_Party_(UK)" tit $le="Labour Party (UK)">Labour \\ n Town Hal 1, King Street\n\n6.33\n\n178,685\n\n <span class="geo-dms" title="Maps, aerial pho</pre> tos, and other data for this location">51\xc2\xb029 \x80\xb202\xe2\x80\xb3W \xef\xbb\xbf / \xef\xbb\xbf<span class="v</pre> card">51.4927\xc2\xb0N 0.2339\xc2\xb0W\xef\xbb\xbf / 51.4927; -0.2339<sp</pre> an style="display:none">\xef\xbb\xbf (Hammersmith and Fulham)\n\n4\n\n

\nHaringey\n\closer"reference" id="cite_refnote2 4-1">[note 3]</sup>\n\n\n</ra> \n<a href="/wiki/Haringey_London_Borough_Council" title="Haringey</pre> London Borough Council">Haringey London Borough Council\n\nLabour\n \n<a class="new" href="/w/index.php?title=Haringey_Civic_Centre&ac</pre> tion=edit&redlink=1" title="Haringey Civic Centre (page does not exis t)">Civic Centre, High Road\n\n11.42\n\n263,386\n</t d>\n<a class="external text" h</pre> ref="//tools.wmflabs.org/geohack/geohack.php?pagename=List of London borou ghs¶ms=51.6_N_0.1119_W_region:GB_type:city&title=Haringey"><sp</pre> an class="geo-nondefault">51\xc2\xb036\x $e2\x80\xb200\xe2\x80\xb3N 0\xc2\xb006\xe2\x$ 80\xb243\xe2\x80\xb3W\x ef\xbb\xbf / \xef\xbb\xbf51.6000\xc2\xb0N 0.1119\xc2\xb0W\xef\xbb\xbf / 51.6000; -0.1119</span</pre> style="display:none">\xef\xbb\xbf (Haringey) span>\n\n29\n\n<tt>\n\n<a hr ef="/wiki/London_Borough_of_Harrow" title="London Borough of Harrow">Harro w\n\n\n\n\n\n\n\n\n orough_Council" title="Harrow London Borough Council">Harrow London Boroug h Council\n\a>\n\labour_Party_(UK)" title="Labour Party (UK)">Labour\n\a\a class="new" href="/w/index.php?title =Harrow_Civic_Centre&action=edit&redlink=1" title="Harrow Civic Ce ntre (page does not exist)">Civic Centre, Station Road\n\n19. 49\n\n243,372\n\nspan class="plainlinks nourlexpansio" n"><a class="external text" href="//tools.wmflabs.org/geohack/geohack.php?</pre> pagename=List_of_London_boroughs¶ms=51.5898_N_0.3346_W_region:GB_t ype:city&title=Harrow"><span class="geo-d</pre> ms" title="Maps, aerial photos, and other data for this location">51\xc2\xb035\xe2\x80\xb223\xe2\x80\xb3N 0\xc2\xb020\xe2\x80\xb205\xe2\x80\xb3W</s pan class="geo-multi-punct">\xef\xbb\xbf / \xef\xbb\xbf<span class</pre> ="geo-default">51.5898\xc2\xb0N 0.3346\xc2\x b0W\xef\xbb\xbf / 51.5 898; -0.3346\xef\xbb\xbf (Harrow)\n\n3 2\n\n<a href="/wiki/London_Borough_of_Havering" title</pre> ="London Borough of Havering">Havering\n\n\n\n >\nHavering London Borough Council\n<a hr</pre> ef="/wiki/Conservative_Party_(UK)" title="Conservative Party (UK)">Conserv ative (council NOC)\n\n<a class="new" href="/w/index.php?title=Haveri</pre> ng_Town_Hall&action=edit&redlink=1" title="Havering Town Hall (pag e does not exist)">Town Hall, Main Road\n\n43.35\n\n 242,080\n\n51\xc2\xb034\xe2\x80\xb252\xe2\x80\xb3N $0\xc2\xb011\xe2\x80\xb201\xe2\x80\xb3E$ o-multi-punct">\xef\xbb\xbf / \xef\xbb\xbf51.5812\xc2\xb0N 0.1837\xc2\xb0E<s

pan style="display:none">\xef\xbb\xbf / 51.5812; 0.1837 \xef\xbb\xbf (Havering)\n\n24\n \n\nHillingdon\n\n\n\n\n Hillingdon London Borough Council\n\nConse rvative\n\a href="/wiki/Hillingdon Civic Centre" title="Hil lingdon Civic Centre">Civic Centre, High Street\n\n44.67\n</t</pre> d>\n286,806\n\n<a cla ss="external text" href="//tools.wmflabs.org/geohack/geohack.php?pagename= List_of_London_boroughs¶ms=51.5441_N_0.476_W_region:GB_type:city&a mp;title=Hillingdon"><span class="geo-dms" ti</pre> tle="Maps, aerial photos, and other data for this location">51\xc2\xb032\xe2\x80\xb239\xe2\x80\xb3N 0\xc2\xb028\xe2\x80\xb234\xe2\x80\xb3W\xef\xbb\xbf / \xef\xbb\xbf51.5441\xc2\xb0N 0.4760\xc2\xb0W</spa n>\xef\xbb\xbf / 51.5441; -0. 4760\xef\xbb\xbf (Hillingdon)\n\n33\n</ td>\n\nHounslow\n\n\n\n\n ><a href="/wiki/Hounslow_London_Borough_Council" title="Hounslow London Bo</pre> rough Council">Hounslow London Borough Council\n\n\cd href="/w iki/Labour_Party_(UK)" title="Labour Party (UK)">Labour\n unslow House, 7 Bath Road\n\n\1.61\n\n\22.407\n\n d><spa</pre> n class="geo-nondefault">51\xc2\xb028\xe2 \x80\xb29\xe2\x80\xb3N 0\xc2\xb022\xe2\x80 \xb205\xe2\x80\xb3W\xef \xbb\xbf / \xef\xbb\xbf<span class="vcar</pre> d">51.4746\xc2\xb0N 0.3680\xc2\xb0W\xef\xbb\xbf / 51.4746; -0.3680\xef\xbb\xbf (Hounslow) span>\n\n14\n\n\n\n<a hr ef="/wiki/London_Borough_of_Islington" title="London Borough of Islingto $n">Islington \\ n \\ img alt="\\xe2\\x98\\x91" data-file-height="60" line for each of the context of the$ 0" data-file-width="600" decoding="async" height="20" src="//upload.wikime dia.org/wikipedia/en/thumb/f/fb/Yes_check.svg/20px-Yes_check.svg.png" srcs et="//upload.wikimedia.org/wikipedia/en/thumb/f/fb/Yes check.svg/30px-Yes check.svg.png 1.5x, //upload.wikimedia.org/wikipedia/en/thumb/f/fb/Yes_che ck.svg/40px-Yes check.svg.png 2x" width="20"/>Y \n\n\n\capacaller href="/wiki/Islington_London_Borough_C ouncil" title="Islington London Borough Council">Islington London Borough Council\n\a> href="/wiki/Labour_Party_(UK)" title="Labour Pa rty (UK)">Labour\n\a\a class="new" href="/w/index.php?title=I slington_Municipal_Offices&action=edit&redlink=1" title="Islington Municipal Offices (page does not exist)">Municipal Offices, 222 Upper Street\n\n5.74\n\n215,667\n\n51\xc2\xb032\xe2\x80\xb230\xe2\x80\x b3N 0\xc2\xb006\xe2\x80\xb208\xe2\x80\xb3W \xef\xbb\xbf / \xef\xbb \xbf51.5416 \xc2\xb0N 0.1022\xc2\xb0W\xef\xbb\xbf / 51.5416; -0.1022<span style="display:non"</pre> e">\xef\xbb\xbf (Islington)</spa n>\n\n10\n\nKensington and Chelsea\n\nY\n\nRoyal\n\a href="/wiki/Ke nsington_and_Chelsea_London_Borough_Council" title="Kensington and Chelsea London Borough Council">Kensington and Chelsea London Borough Council \n\arto>\arto>\arto>\arto>\n\frac{1}{100}
\n
\n arty (UK)">Conservative\n\arty (UK)">Conservative\n\arty (d>\n\arty (WK)">Conservative 1,_London" title="Kensington Town Hall, London">The Town Hall, <a href</pre> ="/wiki/Hornton_Street" title="Hornton Street">Hornton Street\n\n 4.68\n\n155,594\n\nclass="plainlinks nourlexpa">td> nsion"><a class="external text" href="//tools.wmflabs.org/geohack/geohack.</pre> php?pagename=List_of_London_boroughs¶ms=51.502_N_0.1947_W_region:G B type:city&title=Kensington+and+Chelsea">51\xc2\xb030\xe2\x80\xb207\xe2\x80\xb3 N 0\xc2\xb011\xe2\x80\xb241\xe2\x80\xb3W</s pan></tp> f51.5020\x c2\xb0N 0.1947\xc2\xb0W\xef\xbb\xbf / <s pan class="geo">51.5020; -0.1947 \xef\xbb\xbf (Kensington and Chelsea) span>\n\n3\n\n\nKingston upon Thames\n\n\n\nRoyal\n</ td>\nKingston upon Thames London Borough Council\n\n\a href="/wiki/Liberal_Democrats_(UK)" tit $le="Liberal Democrats (UK)">Liberal\xc2\xa0Democrat\n\a<a hree less than the less than th$ f="/wiki/Kingston upon Thames Guildhall" title="Kingston upon Thames Guild hall">Guildhall, High Street\n\n14.38\n\n166,793\n</ td>\n51\xc2\xb024\xe2\x80\xb231\xe2\x80\xb3N 0\xc2\xb018\xe2\x80\xb223\xe2\x80\xb3W\xef\xbb\xbf / \xef\xbb\xbf51.4085\xc2\xb0N 0.3064\xc2\xb0W<s pan style="display:none">\xef\xbb\xbf / 51.4085; -0.3064 \xef\xbb\xbf (Kingston upon Thames)\n\n<t d>16\n\n\nLambeth\n\in<s pan style="display:none">Y\n\n\n\n<a href="/wiki/</pre> Lambeth_London_Borough_Council" title="Lambeth London Borough Council">Lam beth London Borough Council\n\a href="/wiki/Labour_Party_(U K)" title="Labour Party (UK)">Labour\n\a href="/wiki/Lambet h_Town_Hall" title="Lambeth Town Hall">Lambeth Town Hall, Brixton Hill $\n\n= \n= \n$ nourlexpansion"><a class="external text" href="//tools.wmflabs.org/geohac</pre> k/geohack.php?pagename=List_of_London_boroughs¶ms=51.4607_N_0.1163 _W_region:GB_type:city&title=Lambeth"><sp an class="geo-dms" title="Maps, aerial photos, and other data for this loc ation">51\xc2\xb027\xe2\x80\xb239\xe2\x80\xb3N</spa n> 0\xc2\xb006\xe2\x80\xb259\xe2\x80\xb3W span>\xef\xbb\xbf / \xef\xbb\xbf</spa</pre> n>51.4607\xc2\xb0N 0.1163\xc2\xb0W\xef\xbb\xbf / <span clas</pre> s="geo">51.4607; -0.1163\xef\xbb \xbf (Lambeth) \n\n6\n\cd>\n<tt>\nhref="/wiki/London_Borough_of_Lew isham" title="London Borough of Lewisham">Lewisham\n\nY\n\n\n\n\n ref="/wiki/Lewisham_London_Borough_Council" title="Lewisham London Borough Council">Lewisham London Borough Council\n\nLabour\n\nTown Hall, 1 Catford Road\n\n13.57\n\n286,180\n\n51\xc2\xb026\xe2\x80\xb243\xe2\x 80\xb3N 0\xc2\xb001\xe2\x80\xb215\xe2\x80\x b3W \xbb\xbf5 1.4452\xc2\xb0N 0.0209\xc2\xb0W\xef\xbb \xbf / 51.4452; -0.0209\xef\xbb\xbf (Lewisham) \n\n21\n\n\nMerton\n \n\n\n\normale Counc il" title="Merton London Borough Council">Merton London Borough Council\n\n\a href="/wiki/Labour_Party_(UK)" title="Labour Party (UK)"> Labour\n\nCivic Centre, London Road\n\n14.52\n\n<t d>203,223\n\n<a class="ex</pre> ternal text" href="//tools.wmflabs.org/geohack/geohack.php?pagename=List_o f London boroughs¶ms=51.4014 N 0.1958 W region:GB type:city&ti tle=Merton"><span class="geo-dms" title="Map

