

Identifying the Top 25% of Census Tracts in Boston, Worcester, Springfield, and Lowell according to Unemployment Data (2006-2010)

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Introduction

The purpose of this paper is to recommend a transparent and efficient procedure for designating local areas which would qualify for licensing preferences based on the criteria of being in the top 25% of census tracts ranked by average unemployment levels for the years 2006 through 2010 according to the United States Census Bureau.

Section 1 presents a procedure that prospective licensees in Boston, Worcester, Springfield and Lowell can use to determine if an address is in the designated areas, along with reference tables listing the specific census tracts and their respective unemployment rates for the period 2006 through 2010.

Section 2 provides technical information on the procedure use to obtain the data used for the reference tables and to determine the top 25% of census tracts when ranked according to unemployment levels.

Section 3 provides additional background information about this process. Specifically, This section reviews why an alternate selection process was rejected, as well as provides additional corroborative material supporting the use of unemployment data for designating areas of drug arrest impacts

Section 1. Reference Procedure

A census tract number for any address can be obtained in a simple process using a look-up procedure at a website of the US. Census Bureau:

1. Go to the URL:

<https://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?ref=addr&refresh=t#none>

2. Enter the Street Address:

United States Census Bureau

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MAIN COMMUNITY FACTS GUIDED SEARCH ADVANCED SEARCH DOWNLOAD CENTER

Search - Use the options on the left (topics, geographies, ...) to narrow your search results

Your Selections: 'Your Selections' is empty

To search for tables and other files in American FactFinder:

Select Geographies

List Name Address Map

Enter a street address, city and state, or a street address and ZIP code. Click 'Go'.

Note: address search will use the latest available address data beginning with 2017 and working backwards, based on the contents of 'Your Selections'.

street address city state zip

101 Federal Street Boston Massachusetts 02110 GO

these are added to 'Your Selections' the Search Results are updated

2 Next, select Geographies (states, counties, cities, towns, etc.) these are added to 'Your Selections' the Search Results are updated

3 Select one or more Search Results and click View

3. Note the Census Tract number associated with the address listed on the resulting table in the 6th row of the left column of the resulting table.

Geography Name	Geography Type	Geography Code	About
Northeast Region	Region	020	?
New England Division	Division	030	?
Massachusetts	State	040	?
Suffolk County, Massachusetts	County	050	?
Boston city, Suffolk County, Massachusetts	County Subdivision	060	?
Block 6051, Block Group 8, Census Tract 701.01, Suffolk County, Massachusetts	Block	100	?
Census Tract 701.01, Suffolk County, Massachusetts	Census Tract	140	?
Block Group 8, Census Tract 701.01, Suffolk County, Massachusetts	Block Group within Census Tract	150	?
Boston city, Massachusetts	Place within State	160	?

4. See if the tract number is on the published list.

Tables for listing the designated tracts for all 4 cities follow below (See Tables 1 -4). The unemployment levels are provided however it is recommended that they be omitted from the public reference tables used to implement this procedure.

Table 1. Designated Boston Census Tracts

Full Census Tract Name	6 Digit Tract	Unemployment (%)
Census Tract 8.03, Suffolk County, Massachusetts	803	11.8
Census Tract 101.03, Suffolk County, Massachusetts	10103	17.0
Census Tract 101.04, Suffolk County, Massachusetts	10104	11.9
Census Tract 103, Suffolk County, Massachusetts	10300	11.4
Census Tract 104.04, Suffolk County, Massachusetts	10404	15.4
Census Tract 104.05, Suffolk County, Massachusetts	10405	15.6
Census Tract 607, Suffolk County, Massachusetts	60700	13.5
Census Tract 610, Suffolk County, Massachusetts	61000	16.5
Census Tract 611.01, Suffolk County, Massachusetts	61101	24.3
Census Tract 702, Suffolk County, Massachusetts	70200	11.6
Census Tract 712.01, Suffolk County, Massachusetts	71201	14.3
Census Tract 803, Suffolk County, Massachusetts	80300	11.5
Census Tract 804.01, Suffolk County, Massachusetts	80401	12.6
Census Tract 805, Suffolk County, Massachusetts	80500	13.5
Census Tract 806.01, Suffolk County, Massachusetts	80601	24.7
Census Tract 808.01, Suffolk County, Massachusetts	80801	19.8
Census Tract 815, Suffolk County, Massachusetts	81500	12.4
Census Tract 817, Suffolk County, Massachusetts	81700	15.6
Census Tract 818, Suffolk County, Massachusetts	81800	18.2
Census Tract 819, Suffolk County, Massachusetts	81900	16.3
Census Tract 820, Suffolk County, Massachusetts	82000	16.1
Census Tract 821, Suffolk County, Massachusetts	82100	17.5
Census Tract 901, Suffolk County, Massachusetts	90100	23.0
Census Tract 902, Suffolk County, Massachusetts	90200	16.0
Census Tract 903, Suffolk County, Massachusetts	90300	17.5
Census Tract 904, Suffolk County, Massachusetts	90400	20.6
Census Tract 906, Suffolk County, Massachusetts	90600	11.5
Census Tract 912, Suffolk County, Massachusetts	91200	16.6
Census Tract 914, Suffolk County, Massachusetts	91400	12.5
Census Tract 917, Suffolk County, Massachusetts	91700	12.7
Census Tract 918, Suffolk County, Massachusetts	91800	26.5
Census Tract 919, Suffolk County, Massachusetts	91900	14.1
Census Tract 920, Suffolk County, Massachusetts	92000	16.8
Census Tract 923, Suffolk County, Massachusetts	92300	12.3
Census Tract 924, Suffolk County, Massachusetts	92400	14.8
Census Tract 1001, Suffolk County, Massachusetts	100100	12.9
Census Tract 1002, Suffolk County, Massachusetts	100200	14.3
Census Tract 1006.01, Suffolk County, Massachusetts	100601	11.7
Census Tract 1010.01, Suffolk County, Massachusetts	101001	13.7
Census Tract 1011.01, Suffolk County, Massachusetts	101101	15.1
Census Tract 1011.02, Suffolk County, Massachusetts	101102	15.2
Census Tract 1102.01, Suffolk County, Massachusetts	110201	11.9
Census Tract 1205, Suffolk County, Massachusetts	120500	15.3
Census Tract 9801.01, Suffolk County, Massachusetts	980101	51.2
Census Tract 9803, Suffolk County, Massachusetts	980300	36.5

Census Tract 9811, Suffolk County, Massachusetts	981100	22.6
Census Tract 9817, Suffolk County, Massachusetts	981700	see notes
Census Tract 9818, Suffolk County, Massachusetts	981800	11.8

Table 2. Designated Worcester Census Tracts

Full Census Tract Name	6 Digit Tract	Unemployment (%)
Census Tract 7302, Worcester County, Massachusetts	730200	10.1
Census Tract 7305, Worcester County, Massachusetts	730500	10.3
Census Tract 7310.02, Worcester County, Massachusetts	731002	10.7
Census Tract 7312.03, Worcester County, Massachusetts	731203	17.6
Census Tract 7312.04, Worcester County, Massachusetts	731204	13.2
Census Tract 7313, Worcester County, Massachusetts	731300	9.9
Census Tract 7314, Worcester County, Massachusetts	731400	16.0
Census Tract 7315, Worcester County, Massachusetts	731500	9.8
Census Tract 7317, Worcester County, Massachusetts	731700	17.0
Census Tract 7318, Worcester County, Massachusetts	731800	11.3
Census Tract 7320.01, Worcester County, Massachusetts	732001	18.4
Census Tract 7323.02, Worcester County, Massachusetts	732302	10.0
Census Tract 7324, Worcester County, Massachusetts	732400	16.2
Census Tract 7327, Worcester County, Massachusetts	732700	21.0
Census Tract 7330, Worcester County, Massachusetts	733000	9.3