s, aerial photos, and other data for this location">51\xc2\xb024\xe2\x80\xb205\xe2\x80\xb3N $0\xc2\xb011\xe2\x80\xb245\xe2\x80\xb3W$ o-multi-punct">\xef\xbb\xbf / \xef\xbb\xbf51.4014\xc2\xb0N 0.1958\xc2\xb0W<s pan style="display:none">\xef\xbb\xbf / 51.4014; -0.1958 \xef\xbb\xbf (Merton)\n\n17\n</t r>\n\nNewham\n\n<sup class="reference" id="cite_ref-n</pre> ote2_4-2">[note 3]</sup>\n\n\n</ td>\nNewham London Borough Council\n\nLabour\n d><a class="new" href="/w/index.php?title=Newham Dockside&action=edit&</pre> amp;redlink=1" title="Newham Dockside (page does not exist)">Newham Docksi de, 1000 Dockside Road\n\n13.98\n\n318,227\n\n< td><span</pre> class="geo-nondefault"><span class="geo-dms" title="Maps, aerial photos, a</pre> nd other data for this location">51\xc2\xb030\xe2\x 80\xb228\xe2\x80\xb3N 0\xc2\xb002\xe2\x80\x b249\xe2\x80\xb3E\xef\x bb\xbf / \xef\xbb\xbf <span class="geo-dec" title="Maps, aerial photos, and other data for this</pre> location">51.5077\xc2\xb0N 0.0469\xc2\xb0E\xef\xbb\xbf / 51.5077; 0.0469\xef\xbb\xbf (Newham) \n\n27\n\n\nRedb ridge\n\n\n\n\n\n ondon Borough Council" title="Redbridge London Borough Council">Redbridge London Borough Council\nLabour\n\a class="new" href="/w/in dex.php?title=Redbridge_Town_Hall&action=edit&redlink=1" title="Re dbridge Town Hall (page does not exist)">Town Hall, 128-142 High Road $\n\n= 21.78\n$ nourlexpansion"><a class="external text" href="//tools.wmflabs.org/geohac</pre> k/geohack.php?pagename=List of London boroughs¶ms=51.559 N 0.0741 E region:GB type:city&title=Redbridge"><s</pre> pan class="geo-dms" title="Maps, aerial photos, and other data for this lo cation"> $51\xc2\xb033\xe2\xb232\xe2\xb0\xb3N</sp$ an> 0\xc2\xb004\xe2\x80\xb227\xe2\x80\xb3E \xef\xbb\xbf / \xef\xbb\xbf</s pan><span class="geo-dec" ti</pre> tle="Maps, aerial photos, and other data for this location">51.5590\xc2\xb 0N 0.0741\xc2\xb0E\xef\xbb\xbf / <span c</pre> lass="geo">51.5590; 0.0741\xef\xb b\xbf (Redbridge) an>\n\n26\n\n\nRich mond upon Thames\n\n\n\n\n\n Richmond_upon_Thames_London_Borough_Council" title="Richmond upon Thames L ondon Borough Council">Richmond upon Thames London Borough Council\n</ td>\nLiberal\xc2\xa0Democrat\n\nCivic Centre, 44 York Street\n\n22.17\n\n191,365\n\n

51\x c2\xb026\xe2\x80\xb252\xe2\x80\xb3N 0\xc2\x b019\xe2\x80\xb234\xe2\x80\xb3W\xef\xbb\xbf / \xef\xbb\xbf<span</pre> class="vcard">51.4479\xc2\xb0N 0.3260\xc2\xb0W\xef\xbb\xbf / 51.4479; -0.3260</ span>\xef\xbb\xbf (Richmon >\n\nSouthwark\n\ind alt="\xe2\x98\x91" data-file-height="600" data-file-width="600" decoding="async" height="20" src="//upload.wikimedia.org/wikipedia/en/thumb/f/fb/Yes_check.svg/20px-Yes _check.svg.png" srcset="//upload.wikimedia.org/wikipedia/en/thumb/f/fb/Yes _check.svg/30px-Yes_check.svg.png 1.5x, //upload.wikimedia.org/wikipedia/e n/thumb/f/fb/Yes_check.svg/40px-Yes_check.svg.png 2x" width="20"/>Y\n\n\n\n\n\n ark_London_Borough_Council" title="Southwark London Borough Council">South wark London Borough Council\n\n<a href="/wiki/Labour_Party_(U</pre> K)" title="Labour Party (UK)">Labour\n\a class="new" href ="/w/index.php?title=160_Tooley_Street&action=edit&redlink=1" titl e="160 Tooley Street (page does not exist)">160 Tooley Street\n\n 11.14\n\n298,464\n\nclass="plainlinks nourlexp">10.11.14\n ansion"> $51\xc2\xb030\xe2\x80\xb213\xe2\x80\xb3N <$ span class="longitude">0\xc2\xb004\xe2\x80\xb249\xe2\x80\xb3W</span</pre> >\xef\xbb\xbf / \xef\xbb\xbf<s pan class="geo-default">51.5035\xc2\xb0N 0.0 804\xc2\xb0W\xef\xbb\xbf / 51.5035; -0.0804\xef\xbb\x bf (Southwark \n\n\\n\\n\\n\of Sut ton" title="London Borough of Sutton">Sutton\n\n\n\n \n\action\n\action_London_Borough_Council" title="Sutton L ondon Borough Council">Sutton London Borough Council\n\na hr ef="/wiki/Liberal_Democrats_(UK)" title="Liberal Democrats (UK)">Liberal\x c2\xa0Democrat\n\a\end{align* class="new" href="/w/index.php?title=Sut ton Civic Offices&action=edit&redlink=1" title="Sutton Civic Offic es (page does not exist)">Civic Offices, St Nicholas Way\n\n\1 6.93\n\n195,914\n\nclass="plainlinks nourlexpansio" n"><span class="geo-d</pre> ms" title="Maps, aerial photos, and other data for this location">51\xc2\xb021\xe2\x80\xb242\xe2\x80\xb3N 0\xc2\xb011\xe2\x80\xb240\xe2\x80\xb3W pan class="geo-multi-punct">\xef\xbb\xbf / \xef\xbb\xbf<span class</pre> ="geo-default">51.3618\xc2\xb0N 0.1945\xc2\x b0W\xef\xbb\xbf / 51.3 618; -0.1945\xef\xbb\xbf (Sutton)\n\n1 8\n\n\n<a href="/wiki/London_Borough_of_Tower_Hamlets" t</pre>

itle="London Borough of Tower Hamlets">Tower Hamlets\n\nY\n\n\n\n a href="/wiki/Tower_Hamlets_London_Borough_Council" title="Tower Hamlets L ondon Borough Council">Tower Hamlets London Borough Council\n d>Labour\n \n<a class="new" href="/w/index.php?title=Tower_Hamlets_Town_Hall &action=edit&redlink=1" title="Tower Hamlets Town Hall (page does not exist)">Town Hall, Mulberry Place, 5 Clove Crescent\n</rr> 7.63\n\n272,890\n\nclass="plainlinks nourlexpansio" n"><a class="external text" href="//tools.wmflabs.org/geohack/geohack.php?</pre> pagename=List of London boroughs¶ms=51.5099 N 0.0059 W region:GB t ype:city&title=Tower+Hamlets"><span class</pre> ="geo-dms" title="Maps, aerial photos, and other data for this location">< span class="latitude"> $51\xc2\xb030\xe2\x80\xb236\xe2\x80\xb3N < span$ class="longitude"> $0\xc2\xb000\xe2\xb00\xb221\xe2\xb0\xb3W</pa>$ an>\xef\xbb\xbf / \xef\xbb\xbf<span c</pre> lass="geo-default">51.5099\xc2\xb0N 0.0059 \xc2\xb0W\xef\xbb\xbf / <span class="ge"</pre> o">51.5099; -0.0059\xef\xbb\xbf (Tower Hamlets)</spa</pre> n>\n\n8\n\d>\nWaltham Forest \n\n\n\n\normale n_Borough_Council" title="Waltham Forest London Borough Council">Waltham F orest London Borough Council\n\a href="/wiki/Labour_Party_ (UK)" title="Labour Party (UK)">Labour\n\a href="/wiki/Walt ham Forest Town Hall" title="Waltham Forest Town Hall">Waltham Forest Town Hall, Forest Road\n\n14.99\n\n265,797\n\n<< pan class="plainlinks nourlexpansion"><spa n class="geo-nondefault">51\xc2\xb035\xe2 \x80\xb227\xe2\x80\xb3N 0\xc2\xb000\xe2\x80 \xb248\xe2\x80\xb3W\xef \xbb\xbf / \xef\xbb\xbf<span class="vcar</pre> d">51.5908\xc2\xb0N 0.0134\xc2\xb0W\xef\xbb\xbf / 51.5908; -0.0134\xef\xbb\xbf (Waltham Forest</s</pre> pan>)\n\n\n\td>\n d>Wandsworth\n\nY\n\n\n\nWandsworth Lon don Borough Council\n\n<a href="/wiki/Conservative Party (U</pre> K)" title="Conservative Party (UK)">Conservative\n\n<a class</p> ="new" href="/w/index.php?title=Wandsworth_Town_Hall&action=edit&r edlink=1" title="Wandsworth Town Hall (page does not exist)">The Town Hall , <a href="/wiki/Wandsworth_High_Street" title="Wandsworth High Stree