Table 3. Designated Springfield Census Tracts

Full Census Tract Name	6 Digit Tract	Unemployment (%)
Census Tract 8001.02, Hampden County, Massachusetts	800102	14.8
Census Tract 8005, Hampden County, Massachusetts	800500	14.8
Census Tract 8006, Hampden County, Massachusetts	800600	29.1
Census Tract 8007, Hampden County, Massachusetts	800700	21.4
Census Tract 8008, Hampden County, Massachusetts	800800	31.0
Census Tract 8009, Hampden County, Massachusetts	800900	21.7
Census Tract 8011.01, Hampden County, Massachusetts	801101	22.4
Census Tract 8014.01, Hampden County, Massachusetts	801401	15.0
Census Tract 8018, Hampden County, Massachusetts	801800	23.3
Census Tract 8019.02, Hampden County, Massachusetts	801902	21.6
Census Tract 8020, Hampden County, Massachusetts	802000	18.3
Census Tract 8022, Hampden County, Massachusetts	802200	18.0
Census Tract 8023, Hampden County, Massachusetts	802300	18.5

Table 4. Designated Lowell Census Tracts

Full Census Tract Name	6 Digit Tract	Unemployment (%)
Census Tract 3101, Middlesex County, Massachusetts	310100	14.4
Census Tract 3104, Middlesex County, Massachusetts	310400	12.2
Census Tract 3111, Middlesex County, Massachusetts	311100	12.2
Census Tract 3112, Middlesex County, Massachusetts	311200	13.1
Census Tract 3117, Middlesex County, Massachusetts	311700	12.2
Census Tract 3118, Middlesex County, Massachusetts	311800	13.4

Census Tract 3119, Middlesex County, Massachusetts	311900	14.2
Census Tract 3120, Middlesex County, Massachusetts	312000	12.7
Census Tract 3124, Middlesex County, Massachusetts	312400	16.3

Notes:

There are anomalies in the census tract listing for Boston. They are as follows:

- 1) Tracts 105 and 106 are labeled as being in Barnstable County, but when mapped are clearly within the area for Boston. Tracts 401, 402, 403, and 406 are labeled as being in Franklin County, but when mapped are clearly within the area for Boston. These tracts were counted in the total number of tracts in Boston for the purposes of determining the calculating how many tracts were contained in the top 25% of tracts with the highest unemployment. None of these tracts are contained in the top 25% of the listed tracts.
- 2) There are 6 tracts for which there is no unemployment data. (9807, 9810, 9812.10, 9815.01, 9816, 9817.) Of these, only Tract 9817 is in a Boston Police District (A1) containing a high percentage of recent marijuana arrests. Therefore, it is included in the designated tracts on that basis. While the unemployment level is unknown, and its designation is subjective, this designation avoids a scenario in which an application deserving of this status is rejected because of incomplete information.

Section 2. Technical Background

The unemployment data used in this report is provided by the American Community Survey (ACS), conducted by the United States Census Bureau. Unlike the 10-year Census, this survey is conducted on an annual basis in which the Census Bureau contacts about 3.5 million random households. According to the Census Bureau “Information from the survey generates data that help determine how more than \$675 billion in federal and state funds are distributed each year.”¹ Because of the annual sample size, summary data for specific geographical areas requires data for several years, typically 3- or 5-year samples. Data from the American Community Survey is publicly available from the American FactFinder², which also provides data from other Census Bureau surveys.