t">Wandsworth High Street\n\n13.23\n\n310,516\n \n<a class="external text" hre</pre> f="//tools.wmflabs.org/geohack/geohack.php?pagename=List of London borough s¶ms=51.4567_N_0.191_W_region:GB_type:city&title=Wandsworth">< span class="geo-nondefault">51\xc2\xb027 \xe2\x80\xb224\xe2\x80\xb3N 0\xc2\xb011\xe2 \x80\xb228\xe2\x80\xb3W \xef\xbb\xbf / \xef\xbb\xbf<span class="v</pre> card">51.4567\xc2\xb0N 0.1910\xc2\xb0W\xef\xbb\xbf / 51.4567; -0.1910</sp an style="display:none">\xef\xbb\xbf (Wandsworth</spa n>)\n\n\n\td>\tr>\n\n< a href="/wiki/City_of_Westminster" title="City of Westminster">Westminster \n\nY\n \n<a href="/wiki/City_status_in_the_United_Kingdom" title="City status"</pre> in the United Kingdom">City\n\a href="/wiki/Westminster_Cit y_Council" title="Westminster City Council">Westminster City Council\n \n<a href="/wiki/Conservative_Party_(UK)" title="Conservative Par</pre> ty (UK)">Conservative\n\acta>Westminster City Hall, 64 Victoria Street\n\n8.29\n\n226,841\n\n<span class="geo-nonde"</pre> fault">51\xc2\xb029\xe2\x80\xb250\xe2\x80 \xb3N 0\xc2\xb008\xe2\x80\xb214\xe2\x80\xb3 W</tp> b\xbf51.497 3\xc2\xb0N 0.1372\xc2\xb0W\xef\xbb\xbf / 51.4973; -0.1372<span style="display:non"</pre> e">\xef\xbb\xbf (Westminster)</s pan>\n\n\n\n<h2>City of London[<a href="/w/index.</pre> php?title=List_of_London_boroughs&action=edit§ion=2" title="Ed it section: City of London">edit] </h2>\nThe City of London is the 33rd principal division of Greater Lond on but it is not a London borough.\n\n<table class="wikitable sortabl e" style="font-size:95%" width="100%">\n\n<i>> \xe2\x80\x98Borough\xe2\x80\x99</i>\n\nInner\n\n<th width="1 00px">Status\n\n\ocal authority\n\nPolitical control\n</ th>\nHeadquarters\n\nArea
(sq\xc2\xa0mi)\n \nPopulation
(2011 est)\n\nCo-ordinates \n\n Nr. in
map \n</t</pre> h>\n\nC ity of London\n\(\cimg alt="\xe2\x98\x91" data-file-height="6 00" data-file-width="600" decoding="async" height="20" src="//upload.wikim edia.org/wikipedia/en/thumb/f/fb/Yes_check.svg/20px-Yes_check.svg.png" src set="//upload.wikimedia.org/wikipedia/en/thumb/f/fb/Yes check.svg/30px-Yes _check.svg.png 1.5x, //upload.wikimedia.org/wikipedia/en/thumb/f/fb/Yes_ch eck.svg/40px-Yes_check.svg.png 2x" width="20"/> Y)
^{[note 5]}\n\n<i>Sui generis</i>;
href="/wiki/City_status_in_the_Unit ed Kingdom" title="City status in the United Kingdom">City;
<a hre f="/wiki/Ceremonial_counties_of_England" title="Ceremonial counties of Eng land">Ceremonial county\n\aclass="mw-redirect" href="/wik i/Corporation_of_London" title="Corporation of London">Corporation of London on;
Inner Temple ;
Middle Templ e\n\n\xc2\xa0\n\nGuildhall\n\n1.12\n\n7,00 0\n\n<a class="external t</pre> ext" href="//tools.wmflabs.org/geohack/geohack.php?pagename=List_of_London _boroughs¶ms=51.5155_N_0.0922_W_region:GB_type:city&title=City +of+London">51\xc2\xb030\xe2\x80\xb256\xe2\x80\xb3N $0\xc2\xb005\xe2\x80\xb232\xe2\x80\xb3W$ o-multi-punct">\xef\xbb\xbf / \xef\xbb\xbf51.5155\xc2\xb0N 0.0922\xc2\xb0W<s pan style="display:none">\xef\xbb\xbf / 51.5155; -0.0922 \xef\xbb\xbf (City of London)\n\n1\n \n tyle="width: 23em; font-size: 88%; line-height: 1.5em">\n\n Map all coordinates using: OpenStreetMap\xc2\xa0\n\n\n>Dow nload coordinates as: <a class="external text" href="//tools.wmflabs.o</pre> rg/kmlexport?article=List_of_London_boroughs">KML\xc2\xa0\xc2\xb7</ b>\xc2\xa0GPX\n\n<h2><span class</pre> ="mw-headline" id="See_also">See also< span class="mw-editsection-bracket">[<a href="/w/index.php?title=Li</pre> st_of_London_boroughs&action=edit§ion=3" title="Edit section: See also">edit]</h 2>\nPo litical make-up of London borough councils\nList of areas of Lo ndon\nSubdivisions of England\n<h2>Notes[ed it]</h2>\n<div clas s="reflist" style="list-style-type: decimal;">\n<div class="mw-referenceswrap">\n^ Renamed from London Borough of Barking 1 January 1980. <cite class ="citation magazine" id="CITEREFGazette48021">"No. 48021". <i>The London Gazette</i>. 4 December 1979. p.\xc2\xa015280. </cite><style data-mw-deduplicate="TemplateStyles:r8860 58088">.mw-parser-output cite.citation{font-style:inherit}.mw-parser-outpu t .citation q{quotes:"\\"""\\""\\""}.mw-parser-output .citation .cs1-l ock-free a{background:url("//upload.wikimedia.org/wikipedia/commons/thumb/ 6/65/Lock-green.svg/9px-Lock-green.svg.png")no-repeat;background-position: right .1em center}.mw-parser-output .citation .cs1-lock-limited a,.mw-pars er-output .citation .cs1-lock-registration a{background:url("//upload.wiki media.org/wikipedia/commons/thumb/d/d6/Lock-gray-alt-2.svg/9px-Lock-gray-a lt-2.svg.png")no-repeat;background-position:right .1em center}.mw-parser-o utput .citation .cs1-lock-subscription a{background:url("//upload.wikimedi a.org/wikipedia/commons/thumb/a/aa/Lock-red-alt-2.svg/9px-Lock-red-alt-2.s vg.png")no-repeat;background-position:right .1em center}.mw-parser-output .cs1-subscription,.mw-parser-output .cs1-registration{color:#555}.mw-pars er-output .cs1-subscription span,.mw-parser-output .cs1-registration span {border-bottom:1px dotted;cursor:help}.mw-parser-output .cs1-ws-icon a{bac kground:url("//upload.wikimedia.org/wikipedia/commons/thumb/4/4c/Wikisourc e-logo.svg/12px-Wikisource-logo.svg.png")no-repeat;background-position:rig ht .1em center}.mw-parser-output code.cs1-code{color:inherit;background:in herit;border:inherit;padding:inherit}.mw-parser-output .cs1-hidden-error{d isplay:none;font-size:100%}.mw-parser-output .cs1-visible-error{font-size: 100%}.mw-parser-output .cs1-maint{display:none;color:#33aa33;margin-left: 0.3em}.mw-parser-output .cs1-subscription,.mw-parser-output .cs1-registrat ion,.mw-parser-output .cs1-format{font-size:95%}.mw-parser-output .cs1-ker n-left,.mw-parser-output .cs1-kern-wl-left{padding-left:0.2em}.mw-parser-o utput .cs1-kern-right,.mw-parser-output .cs1-kern-wl-right{padding-right: 0.2em\</style>\n\nid="cite note-3"><span class="mw-cite-ba</pre> cklink">^ Royal borough from 2012\n\nid="cite note-note2-4"><sp an class="mw-cite-backlink">^ ^{<i>a</ b></i>} ^{<i>b></i>} ^{<i></i>} < span class="reference-text">Haringey and Newham are Inner London for stati stics; Greenwich is Outer London for statistics\n\nid="cit e_note-5">^ Renamed from London Borough of Hamme rsmith 1 April 1979. <cite class="citation magazine" id="CITEREFGazette477 71">"No. 47771". <i>The London Gazette</i>. 13 February 1979. p.\xc2\xa02095.</cite><link href="mw-dat a:TemplateStyles:r886058088" rel="mw-deduplicated-inline-style"/>\n \n<a href="#ci</pre> te ref-6">^ The City of London was not part of the County of London and is not a London Borough but can be counted to Inner London. \n\n</div></div>\n<h2> References[<a href="/w/index.php?title=List_of_London_boroughs&a</pre> ction=edit§ion=5" title="Edit section: References">edit]</h2>\n<div class="reflist" s tyle="list-style-type: decimal;">\n<div class="mw-references-wrap"><ol cla ss="references">\n< a href="#cite ref-1">^ <cite c lass="citation web">ONS (2 July 2010). <a class="external text" href="http

s://webarchive.nationalarchives.gov.uk/20160107070948/http://www.ons.gov.u k/ons/publications/re-reference-tables.html" rel="nofollow">"Release Editi on Reference Tables". <i>Webarchive.nationalarchives.gov.uk</i>. Retrieved 5 February</s pan> 2019.</cite>< link href="mw-data:TemplateStyles:r886058088" rel="mw-deduplicated-inlinestyle"/>\n\n</div></div>\n<h2>External links[<a href="/w/index.php?title=List_of")</pre> London boroughs&action=edit§ion=6" title="Edit section: Exter nal links">edit]</h</pre> 2>\nLondon Councils: List of inner/outer London boroug hs\nLondon Boroughs Map\n<div aria-labelle dby="Governance_of_Greater_London" class="navbox" role="navigation" style ="padding:3px"><table class="nowraplinks hlist mw-collapsible mw-collapsed navbox-inner" style="border-spacing:0;background:transparent;color:inheri t"><div class ="plainlinks hlist navbar mini"><abbr style=";;background:none transparent;border:none;-moz-box-s</pre> hadow:none;-webkit-box-shadow:none;box-shadow:none; padding:0;" title="Vie w this template">v</abbr><abbr style=";;background:none transparent;border:none;-m</pre> oz-box-shadow:none;-webkit-box-shadow:none;box-shadow:none; padding:0;" ti tle="Discuss this template">t</abbr><abbr style=";;background: none transparent;border:none;-moz-box-shadow:none;-webkit-box-shadow:none; box-shadow:none; padding:0;" title="Edit this template">e</abbr> </div><div id="Governance_of_Greater_London" style="font-size:114%;ma" rgin:0 4em">Governance of Greater London</div><td class="navbox-abovebelow" colspan="2"><div id="*_City_of_London&#10;*_London">\nCity of London i>London\n</div> Regional</t</pre> h><td class="navbox-list navbox-odd" style="text-align:left;border-left-wi dth:2px;border-left-style:solid;width:100%;padding:0px"><div style="paddin g:0em 0.25em">\nGreater London Authority: London Assembly Mayor of London\n</div><th class="navbox-group" scope="row" styl e="width:1%">Borou ghs
(list) ox-list navbox-even" style="text-align:left;border-left-width:2px;border-l eft-style:solid;width:100%;padding:0px"><div style="padding:0em 0.25em">\n London Councils: Barking and Dagenham<// li>\n<a href="/wiki/London_Borough_of_Barnet" title="London Borough of

Barnet">Barnet\na href="/wiki/London Borough of Bexley" titl e="London Borough of Bexley">Bexley\nBrent\n<a hre f="/wiki/London_Borough_of_Bromley" title="London Borough of Bromley">Brom ley\na href="/wiki/London Borough of Camden" title="London B orough of Camden">Camden\n\a href="/wiki/London_Borough_of_Cr oydon" title="London Borough of Croydon">Croydon\nEaling \nLondon Borough of Enfield">Enfield\nHorough_of_Greenwic h" title="Royal Borough of Greenwich">Greenwich\nHackney\n<a href="/wiki/London_Borough_of_Hammersmith_and_Fulham" title</pre> ="London Borough of Hammersmith and Fulham">Hammersmith and Fulham\nHaringey\n<a href="/wiki/London Borough of Harrow"</pre> title="London Borough of Harrow">Harrow\n\a href="/wiki/Lond on_Borough_of_Havering" title="London Borough of Havering">Havering</l i>\nHillingdon\n\a href="/wiki/London_Borough_of_H ounslow" title="London Borough of Hounslow">Hounslow\n\a href ="/wiki/London_Borough_of_Islington" title="London Borough of Islington">I slington\nhref="/wiki/Royal_Borough_of_Kensington_and_Chel sea" title="Royal Borough of Kensington and Chelsea">Kensington and Chelse a\n\a href="/wiki/Royal_Borough_of_Kingston_upon_Thames" titl e="Royal Borough of Kingston upon Thames">Kingston upon Thames li>Lambeth\nLewisham\nMerton\nNewham\nRedbridge\nRichmond upon Thames\n\Southwark a href="/wiki/London_Borough_of_Sutton" title="London Borough of Sutton">S utton\na href="/wiki/London_Borough_of_Tower_Hamlets" title ="London Borough of Tower Hamlets">Tower Hamlets\nWaltham Forest\nWandsworth\n\a href ="/wiki/City_of_Westminster" title="City of Westminster">Westminster</ li>\n</div><th class="navbox-group" scope="row" style ="width:1%">Ceremonial<td class="navbox-list navbox-odd" style="textalign:left;border-left-width:2px;border-left-style:solid;width:100%;paddin g:0px"><div style="padding:0em 0.25em">\nLord Mayor of the City of London \nLord Lieutenant of Gr eater London\na href="/wiki/High Sheriff of Greater London" title="High Sheriff of Greater London">High Sheriff of Greater London \n</div> ="width:1%">Historical<td class="navbox -list navbox-even" style="text-align:left;border-left-width:2px;border-lef t-style:solid;width:100%;padding:0px"><div style="padding:0em 0.25em">\n<u l><a href="/wiki/Metropolitan_Board_of_Works" title="Metropolitan Boar"</pre> d of Works">Metropolitan Board of Works (MBW) 1855\xe2\x80\x931889\n\a href="/wiki/London County C ouncil" title="London County Council">London County Council <span styl

e="font-size:85%;">(LCC) 1889\xe2\x80\x931965\nGreater London $Council < span style = "font-size: 85%;" > (GLC) 1965 \\ \times 2 \\ \times 80 \\ \times 931986 </span$ >\nLeaders\nSheriffs of the City of London</div></di v>\n<!-- \nNewPP limit report\nParsed by mw1275\nCached time: 201912301539 04\nCache expiry: 2592000\nDynamic content: false\nComplications: [vary\xe 2\x80\x90revision\xe2\x80\x90sha1]\nCPU time usage: 0.416 seconds\nReal ti me usage: 0.486 seconds\nPreprocessor visited node count: 5140/1000000\nPr eprocessor generated node count: 0/1500000\nPost\xe2\x80\x90expand include size: 79370/2097152 bytes\nTemplate argument size: 1081/2097152 bytes\nHig hest expansion depth: 13/40\nExpensive parser function count: 2/500\nUnstr ip recursion depth: 1/20\nUnstrip post\xe2\x80\x90expand size: 10101/50000 00 bytes\nNumber of Wikibase entities loaded: 0/400\nLua time usage: 0.14 7/10.000 seconds\nLua memory usage: 3.08 MB/50 MB\n-->\n<!--\nTransclusion expansion time report (%,ms,calls,template)\n100.00% 355.180 1 -tota 2 Template:Reflist\n 32.57% 115.696 1\n 39.60% 140.660 2 Templ ate:London_Gazette\n 30.79% 109.369 2 Template:Cite_magazine\n 20.1 33 Template:Coord\n 12.80% 45.464 71.646 1 Template:Use dm 33 Template:English_district_control\n 5.7 y_dates\n 12.23% 43.434 1 Template:London\n 5.05% 17.934 5% 20.411 2 Template:DMCA \n 4.35% 15.460 2 Template:Dated_maintenance_category\n-->\n<!-- S</pre> aved in parser cache with key enwiki:pcache:idhash:28092685-0!canonical an d timestamp 20191230153903 and revision id 931680068\n -->\n</div><noscrip t></noscript></div>\n<div class="printfooter">Retrieved from "<a di r="ltr" href="https://en.wikipedia.org/w/index.php?title=List_of_London_bo roughs&oldid=931680068">https://en.wikipedia.org/w/index.php?title=Lis t_of_London_boroughs&oldid=931680068"</div>\n<div class="catlinks" data-mw="interface" id="catlinks"><div class="mw-normal-catlinks" id="mw-n ormal-catlinks">Catego ries: London boroughsLists o f places in London</div><div class="mw-hidden-catlinks mw-hi dden-cats-hidden" id="mw-hidden-catlinks">Hidden categories: <a hr ef="/wiki/Category:Use_dmy_dates_from_August_2015" title="Category:Use dmy dates from August 2015">Use dmy dates from August 2015Use British English from August 2015 <a href="/wiki/Category:Lists_of_coordinates" title="Category:Lis</pre> ts of coordinates">Lists of coordinatesGeographic coordinate listshref="/wiki/Category:Article s_with_Geo" title="Category:Articles with Geo">Articles with Geo </div></div>\n</div>\n</div>\n</div>\n</div>\n</div> d="mw-data-after-content">\n<div class="read-more-container"></div>\n</div >\n<div id="mw-navigation">\n<h2>Navigation menu</h2>\n<div id="mw-head"> \n<div aria-labelledby="p-personal-label" id="p-personal" role="navigatio"</pre> n">\n<h3 id="p-personal-label">Personal tools</h3>\n\n<li id="pt-anonu serpage">Not logged inid="pt-anontalk"><a accesskey="n" href="/wi</pre> ki/Special:MyTalk" title="Discussion about edits from this IP address [n]">TalkContributionsCreate accountid="pt-login"><a accesskey="o" href

="/w/index.php?title=Special:UserLogin&returnto=List+of+London+borough s" title="You\'re encouraged to log in; however, it\'s not mandatory. [o]">Log in \n</div>\n<div id="left-navigation">\n<div aria -labelledby="p-namespaces-label" class="vectorTabs " id="p-namespaces" rol e="navigation">\n<h3 id="p-namespaces-label">Namespaces</h3>\n\ncl ass="selected" id="ca-nstab-main">Article<li id="ca -talk">Talk\n\n</div>\n<div aria-labelledby="p-variants-label" class="vectorMenu empty</pre> Portlet" id="p-variants" role="navigation">\n<input aria-labelledby="p-var iants-label" class="vectorMenuCheckbox" type="checkbox"/>\n<h3 id="p-varia</pre> nts-label">\nVariants\n</h3>\n\n\n</div >\n</div>\n<div id="right-navigation">\n<div aria-labelledby="p-views-labe</pre> l" class="vectorTabs " id="p-views" role="navigation">\n<h3 id="p-views-la</pre> bel">Views</h3>\n\n<a hr ef="/wiki/List_of_London_boroughs">Read<li class="collapsible" id ="ca-edit">Editclass="col lapsible" id="ca-history"><a accesskey="h" href="/w/index.php?title=List_o</pre> f_London_boroughs&action=history" title="Past revisions of this page [h]">View history\n\n</div>\n<div aria-labelledby="p-cactio ns-label" class="vectorMenu emptyPortlet" id="p-cactions" role="navigatio" n">\n<input aria-labelledby="p-cactions-label" class="vectorMenuCheckbox" type="checkbox"/>\n<h3 id="p-cactions-label">More</h3>\n class="menu">\n\n</div>\n<div id="p-search" role="search">\n<h3>\n<l</pre> abel for="searchInput">Search</label>\n</h3>\n<form action="/w/index.php" id="searchform">\n<div id="simpleSearch">\n<input accesskey="f" id="searc</pre> hInput" name="search" placeholder="Search Wikipedia" title="Search Wikiped ia [f]" type="search"/>\n<input name="title" type="hidden" value="Special:</pre> Search"/>\n<input class="searchButton mw-fallbackSearchButton" id="mw-sear chButton" name="fulltext" title="Search Wikipedia for this text" type="sub mit" value="Search"/>\n<input class="searchButton" id="searchButton" name</pre> ="go" title="Go to a page with this exact name if it exists" type="submit" value="Go"/>\n</div>\n</form>\n</div>\n</div>\n</div>\n<div id="mw-panel"> \n<div id="p-logo" role="banner"><a class="mw-wiki-logo" href="/wiki/Main_</pre> Page" title="Visit the main page"></div>\n<div aria-labelledby="p-navi gation-label" class="portal" id="p-navigation" role="navigation">\n<h3 id ="p-navigation-label">Navigation</h3>\n<div class="body">\n\n<li id="n -mainpage-description">Main pageContents <a href="/wiki/Wikipedia:Featured_content" titl</pre> e="Featured content \xe2\x80\x93 the best of Wikipedia">Featured content</ a>Current events li id="n-randompage">Random articleDonate to Wikipedia<li id="n-s hoplink"> Wikipedia store \n</div>\n</div>\n<div aria-labelledby="p-in teraction-label" class="portal" id="p-interaction" role="navigation">\n<h3 id="p-interaction-label">Interaction</h3>\n<div class="body">\n\n<li i d="n-help">Helpid="n-aboutsite">About Wikipediaid ="n-portal">Community portal id="n-recentchanges"><a accesskey="r" href="/wiki/Special:RecentChanges" t</pre> itle="A list of recent changes in the wiki [r]">Recent changes<li id="n-contactpage">Contact page \n</div>\n</d iv>\n<div aria-labelledby="p-tb-label" class="portal" id="p-tb" role="navi</pre> gation">\n<h3 id="p-tb-label">Tools</h3>\n<div class="body">\n\n<li id ="t-whatlinkshere">What links here<li id="t-recentchangeslin" ked">Related changesUpload fil eSpecial pages li id="t-permalink"><a hr p;oldid=931680068" title="Permanent link to this revision of the page">Per manent linkid="t-info">Pa ge informationid="t-wikibase"><a accesskey="g" href="https://</pre> www.wikidata.org/wiki/Special:EntityPage/Q6577004" title="Link to connecte d data repository item [g]">Wikidata itemCite this page \n</div>\n</div>\n<div aria-labelledby="p-coll-print_e</pre> xport-label" class="portal" id="p-coll-print_export" role="navigation">\n<</pre> h3 id="p-coll-print_export-label">Print/export</h3>\n<div class="body">\n< ul>\nid="coll-create a book">Create a boo kDownload as PDFid="t-print">Printable version \n</div>\n</div> \n<div aria-labelledby="p-lang-label" class="portal" id="p-lang" role="nav</pre> igation">\n<h3 id="p-lang-label">Languages</h3>\n<div class="body">\n \nclass="interlanguage-link interwiki-ru">\xd0\xa0\xd1\x83\xd1\x81\xd1\x81\xd0\xba\xd0\xb8\xd0\xb9 \n<div class="after-portlet after-portlet-lang"><span class="w</pre> b-langlinks-edit wb-langlinks-link">Edit links</div> </div>\n</div>\n </div>\n</div>\n<div id="footer" role="contentinfo">\n<ul id="footer-inf o">\n This page was last edited on 20 Decembe r 2019, at 13:29\xc2\xa0(UTC). li id="footer-info-copyright">Text is available under the Creative Commons Attribution-ShareAli ke License;\nadditional terms may apply. By using t his site, you agree to the Terms of Use and Privacy Policy. Wikipedia\xc2\xae is a registered trademar k of the Wikimedia Foundation, In c., a non-profit organization.\n\n\n<</pre> li id="footer-places-privacy">Privacy policy \nAbout Wikipedia\n<li id="footer-places-disc laimer">Disclaimers\nid="footer-places-contact"><a hr ef="//en.wikipedia.org/wiki/Wikipedia:Contact us">Contact Wikipedia</l i>\nid="footer-places-developers">Developers\nid="foo ter-places-statslink">Statistics\nid="footer-places-cookiestatement"><a hre f="https://foundation.wikimedia.org/wiki/Cookie_statement">Cookie statemen t\n RedirectToggle" href="//en.m.wikipedia.org/w/index.php?title=List_of_Londo n_boroughs&mobileaction=toggle_view_mobile">Mobile view\n\n\n\n <img alt="Wikimedia Foundation"</pre> height="31" src="/static/images/wikimedia-button.png" srcset="/static/imag es/wikimedia-button-1.5x.png 1.5x, /static/images/wikimedia-button-2x.png 2x" width="88"/> \nid="footer-poweredbyico">\n \n\n<div style="clear: both;"></div>\n</ div>\n<script>(RLQ=window.RLQ||[]).push(function(){mw.config.set({"wgPageP arseReport":{"limitreport":{"cputime":"0.416","walltime":"0.486","ppvisite dnodes":{"value":5140,"limit":1000000},"ppgeneratednodes":{"value":0,"limi t":1500000}, "postexpandincludesize":{"value":79370, "limit":2097152}, "templ ateargumentsize":{"value":1081,"limit":2097152},"expansiondepth":{"value": 13, "limit":40}, "expensivefunctioncount": { "value":2, "limit":500}, "unstrip-d epth":{"value":1,"limit":20},"unstrip-size":{"value":10101,"limit":500000 0}, "entityaccesscount": {"value":0, "limit":400}, "timingprofile": ["100.00% 2 Template:Reflist"," 32.5 1 -total"," 39.60% 140.660 2 Template:London_Gazette", 30.79% 109.369 7% 115.696 2 Templ ate:Cite magazine"," 20.17% 33 Template:Coord"," 12.80% 71.646 1 Template:Use_dmy_dates"," 12.23% 464 43.434 33 Template: Engli sh_district_control"," 5.75% 20.411 1 Template:London", 5.05% 2 Template:DMCA"," 4.35% 15.460 2 Template:Dated_main tenance_category"]},"scribunto":{"limitreport-timeusage":{"value":"0.14 7","limit":"10.000"},"limitreport-memusage":{"value":3227926,"limit":52428 800}}, "cachereport": { "origin": "mw1275", "timestamp": "20191230153904", "ttl": 2592000, "transientcontent": false \}\); \); </script \n < script type = "applicati on/ld+json">{"@context":"https:\\/\\/schema.org","@type":"Article","nam e":"List of London boroughs", "url": "https:\\/\/en.wikipedia.org\\/wiki\\/ List_of_London_boroughs", "sameAs": "http:\\/\/www.wikidata.org\\/entity\\/ Q6577004", "mainEntity": "http:\\/\/www.wikidata.org\\/entity\\/Q657700 4", "author": { "@type": "Organization", "name": "Contributors to Wikimedia proj ects"}, "publisher": { "@type": "Organization", "name": "Wikimedia Foundation, I nc.","logo":{"@type":"ImageObject","url":"https:\\/\/www.wikimedia.org\\/ static\\/images\\/wmf-hor-googpub.png"}},"datePublished":"2010-07-20T07:2 8:35Z", "dateModified": "2019-12-20T13:29:39Z", "headline": "Wikimedia list ar ticle"}</script>\n<script>(RLQ=window.RLQ||[]).push(function(){mw.config.s et({"wgBackendResponseTime":110,"wgHostname":"mw1322"});});</script>\n</bo dy>\n</html>\n'