The data used to designate census tracts within Boston, Worcester, Springfield and Lowell is for the period 2006 to 2010, a 5-year period which includes the last 3 years of marijuana’s criminalization in Massachusetts as well as 2 years under a decriminalization statute passed by the initiative process. The unemployment data. Using American FactFinder the dataset S2310 (Employment Status) provides this information. It is accessed by selecting a geographical area followed by a topic. The geographical area selected is the census tract, followed by a state designation, and as needed the data selection can also be specified by county. Under topics the category “People” and the sub-category “Employment” provides several topics. In this case the topic “Employment (Labor Force) Status has been utilized. When these selections have been made, American FactFinder provides a list of datasets for viewing, with S2301 Employment Status being the first. Among other data, the unemployment level for adults age 16 and over is provided. Data in American FactFinder can be viewed in table form, tables can be modified allowing rows and columns can be transposed, and data can be downloaded in a spreadsheet format.

As indicated in the notes following Section 1 above, the data is not without anomalies. Missing data may be due to many factors however the most likely factor is insufficient survey responses for a geographical location. For example, the smaller the population of an area the more years of data are required to produce statistically significant estimates.

The advantages of using American Community Survey data are that 1) it provides detailed, localized data and 2) the data is publicly available. In other words, it is both informative and transparent.

This report has used Geographic Information System (GIS) software to identify census tracts located within town boundaries for the 4 featured cities. The GIS files providing mapping coordinates for census tracts and town boundaries were obtained from the Massachusetts Bureau of Geographical Information (MassGIS).³

For Boston, 178 census tracts were reviewed. The top 25%, 47 census tracts, had unemployment levels above 11.3%. As noted above, one additional tract was added to the list on the basis of its location

¹ See the American Community Survey Website for more information:
<https://www.census.gov/programssurveys/acs/about.html>

² For more information or to access the American FactFinder Website, see:
<https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>

³ For more information on MassGIS: <https://www.mass.gov/orgs/massgis-bureau-of-geographic-information>

alone (without reported unemployment data). For Worcester, 58 census tracts were reviewed. The top 25%, 15 (rounding from 14.5), had unemployment levels above 9%. For Springfield, 50 census tracts were reviewed. The top 25%, 13 census tracts (rounding up from 12.5), had unemployment levels above 14.6%. For Lowell, 32 census tracts were reviewed. The top 25% had unemployment levels above 11.5%. However, for Lowell 9 census tracts were designated, as the 9th tract had the same unemployment level as those ranked 7th and 8th (12.2%). A spreadsheet providing unemployment levels for this period for all census tracts in these cities has been provided separately to the Commission.

Section 3. Additional Background

This section reviews why an alternate selection process was rejected, as well as additional corroborative material supporting the use of unemployment data for designating areas of drug arrest impacts. **a) Zip Code Selection**

The use of 5-digit zip code areas rather than census tract areas was considered and rejected. A zip code system would be efficient because the information is readily available for any applicant as part of their address. However, the gains in efficiency are offset by a loss of equity as it would broaden the selection criteria in an unequal and inconsistent fashion. Census tract data indicates that unemployment data varies throughout different areas of a zip code.

This approach will not address all targeted areas and is thus not comprehensive. In a very general assessment this approach could address 75% of the targeted areas in Boston, 50% in Springfield, and 25% in Worcester. However, to repeat, it would also bring in additional areas not consistent with the selection criteria. Thus, it would only partially expedite address identification, but it would not provide a comprehensive solution. In other words, it would designate areas with more mixed levels of unemployment. While a Zip+4 basis would identify small areas this characteristic of local addresses is not well-known and requires a look-up procedure. While the United States Postal Service provides an easy-to-use web service to provide Zip+4 codes this is not much easier than using the US Census web service to look up a census tract designation.

In conclusion a Zip Code selection process would not designate area with the greatest impact of drug arrests nor with high localized unemployment rates. While improving efficiency it would reduce equity.