In [7]:

```
BoroughName = []
Population = []
Coordinates = []

for row in soup.find('table').find_all('tr'):
    cells = row.find_all('td')
    if len(cells) > 0:
        BoroughName.append(cells[0].text.rstrip('\n'))
        Population.append(cells[7].text.rstrip('\n'))
        Coordinates.append(cells[8].text.rstrip('\n'))
```

In [8]:

Out[8]:

	BoroughName	Population	Coordinates
0	Barking and Dagenham [note 1]	194,352	51°33′39″N 0°09′21″E / 51.5607°N 0.1557°E /
1	Barnet	369,088	51°37′31″N 0°09′06″W / 51.6252°N 0.1517°W /
2	Bexley	236,687	51°27′18″N 0°09′02″E / 51.4549°N 0.1505°E /
3	Brent	317,264	51°33′32″N 0°16′54″W / 51.5588°N 0.2817°W /
4	Bromley	317,899	51°24′14″N 0°01′11″E / 51.4039°N 0.0198°E /

In [9]:

```
# Strip unwanted texts
info['BoroughName'] = info['BoroughName'].map(lambda x: x.rstrip(']'))
info['BoroughName'] = info['BoroughName'].map(lambda x: x.rstrip('1234567890.'))
info['BoroughName'] = info['BoroughName'].str.replace('note','')
info['BoroughName'] = info['BoroughName'].map(lambda x: x.rstrip(' ['))
info.head()
```

Out[9]:

	BoroughName	Population	Coordinates
0	Barking and Dagenham	194,352	51°33′39″N 0°09′21″E / 51.5607°N 0.1557°E /
1	Barnet	369,088	51°37′31″N 0°09′06″W / 51.6252°N 0.1517°W /
2	Bexley	236,687	51°27′18″N 0°09′02″E / 51.4549°N 0.1505°E /
3	Brent	317,264	51°33′32″N 0°16′54″W / 51.5588°N 0.2817°W /
4	Bromley	317,899	51°24′14″N 0°01′11″E / 51.4039°N 0.0198°E /

In [10]:

```
# Clean coordinates
info[['Coordinates1','Coordinates2','Coordinates3']] = info['Coordinates'].str.split(
'/',expand=True)
info.head()
```

Out[10]:

	BoroughName	Population	Coordinates	Coordinates1	Coordinates2	Coordinates			
0	Barking and Dagenham	194,352	51°33′39″N 0°09′21″E / 51.5607°N 0.1557°E /	51°33′39″N 0°09′21″E	51.5607°N 0.1557°E	51.5607; 0.1557 (Barking and Dagenham)			
1	Barnet	369,088	51°37′31″N 0°09′06″W / 51.6252°N 0.1517°W /	51°37′31″N 0°09′06″W	51.6252°N 0.1517°W	51.6252; -0.1517 (Barnet)			
2	Bexley	236,687	51°27′18″N 0°09′02″E / 51.4549°N 0.1505°E /	51°27′18″N 0°09′02″E	51.4549°N 0.1505°E	51.4549; 0.1505 (Bexley)			
3	Brent	317,264	51°33′32″N 0°16′54″W / 51.5588°N 0.2817°W /	51°33′32″N 0°16′54″W	51.5588°N 0.2817°W	51.5588; -0.2817 (Brent)			
4	Bromley	317,899	51°24′14″N 0°01′11″E / 51.4039°N 0.0198°E /	51°24′14″N 0°01′11″E	51.4039°N 0.0198°E	51.4039; 0.0198 (Bromley)			
4									

In [11]:

info.drop(labels=['Coordinates','Coordinates1','Coordinates2'], axis=1,inplace = True)
info[['Latitude','Longitude']] = info['Coordinates3'].str.split(';',expand=True)
info.head()

Out[11]:

	BoroughName	Population	Coordinates3	Latitude	Longitude
0	Barking and Dagenham	194,352	51.5607; 0.1557 (Barking and Dagenham)	51.5607	0.1557 (Barking and Dagenham)
1	Barnet	369,088	51.6252; -0.1517 (Barnet)	51.6252	-0.1517 (Barnet)
2	Bexley	236,687	51.4549; 0.1505 (Bexley)	51.4549	0.1505 (Bexley)
3	Brent	317,264	51.5588; -0.2817 (Brent)	51.5588	-0.2817 (Brent)
4	Bromley	317,899	51.4039; 0.0198 (Bromley)	51.4039	0.0198 (Bromley)

In [12]:

```
info.drop(labels=['Coordinates3'], axis=1,inplace = True)
info['Latitude'] = info['Latitude'].map(lambda x: x.rstrip(u'\ufeff'))
info['Latitude'] = info['Latitude'].map(lambda x: x.lstrip())
info['Longitude'] = info['Longitude'].map(lambda x: x.rstrip(')'))
info['Longitude'] = info['Longitude'].map(lambda x: x.rstrip('abcdefghijklmnopqrstuvwxy
zABCDEFGHIJKLMNOPQRSTUVWXYZ '))
info['Longitude'] = info['Longitude'].map(lambda x: x.rstrip(' ('))
info['Longitude'] = info['Longitude'].map(lambda x: x.rstrip(u'\ufeff'))
info['Longitude'] = info['Longitude'].map(lambda x: x.lstrip())
info['Population'] = info['Population'].str.replace(',','')
info.head()
```

Out[12]:

	BoroughName	Population	Latitude	Longitude
0	Barking and Dagenham	194352	51.5607	0.1557
1	Barnet	369088	51.6252	-0.1517
2	Bexley	236687	51.4549	0.1505
3	Brent	317264	51.5588	-0.2817
4	Bromley	317899	51.4039	0.0198

In [13]:

```
#Find the unique Boroughs
info['BoroughName'].unique()
```

Out[13]:

*Foursquare API

- List of top 50 popular places in the neighborhood
- · source: Foursquare
- url: https://api.foursquare.com)

In [14]:

```
# Foursquare credentials
CLIENT_ID = 'FDTRVYJUIMW5NIUX1P05QXRCVBYF44E2GGER5C4JR32J021U'
CLIENT SECRET = '1GBIIWCMLOMCHNWN2LBH5WVGZDY1LL2MHCD2MFF4FFGLKLJV'
VERSION = '20180605'
print('Your credentails:')
print('CLIENT_ID: ' + CLIENT_ID)
print('CLIENT_SECRET:' + CLIENT_SECRET)
Your credentails:
CLIENT_ID: FDTRVYJUIMW5NIUX1P05QXRCVBYF44E2GGER5C4JR32J021U
CLIENT SECRET:1GBIIWCMLOMCHNWN2LBH5WVGZDY1LL2MHCD2MFF4FFGLKLJV
In [15]:
#Create a function to explore all borough
def getNearbyVenues(names, latitudes, longitudes, radius=500):
    venues list=[]
    for name, lat, lng in zip(names, latitudes, longitudes):
        print(name)
        # create the API request URL
        url = 'https://api.foursquare.com/v2/venues/explore?&client_id={}&client_secret
={}&v={}&ll={},{}&radius={}&limit={}'.format(
            CLIENT_ID,
            CLIENT_SECRET,
            VERSION,
            lat,
            lng,
            radius,
            LIMIT)
        # make the GET request
        results = requests.get(url).json()["response"]['groups'][0]['items']
        # return only relevant information for each nearby venue
        venues_list.append([(
            name,
            lat,
            lng,
            v['venue']['name'],
            v['venue']['location']['lat'],
            v['venue']['location']['lng'],
            v['venue']['categories'][0]['name']) for v in results])
    nearby venues = pd.DataFrame([item for venue list in venues list for item in venue
list])
    nearby_venues.columns = ['BoroughName',
                   'Borough Latitude',
                   'Borough Longitude',
                  'Venue',
                  'Venue Latitude',
                   'Venue Longitude',
                  'Venue Category']
    return(nearby_venues)
```