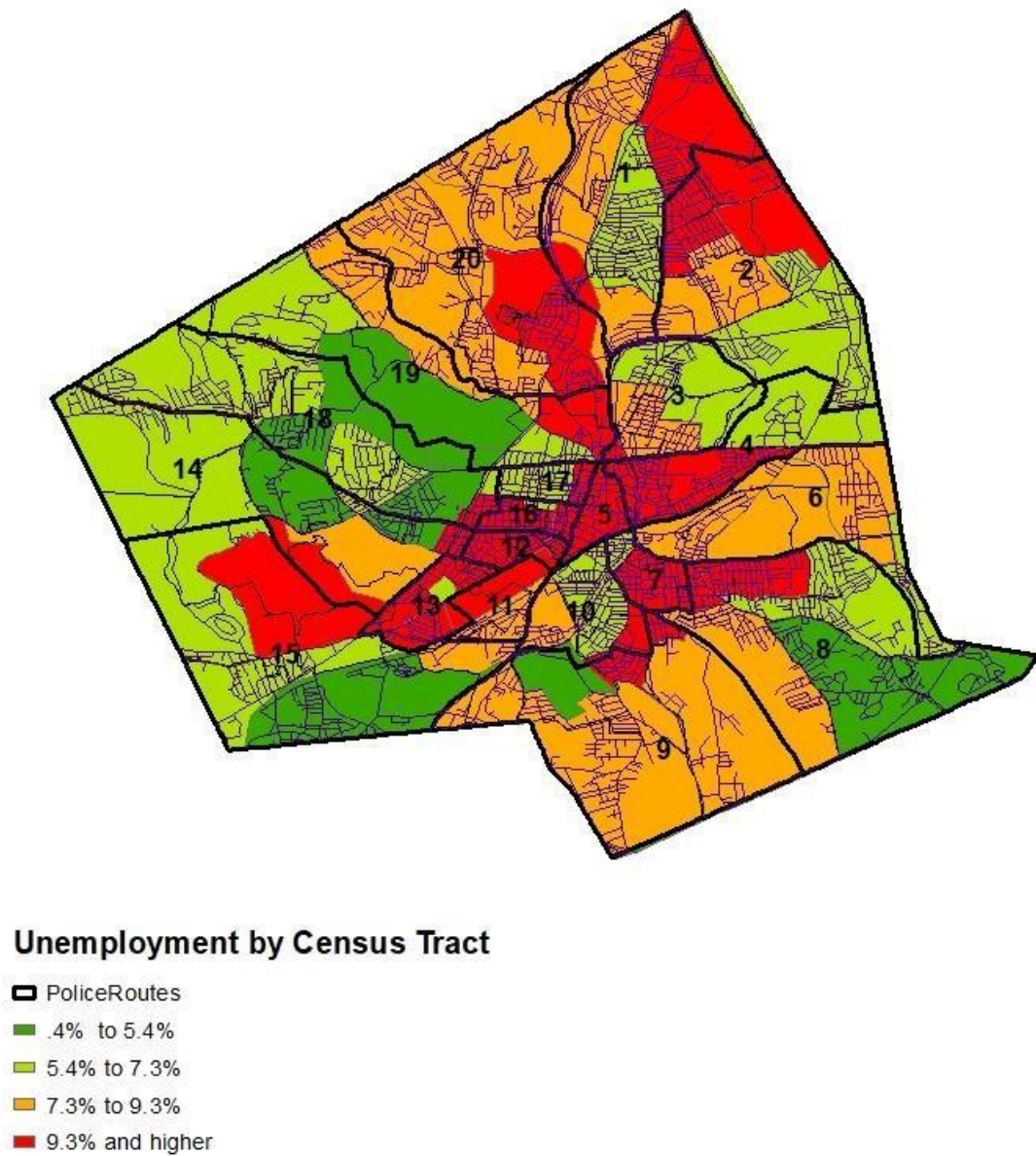
b) Additional Corroborative Material

A prior report for the Commission on “Impact of Drug and Marijuana Arrests Within the Largest Cities of Massachusetts” reviewed both arrest and recent unemployment data for Worcester (rather than the 2006-2010 unemployment data utilized above). A visual correlation was made between three exhibits – a table with arrest data by police route, a map of the police routes in Worcester, and a map of unemployment data by census tract. The table of arrest data by police route (See Table 5.) is below as well as a new map (See Figure 1.) which overlays the police routes with the unemployment data. This new map makes it easier to observe the high unemployment in areas with the greatest number of arrests.