In [16]:

Barking and Dagenham Barnet Bexley Brent Bromley Camden Croydon Ealing Enfield Greenwich Hackney Hammersmith and Fulham Haringey Harrow Havering Hillingdon **Hounslow Islington** Kensington and Chelsea Kingston upon Thames Lambeth Lewisham Merton Newham Redbridge Richmond upon Thames Southwark Sutton Tower Hamlets Waltham Forest Wandsworth

Westminster

In [17]:

print(venues.shape)
venues.head()

(1145, 7)

Out[17]:

	BoroughName	Borough Latitude	Borough Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Barking and Dagenham	51.5607	0.1557	Central Park	51.559560	0.161981	Park
1	Barking and Dagenham	51.5607	0.1557	Beacontree Heath Leisure Centre	51.560997	0.148932	Gym / Fitness Center
2	Barking and Dagenham	51.5607	0.1557	Crowlands Heath Golf Course	51.562457	0.155818	Golf Course
3	Barking and Dagenham	51.5607	0.1557	Robert Clack Leisure Centre	51.560808	0.152704	Martial Arts Dojo
4	Barking and Dagenham	51.5607	0.1557	Becontree Heath Bus Station	51.561065	0.150998	Bus Station

3. Methodology

In this section, we will explore the cleansed data more thoroughly using visualizations. Then, we will conduct cluster analysis to classify the boroughs into different levels of preference.

a. Exploratory Analysis

In [18]:

info.head()

Out[18]:

	BoroughName	Population	Latitude	Longitude
0	Barking and Dagenham	194352	51.5607	0.1557
1	Barnet	369088	51.6252	-0.1517
2	Bexley	236687	51.4549	0.1505
3	Brent	317264	51.5588	-0.2817
4	Bromley	317899	51.4039	0.0198

In [19]:

venues.head()

Out[19]:

	BoroughName	Borough Latitude	Borough Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
0	Barking and Dagenham	51.5607	0.1557	Central Park	51.559560	0.161981	Park
1	Barking and Dagenham	51.5607	0.1557	Beacontree Heath Leisure Centre	51.560997	0.148932	Gym / Fitness Center
2	Barking and Dagenham	51.5607	0.1557	Crowlands Heath Golf Course	51.562457	0.155818	Golf Course
3	Barking and Dagenham	51.5607	0.1557	Robert Clack Leisure Centre	51.560808	0.152704	Martial Arts Dojo
4	Barking and Dagenham	51.5607	0.1557	Becontree Heath Bus Station	51.561065	0.150998	Bus Station

In [20]:

venues.groupby('BoroughName').count()

Out[20]:

	Borough Latitude	Borough Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
BoroughName						
Barking and Dagenham	7	7	7	7	7	7
Barnet	4	4	4	4	4	4
Bexley	30	30	30	30	30	30
Brent	50	50	50	50	50	50
Bromley	41	41	41	41	41	41
Camden	50	50	50	50	50	50
Croydon	40	40	40	40	40	40
Ealing	50	50	50	50	50	50
Enfield	50	50	50	50	50	50
Greenwich	40	40	40	40	40	40
Hackney	50	50	50	50	50	50
Hammersmith and Fulham	50	50	50	50	50	50
Haringey	22	22	22	22	22	22
Harrow	8	8	8	8	8	8
Havering	41	41	41	41	41	41
Hillingdon	50	50	50	50	50	50
Hounslow	4	4	4	4	4	4
Islington	50	50	50	50	50	50
Kensington and Chelsea	50	50	50	50	50	50
Kingston upon Thames	50	50	50	50	50	50
Lambeth	50	50	50	50	50	50
Lewisham	31	31	31	31	31	31
Merton	18	18	18	18	18	18
Newham	12	12	12	12	12	12
Redbridge	37	37	37	37	37	37
Richmond upon Thames	50	50	50	50	50	50
Southwark	50	50	50	50	50	50
Sutton	37	37	37	37	37	37

	Borough Latitude	Borough Longitude	Venue	Venue Latitude	Venue Longitude	Venue Category
BoroughName						
Tower Hamlets	18	18	18	18	18	18
Waltham Forest	13	13	13	13	13	13
Wandsworth	42	42	42	42	42	42
Westminster	50	50	50	50	50	50

In [21]:

```
print('There are {} uniques categories.'.format(len(venues['Venue Category'].unique
())))
```

There are 180 uniques categories.

In [22]:

from geopy.geocoders import Nominatim

In [23]:

```
address = 'London, United Kingdom'
geolocator = Nominatim(user_agent="ld_explorer")
location = geolocator.geocode(address)
latitude = location.latitude
longitude = location.longitude
print('The geograpical coordinate of London are {}, {}.'.format(latitude, longitude))
```

The geograpical coordinate of London are 51.5073219, -0.1276474.

In [25]:

import folium

In [35]:

info.dtypes

Out[35]:

BoroughName object
Population object
Latitude float64
Longitude float64

dtype: object

In [34]:

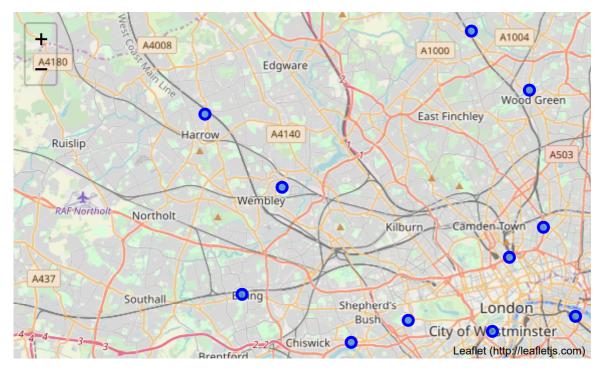
#update the Latitude and Longitude data types to float as they are oh object datatype
info = info.astype({"Latitude": float, "Longitude": float})

In [36]:

```
# make a map of London using folium
map = folium.Map(location=[latitude, longitude], zoom_start=11)

# add markers to map
for lat, lng, borough in zip(info['Latitude'], info['Longitude'], info['BoroughName']):
    label = folium.Popup(borough, parse_html=True)
    folium.CircleMarker(
        [lat, lng],
        radius=5,
        popup=label,
        color='blue',
        fill=True,
        fill_color='#3186cc',
        fill_opacity=0.7,
        parse_html=False).add_to(map)
map
```

Out[36]:



b. Cluster Analysis

In this part, we will conduct K-means clustering to group the boroughs according to what convenience facilities they have using Foursquare data.

In [37]:

```
print('There are {} uniques categories.'.format(len(venues['Venue Category'].unique
())))
```

There are 180 uniques categories.

In [38]:

```
# One hot encoding before clustering
kut_onehot = pd.get_dummies(venues[['Venue Category']], prefix="", prefix_sep="")

# add boroughname column back to dataframe
kut_onehot['BoroughName'] = venues['BoroughName']

# move boroughname column to the first column
fixed_columns = [kut_onehot.columns[-1]] + list(kut_onehot.columns[:-1])
kut_onehot = kut_onehot[fixed_columns]
kut_onehot.head()
```

Out[38]:

	BoroughName	African Restaurant	Airport	Airport Lounge	-		Argentinian Restaurant	Gall
0	Barking and Dagenham	0	0	0	0	0	0	0
1	Barking and Dagenham	0	0	0	0	0	0	0
2	Barking and Dagenham	0	0	0	0	0	0	0
3	Barking and Dagenham	0	0	0	0	0	0	0
4	Barking and Dagenham	0	0	0	0	0	0	0

5 rows × 181 columns

In [39]:

Group rows by borough and take the mean of frequency of each venue category
kut_grouped = kut_onehot.groupby('BoroughName').mean().reset_index()
kut_grouped

Out[39]:

	BoroughName	African Restaurant	Airport	Airport Lounge	Airport Service	American Restaurant	Argentinian Restaurant
0	Barking and Dagenham	0.000	0.000000	0.000000	0.000000	0.000000	0.00
1	Barnet	0.000	0.000000	0.000000	0.000000	0.000000	0.00
2	Bexley	0.000	0.000000	0.000000	0.000000	0.033333	0.00
3	Brent	0.000	0.000000	0.000000	0.000000	0.040000	0.00
4	Bromley	0.000	0.000000	0.000000	0.000000	0.000000	0.00
5	Camden	0.000	0.000000	0.000000	0.000000	0.000000	0.00
6	Croydon	0.000	0.000000	0.000000	0.000000	0.000000	0.00
7	Ealing	0.000	0.000000	0.000000	0.000000	0.000000	0.00
8	Enfield	0.000	0.000000	0.000000	0.000000	0.000000	0.00
9	Greenwich	0.025	0.000000	0.000000	0.000000	0.000000	0.00
10	Hackney	0.000	0.000000	0.000000	0.000000	0.000000	0.00
11	Hammersmith and Fulham	0.000	0.000000	0.000000	0.000000	0.000000	0.00
12	Haringey	0.000	0.000000	0.000000	0.000000	0.000000	0.00
13	Harrow	0.000	0.000000	0.000000	0.000000	0.000000	0.00
14	Havering	0.000	0.000000	0.000000	0.000000	0.000000	0.00
15	Hillingdon	0.000	0.000000	0.000000	0.000000	0.000000	0.00
16	Hounslow	0.000	0.000000	0.000000	0.000000	0.000000	0.00
17	Islington	0.000	0.000000	0.000000	0.000000	0.000000	0.00
18	Kensington and Chelsea	0.000	0.000000	0.000000	0.000000	0.000000	0.00
19	Kingston upon Thames	0.000	0.000000	0.000000	0.000000	0.000000	0.00
20	Lambeth	0.020	0.000000	0.000000	0.000000	0.000000	0.00
21	Lewisham	0.000	0.000000	0.000000	0.000000	0.000000	0.00
22	Merton	0.000	0.000000	0.000000	0.000000	0.000000	0.00
23	Newham	0.000	0.083333	0.083333	0.083333	0.000000	0.00
24	Redbridge	0.000	0.000000	0.000000	0.000000	0.000000	0.00
25	Richmond upon Thames	0.000	0.000000	0.000000	0.000000	0.000000	0.00
26	Southwark	0.000	0.000000	0.000000	0.000000	0.020000	0.02

	BoroughName	African Restaurant	Airport	Airport Lounge	Airport Service	American Restaurant	Argentinian Restaurant
27	Sutton	0.000	0.000000	0.000000	0.000000	0.000000	0.00
28	Tower Hamlets	0.000	0.000000	0.000000	0.000000	0.000000	0.00
29	Waltham Forest	0.000	0.000000	0.000000	0.000000	0.000000	0.00
30	Wandsworth	0.000	0.000000	0.000000	0.000000	0.000000	0.00
31	Westminster	0.000	0.000000	0.000000	0.000000	0.000000	0.00

32 rows × 181 columns

→

In [40]:

kut_grouped.shape

Out[40]:

(32, 181)

In [41]:

```
# top 5 venues for each neighborhood
num_top_venues = 5

for hood in kut_grouped['BoroughName']:
    print("----"+hood+"----")
    temp = kut_grouped[kut_grouped['BoroughName'] == hood].T.reset_index()
    temp.columns = ['venue','freq']
    temp = temp.iloc[1:]
    temp['freq'] = temp['freq'].astype(float)
    temp = temp.round({'freq': 2})
    print(temp.sort_values('freq', ascending=False).reset_index(drop=True).head(num_top_venues))
    print('\n')
```

```
----Barking and Dagenham----
        venue freq
0
         Pool 0.14
         Park 0.14
1
2 Bus Station 0.14
3 Supermarket 0.14
4 Golf Course 0.14
----Barnet----
               venue freq
0
                Café 0.50
1
            Bus Stop 0.25
2
    Recording Studio 0.25
3
  African Restaurant 0.00
4
                Park 0.00
----Bexley----
                   venue freq
0
          Clothing Store 0.13
1
                     Pub 0.10
             Coffee Shop 0.10
2
3
  Furniture / Home Store 0.07
4
    Fast Food Restaurant 0.07
----Brent----
                venue freq
0
          Coffee Shop 0.12
1
                Hotel 0.10
2
        Grocery Store 0.06
  Sporting Goods Shop 0.06
3
4
       Clothing Store 0.06
----Bromley----
                 venue freq
0
        Clothing Store 0.12
1
           Coffee Shop 0.12
2
          Burger Joint 0.05
3
  Gym / Fitness Center 0.05
4
           Pizza Place 0.05
----Camden----
             venue freq
0
             Hotel 0.12
1
              Café 0.08
2
       Coffee Shop 0.06
  Tapas Restaurant 0.04
3
    Breakfast Spot 0.04
----Croydon----
                  venue freq
0
            Coffee Shop 0.10
1
                    Pub 0.10
2
      Indian Restaurant
                         0.05
3
  Portuguese Restaurant
                         0.05
   Gym / Fitness Center
                         0.05
```

```
----Ealing----
                  venue frea
0
            Coffee Shop 0.10
1
                     Pub 0.04
2
            Pizza Place
                         0.04
3
           Burger Joint 0.04
  Vietnamese Restaurant 0.04
----Enfield----
               venue freq
0
      Clothing Store 0.08
1
          Coffee Shop 0.08
2
        Optical Shop 0.04
3 Turkish Restaurant 0.04
4
           Bookstore 0.04
----Greenwich----
                 venue freq
0
           Coffee Shop 0.08
1
                    Pub
                        0.08
2
        Clothing Store
                        0.08
3
  Fast Food Restaurant
                        0.08
4
           Supermarket 0.08
----Hackney----
         venue freq
0
           Pub 0.10
1
    Coffee Shop 0.08
2
        Bakery
                0.06
3
          Café 0.06
  Cocktail Bar 0.06
4
----Hammersmith and Fulham----
               venue frea
0
                  Pub 0.14
   Indian Restaurant 0.08
2
  Italian Restaurant 0.08
3
            Gastropub 0.06
4
       Clothing Store 0.04
----Haringey----
                      venue
                            freq
0
       Fast Food Restaurant 0.09
1
                            0.09
                       Café
2
                        Pub
                            0.05
3
  Mediterranean Restaurant
                            0.05
4
     Portuguese Restaurant 0.05
----Harrow----
                 venue frea
0
     Indian Restaurant 0.25
1
           Coffee Shop
                       0.25
  Indie Movie Theater 0.12
```

```
3
              Platform 0.12
4
    Convenience Store 0.12
----Havering----
           venue freq
   Clothing Store 0.12
1
      Coffee Shop 0.10
2
   Shopping Mall 0.07
3
            Hotel 0.07
4
              Pub 0.05
----Hillingdon----
               venue freq
          Coffee Shop 0.16
1
   Italian Restaurant 0.08
2
      Clothing Store 0.08
3
            Pharmacy 0.04
4
         Burger Joint 0.04
----Hounslow----
             venue freq
             Park 0.25
0
1
      Pizza Place 0.25
2
             Café 0.25
  Bed & Breakfast 0.25
3
4
     Outlet Store 0.00
----Islington----
                      venue freq
0
                        Pub 0.14
1
               Cocktail Bar
                            0.06
2
  Mediterranean Restaurant 0.06
3
                     Bakery
                            0.06
4
                    Theater
                            0.04
----Kensington and Chelsea----
                        venue freq
0
                         Café 0.06
1
                   Restaurant 0.04
2
           English Restaurant 0.04
3
                 Burger Joint
                              0.04
  Modern European Restaurant
                              0.04
----Kingston upon Thames----
              venue freq
0
       Coffee Shop 0.10
1
               Café 0.08
2
    Clothing Store
                    0.06
3
  Department Store 0.06
4
               Pub 0.04
----Lambeth----
                  venue
                        freq
  Caribbean Restaurant
                        0.08
```

localhost:8888/nbconvert/html/DS/Untitled Folder/Untitled Folder/The Battle of Neighborhoods London.ipynb?download=false

```
Market 0.06
1
2
          Cocktail Bar 0.04
3
             Restaurant
                        0.04
4
     Indian Restaurant 0.04
----Lewisham----
          venue freq
0
    Supermarket 0.13
1
  Grocery Store 0.10
2
    Coffee Shop 0.06
3
  Train Station 0.06
       Platform 0.06
----Merton----
           venue freq
0
     Supermarket 0.11
            Café 0.11
1
2
             Park 0.11
3
   Grocery Store 0.06
4
  Sandwich Place 0.06
---Newham----
                venue freq
0
               Hotel 0.33
1
  Chinese Restaurant 0.08
2
      Airport Lounge 0.08
3
     Airport Service 0.08
4
   Currency Exchange 0.08
----Redbridge----
                 venue freq
  Fast Food Restaurant
0
                        0.11
1
        Clothing Store 0.11
2
           Supermarket 0.05
3
         Grocery Store
                        0.05
4
                 Hotel 0.05
----Richmond upon Thames----
                venue freq
0
                  Pub 0.16
1
         Coffee Shop 0.12
2
  Italian Restaurant 0.10
3
   Indian Restaurant 0.06
4
                Café 0.04
----Southwark----
               venue freq
0
          Coffee Shop
                      0.08
1
                Hotel
                      0.06
2
                  Pub 0.06
3
           Hotel Bar
                      0.04
   English Restaurant 0.04
```

----Sutton----

```
venue freq
  Clothing Store 0.11
             Pub 0.11
1
2
     Coffee Shop 0.08
3
     Pizza Place 0.05
4
            Café 0.05
----Tower Hamlets----
                venue freq
0
                 Café 0.11
1
    Italian Restaurant 0.11
2
          Coffee Shop 0.11
3
                Hotel 0.11
4
  Fried Chicken Joint 0.06
----Waltham Forest----
       venue freq
0
         Pub 0.15
1
        Pool 0.08
2
    Tea Room 0.08
3
  Beer Store 0.08
4
         Gym 0.08
----Wandsworth----
           venue freq
     Coffee Shop 0.10
0
1
             Pub 0.10
  Clothing Store 0.07
2
3
  Breakfast Spot 0.05
     Pizza Place 0.05
4
----Westminster----
             venue freq
0
       Coffee Shop 0.12
1
             Hotel 0.12
2
     Sandwich Place 0.10
3
           Theater 0.08
  Sushi Restaurant 0.06
```

In [42]:

```
# Put into pandas dataframe
def return_most_common_venues(row, num_top_venues):
    row_categories = row.iloc[1:]
    row_categories_sorted = row_categories.sort_values(ascending=False)
    return row_categories_sorted.index.values[0:num_top_venues]
```

In [43]:

Out[43]:

	BoroughName	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
0	Barking and Dagenham	Golf Course	Pool	Bus Station	Gym / Fitness Center	Park
1	Barnet	Café	Bus Stop	Recording Studio	Yoga Studio	Dumpling Restaurant
2	Bexley	Clothing Store	Coffee Shop	Pub	Furniture / Home Store	Supermarket
3	Brent	Coffee Shop	Hotel	Sporting Goods Shop	Grocery Store	Clothing Store
4	Bromley	Clothing Store	Coffee Shop	Pizza Place	Burger Joint	Bar
5	Camden	Hotel	Café	Coffee Shop	Pizza Place	Train Station
6	Croydon	Coffee Shop	Pub	Indian Restaurant	Portuguese Restaurant	Gym / Fitness Center
7	Ealing	Coffee Shop	Pub	Italian Restaurant	Vietnamese Restaurant	Park
8	Enfield	Coffee Shop	Clothing Store	Optical Shop	Café	Supermarket
9	Greenwich	Clothing Store	Supermarket	Fast Food Restaurant	Pub	Coffee Shop
10	Hackney	Pub	Coffee Shop	Café	Cocktail Bar	Bakery
11	Hammersmith and Fulham	Pub	Italian Restaurant	Indian Restaurant	Gastropub	Clothing Store
12	Haringey	Fast Food Restaurant	Café	Playground	Pub	Portuguese Restaurant
13	Harrow	Indian Restaurant	Coffee Shop	Indie Movie Theater	Supermarket	Platform
14	Havering	Clothing Store	Coffee Shop	Hotel	Shopping Mall	Café
15	Hillingdon	Coffee Shop	Italian Restaurant	Clothing Store	Sandwich Place	Burger Joint

	BoroughName	1st Most Common Venue	2nd Most Common Venue	3rd Most Common Venue	4th Most Common Venue	5th Most Common Venue
16	Hounslow	Pizza Place	Park	Café	Bed & Breakfast	Yoga Studio
17	Islington	Pub	Cocktail Bar	Bakery	Mediterranean Restaurant	Burger Joint
18	Kensington and Chelsea	Café	Gym / Fitness Center	Restaurant	English Restaurant	Burger Joint
19	Kingston upon Thames	Coffee Shop	Café	Clothing Store	Department Store	Burger Joint
20	Lambeth	Caribbean Restaurant	Market	Tapas Restaurant	Burger Joint	Pub
21	Lewisham	Supermarket	Grocery Store	Platform	Coffee Shop	Train Station
22	Merton	Supermarket	Café	Park	Garden Center	Fast Food Restaurant
23	Newham	Hotel	Currency Exchange	Airport	Airport Lounge	Airport Service
24	Redbridge	Clothing Store	Fast Food Restaurant	Hotel	Grocery Store	Sandwich Place
25	Richmond upon Thames	Pub	Coffee Shop	Italian Restaurant	Indian Restaurant	Café
26	Southwark	Coffee Shop	Hotel	Pub	Theater	Hotel Bar
27	Sutton	Clothing Store	Pub	Coffee Shop	Italian Restaurant	Café
28	Tower Hamlets	Café	Hotel	Italian Restaurant	Coffee Shop	Convenience Store
29	Waltham Forest	Pub	Coffee Shop	Gym / Fitness Center	Concert Hall	Pool
30	Wandsworth	Pub	Coffee Shop	Clothing Store	Supermarket	Breakfast Spot
31	Westminster	Coffee Shop	Hotel	Sandwich Place	Theater	Sushi Restaurant