Table 5. Worcester Marijuana Arrests (2000 - 2016)

Route	Arrests	Pct	Route	Arrests	Pct
16	540	10.00%	14	197	3.60%
2	458	8.50%	8	189	3.50%
12	448	8.30%	15	161	3.00%
5	443	8.20%	6	156	2.90%
10	397	7.30%	9	155	2.90%
11	354	6.50%	1	131	2.40%
7	325	6.00%	18	122	2.30%
13	308	5.70%	19	98	1.80%
3	287	5.30%	0	94	1.70%
4	264	4.90%	20	81	1.50%
17	199	3.70%	14	197	3.60%
Total			5,407		

Figure 1. Worcester Unemployment by Census Tract (2012-2016) and Police Route



Here is the commentary from the prior report, for which the enhanced map provides greater clarity:

Each of the six areas with the greatest concentration of marijuana arrests contains census tracts with the highest levels of unemployment. In other words, areas with the highest unemployment can be used to locate the police routes with the highest concentration of marijuana arrests. The red coded tract along the eastern boundary of the city, in the upper right area of the census, is in police route 2. The area distinguished by the other three red coded areas indicates the inner-city concentration of the remaining 5 police routes (Routes 5, 10, 11,12 and 16). While this visual assessment is imprecise, as with in Boston, Worcester's concentration of marijuana arrests is associated with its areas with high unemployment.

In addition, data provided by the city of Springfield on drug arrests from 2006 to 2010 provides additional corroboration for the relationship between unemployment and drug arrest impact areas. Table 6 provides drug arrest data for Springfield. Figure 2 provides unemployment (2012 – 2016) by census along with Police Sector boundaries.

Table 6. Drug Arrests in Springfield, MA (2006 – 2010)

	2006	2007	2008	2009	2010
Sector A	12.2%	2.9%	4.3%	0.0%	0.0%
Sector B	7.3%	5.7%	6.4%	50.0%	0.0%
Sector C	2.4%	5.7%	0.0%	0.0%	0.0%
Sector D	4.9%	8.6%	6.4%	0.0%	0.0%
Sector E	19.5%	34.3%	10.6%	25.0%	0.0%
Sector F	26.8%	20.0%	29.8%	0.0%	0.0%
Sector G	4.9%	0.0%	4.3%	0.0%	100.0%
Sector H	19.5%	11.4%	38.3%	0.0%	0.0%
Sector I	2.4%	11.4%	0.0%	25.0%	0.0%
Total	41	35	47	4	1
Sectors E+F	46.3%	54.3%	40.4%	25.0%	0.0%

For the last three years of marijuana's criminalization in Massachusetts, arrests in Sectors E and F accounted for 40.4% to 54.3% of the total. As seen in Figure 2 below, these areas demonstrate some of the highest unemployment levels in the city.

The rationale for using unemployment rates at the census tract level is that the policy objective of establishing licensing preferences for areas with the greatest impact from drug arrests is both remedial and developmental. These cities have been identified as areas with relatively high arrest rates for drug

offenses. These local areas within them are being identified as areas that have experienced high levels of arrests and/or are deserving of economic development. The recommendation to use unemployment levels as a proxy for arrest impacts is based on a correlation between these two characteristics as well as on the objective of economic development. A closer look at the data from Worcester and the additional data from Springfield provide further corroboration for this assessment.

Figure 2. Unemployment by Census Tract (2012 – 2016) and Police Sector for Springfield