In [44]:

```
# import k-means from clustering stage
from sklearn.cluster import KMeans

# set number of clusters
kclusters = 5

kut_grouped_clustering = kut_grouped.drop('BoroughName', 1)

# run k-means clustering
kmeans = KMeans(n_clusters=kclusters, random_state=0).fit(kut_grouped_clustering)

# check cluster labels generated for each row in the dataframe
kmeans.labels_[0:10]
```

Out[44]:

array([4, 2, 3, 0, 3, 0, 0, 0, 3, 3])

In [45]:

```
# add clustering labels
neighborhoods_venues_sort.insert(0, 'Cluster Labels', kmeans.labels_)
kut_merged = info
# merge London_grouped with London_data to add Latitude/Longitude for each neighborhood
kut_merged = kut_merged.join(neighborhoods_venues_sort.set_index('BoroughName'), on='Bo
roughName')
kut_merged.head() # check the last columns!
```

Out[45]:

	BoroughName	Population	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Com V
0	Barking and Dagenham	194352	51.5607	0.1557	4	Golf Course	Pool	Bus Static
1	Barnet	369088	51.6252	-0.1517	2	Café	Bus Stop	Reco Studi
2	Bexley	236687	51.4549	0.1505	3	Clothing Store	Coffee Shop	Pub
3	Brent	317264	51.5588	-0.2817	0	Coffee Shop	Hotel	Sport Good Shop
4	Bromley	317899	51.4039	0.0198	3	Clothing Store	Coffee Shop	Pizza Place

In [46]:

```
kut_merged.info()
```

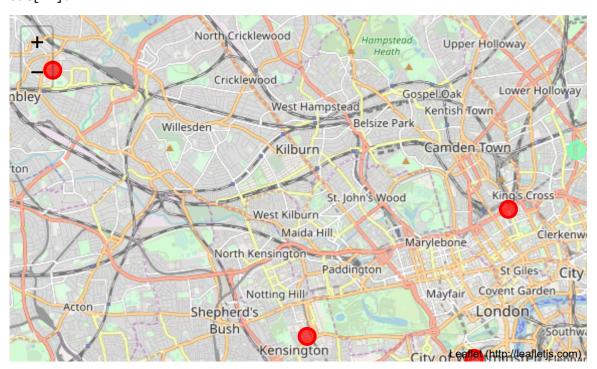
RangeIndex: 32 entries, 0 to 31 Data columns (total 15 columns): BoroughName 32 non-null object 32 non-null object Population 32 non-null float64 Latitude Longitude 32 non-null float64 Cluster Labels 32 non-null int32 1st Most Common Venue 32 non-null object 32 non-null object 2nd Most Common Venue 3rd Most Common Venue 32 non-null object 4th Most Common Venue 32 non-null object 5th Most Common Venue 32 non-null object 6th Most Common Venue 32 non-null object 7th Most Common Venue 32 non-null object 32 non-null object 8th Most Common Venue 9th Most Common Venue 32 non-null object 10th Most Common Venue 32 non-null object dtypes: float64(2), int32(1), object(12) memory usage: 3.7+ KB

<class 'pandas.core.frame.DataFrame'>

In [47]:

```
# create map
import matplotlib.cm as cm
import matplotlib.colors as colors
map_clusters = folium.Map(location=[latitude, longitude], zoom_start=11.5)
# set color scheme for the clusters
x = np.arange(kclusters)
ys = [i + x + (i*x)**2  for i  in range(kclusters)]
colors_array = cm.rainbow(np.linspace(0, 1, len(ys)))
rainbow = [colors.rgb2hex(i) for i in colors array]
# add markers to the map
markers_colors = []
for lat, lon, poi, cluster in zip(kut_merged['Latitude'], kut_merged['Longitude'], kut_
merged['BoroughName'], kut_merged['Cluster Labels']):
    label = folium.Popup(str(poi) + ' Cluster ' + str(cluster), parse_html=True)
    folium.CircleMarker(
        [lat, lon],
        radius=8,
        popup=label,
        color=rainbow[cluster-1],
        fill=True,
        fill color=rainbow[cluster-1],
        fill_opacity=0.7).add_to(map_clusters)
map_clusters
```

Out[47]:



Now let's observe each clusters and name them according to their characteristics

In [48]:

Cluster:0 - This cluster is filled with Restaurants and Pubs.
#Also, two of the boroughs Croydon (3rd most common venue) and Lambeth (6th most common venue) are Indian Restaurants.
kut_merged[kut_merged['Cluster Labels'] == 0]

Out[48]:

	BoroughName	Population	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	: C
3	Brent	317264	51.5588	-0.2817	0	Coffee Shop	Hotel	Sp Go Sh
5	Camden	229719	51.5290	-0.1255	0	Hotel	Café	Cc Sh
6	Croydon	372752	51.3714	-0.0977	0	Coffee Shop	Pub	Inc R€
7	Ealing	342494	51.5130	-0.3089	0	Coffee Shop	Pub	Ita R∈
13	Harrow	243372	51.5898	-0.3346	0	Indian Restaurant	Coffee Shop	Inc Mc Th
18	Kensington and Chelsea	155594	51.5020	-0.1947	0	Café	Gym / Fitness Center	Re
20	Lambeth	314242	51.4607	-0.1163	0	Caribbean Restaurant	Market	Ta R€
23	Newham	318227	51.5077	0.0469	0	Hotel	Currency Exchange	Aiı
26	Southwark	298464	51.5035	-0.0804	0	Coffee Shop	Hotel	Pι
28	Tower Hamlets	272890	51.5099	-0.0059	0	Café	Hotel	Ita R∈
29	Waltham Forest	265797	51.5908	-0.0134	0	Pub	Coffee Shop	Gy Fit C€
31	Westminster	226841	51.4973	-0.1372	0	Coffee Shop	Hotel	Sa Pla
4								•

In [49]:

Cluster:2 - This cluster can be a good place to open an Indian Restaurant.
kut_merged[kut_merged['Cluster Labels'] == 1]

Out[49]:

	BoroughName	Population	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Con
16	Hounslow	262407	51.4746	-0.368	1	Pizza Place	Park	Cafe

In [50]:

Cluster:3 - This cluster can be a good place to open an Indian Restaurant.
kut_merged[kut_merged['Cluster Labels'] == 2]

Out[50]:

	BoroughName	Population	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Com
1	Barnet	369088	51.6252	-0.1517	2	Café	Bus Stop	Reco Studi
4								_ N

In [51]:

Cluster:2 - This cluster is filled with Pubs and Restaurants similar to cluster 1.
kut_merged[kut_merged['Cluster Labels'] == 3]

Out[51]:

	BoroughName	Population	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Mos Commoi Venu
2	Bexley	236687	51.4549	0.1505	3	Clothing Store	Coffee Shop
4	Bromley	317899	51.4039	0.0198	3	Clothing Store	Coffee Shor
8	Enfield	320524	51.6538	-0.0799	3	Coffee Shop	Clothing Store
9	Greenwich	264008	51.4892	0.0648	3	Clothing Store	Supermarke
10	Hackney	257379	51.5450	-0.0553	3	Pub	Coffee Shop
11	Hammersmith and Fulham	178685	51.4927	-0.2339	3	Pub	Italian Restaurant
12	Haringey	263386	51.6000	-0.1119	3	Fast Food Restaurant	Café
14	Havering	242080	51.5812	0.1837	3	Clothing Store	Coffee Shop
15	Hillingdon	286806	51.5441	-0.4760	3	Coffee Shop	Italian Restaurant
17	Islington	215667	51.5416	-0.1022	3	Pub	Cocktail Bar
19	Kingston upon Thames	166793	51.4085	-0.3064	3	Coffee Shop	Café
21	Lewisham	286180	51.4452	-0.0209	3	Supermarket	Grocery Store
22	Merton	203223	51.4014	-0.1958	3	Supermarket	Café
24	Redbridge	288272	51.5590	0.0741	3	Clothing Store	Fast Food Restaurant
25	Richmond upon Thames	191365	51.4479	-0.3260	3	Pub	Coffee Shop
27	Sutton	195914	51.3618	-0.1945	3	Clothing Store	Pub
30	Wandsworth	310516	51.4567	-0.1910	3	Pub	Coffee Shop

Out[52]:

```
In [52]:
kut_merged[kut_merged['Cluster Labels'] == 4]
```

	BoroughName	Population	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd I Com⊦ V€
0	Barking and Dagenham	194352	51.5607	0.1557	4	Golf Course	Pool	Bus Static

4. Results & Recommendation

Now we will review all the analysis made in this project before we make a conclusion on which area will be a good location to start an Indian Restaurant.

Like mentioned in the beginning, our key criteria of location decision will be based on less competition.

From the cluster analysis made above, we will give each clusters a name according to the characteristics inferrable from the popular venues.

According to my interpretation, **Cluster 0** has Restaurants, pubs, coffee shops and grocery stores as popular places.

```
In [55]:
```

According to my interpretation, **Cluster 1** has only one borough and it has no Indian Restaurant in that region.

```
In [58]:
```

```
kut_merged.loc[kut_merged['Cluster Labels'] == 1].BoroughName.unique()
Out[58]:
array(['Hounslow'], dtype=object)
```

According to my interpretation, **Cluster 2** has only one borough and it has no Indian Restaurant in that region.

```
In [59]:
```

```
kut_merged.loc[kut_merged['Cluster Labels'] == 2].BoroughName.unique()
Out[59]:
array(['Barnet'], dtype=object)
```

According to my interpretation, **Cluster 3** has Restaurants, pubs, coffee shops and grocery stores as popular places.

```
In [62]:
```

According to my interpretation, **Cluster 4** has only one borough and it has no Indian Restaurant in that region.

```
In [63]:
```

```
kut_merged.loc[kut_merged['Cluster Labels'] == 4].BoroughName.unique()
Out[63]:
array(['Barking and Dagenham'], dtype=object)
```

5. Conclusion

From our analysis, we have found that the boroughs below are the best places to open an Indian Restaurant, based on the availability of Indian Restaurants and other type of restaurants available in the neighborhoods.

```
In [71]:
```

```
london_top_boroughs = kut_merged[kut_merged['Cluster Labels'].isin([1,2,4])]
```

In [72]:

london_top_boroughs

Out[72]:

		BoroughName	Population	Latitude	Longitude	Cluster Labels	1st Most Common Venue	2nd Most Common Venue	3rd Coi
C)	Barking and Dagenham	194352	51.5607	0.1557	4	Golf Course	Pool	Bus Stat
1		Barnet	369088	51.6252	-0.1517	2	Café	Bus Stop	Rec Stuc
1	16	Hounslow	262407	51.4746	-0.3680	1	Pizza Place	Park	Cafe

In [74]:

```
# make a map of London using folium
map = folium.Map(location=[latitude, longitude], zoom_start=10)
# add markers to map
for lat, lng, borough in zip(london_top_boroughs['Latitude'], london_top_boroughs['Long
itude'], london_top_boroughs['BoroughName']):
    label = '{}'.format(borough)
    label2 = folium.Popup(label, parse_html=True)
    folium.CircleMarker(
        [lat, lng],
        radius=5,
        popup=label2,
        color='blue',
        fill=True,
        fill_color='#3186cc',
        fill_opacity=0.7,
        parse_html=False).add_to(map)
map
```

Out[74]:

