

# Where Do We Put Our Prisons?

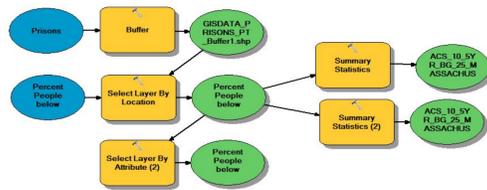
## Background



Prisons are institutions that span the globe, but do we ever stop to think where they are built? Are these buildings, which are the unattractive underside of our legal system that is usually avoided, placed in areas where people don't have the luxury to choose where they live? This model will investigate whether there is correlation between areas in Massachusetts with high levels of poverty, and location of prisons of all types. It will do so firstly by assessing where the highest density of "poverty areas" are throughout the state. A poverty area is defined by the Census Bureau to be "any census tract with a poverty rate of 20.0 percent or more."

The poverty levels of individuals within blockgroups will then be assessed to generate a comparative ratio between the percent of people below poverty in areas near to prisons, and the percent of people below poverty in areas not near prisons. This question is useful to consider because it may indicate that prisons are placed in less affluent areas of the state, disadvantaging specifically a low-income population rather than making prison a visible institution to middle and upper classes.

## Methodology



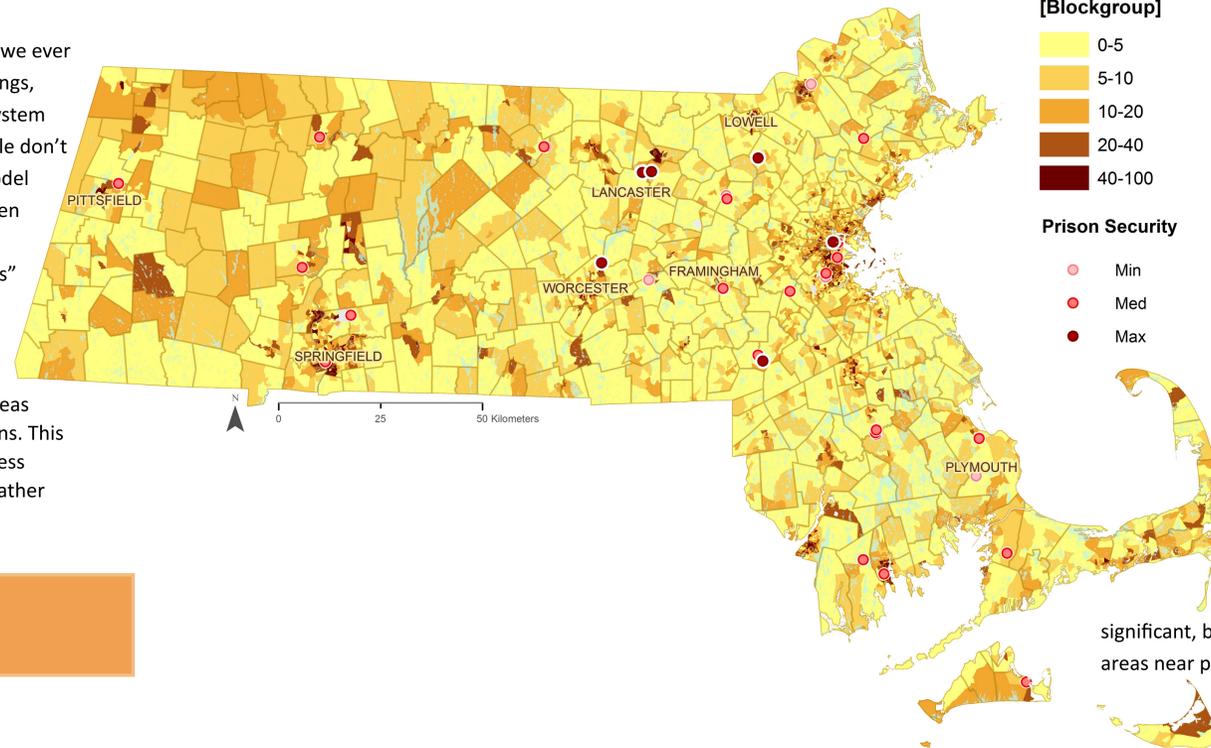
### Assessing Poverty Areas

Poverty data was mapped by normalizing the population below poverty level with the total population for which poverty level was determined. This generated a percentage map for people below poverty in each blockgroup. Geoprocessing procedures includes the creation of buffer zones around prison sites, within which the percentage of people in poverty in these zones are assessed. These buffers are then used to select blockgroups with their centers in the buffer zone, using the Select by Location tool. Once these blockgroups are selected, the Select by Attribute tool is implemented to isolate blockgroups where 20% or more of people are below poverty level. This cutoff was determined by the definition of a "poverty area," defined by the Census Bureau.

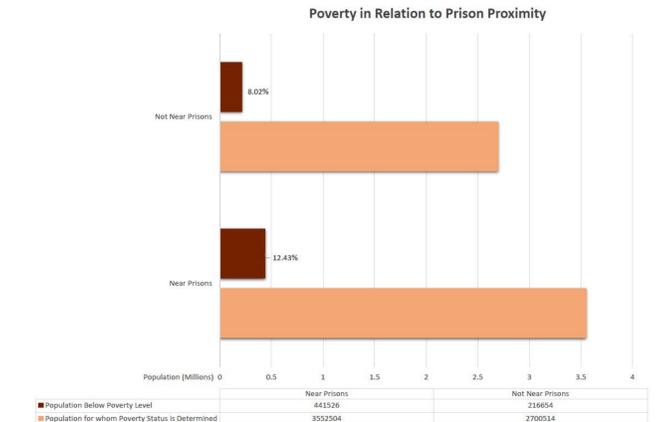
### Assessing Percent of People Below Poverty Near and Away from Prisons

Summary statistics were run for both the number of people within the buffers below poverty level, and the number of total people within the buffers for which poverty level was determined. These values were then used to calculate the total percent of people below poverty within the blockgroup areas with their center in a buffer zone. This ratio was then compared to the percentage of people below poverty outside of buffer areas, to determine whether the percentage of people below poverty is higher, lower, or relatively equal in areas closer to prisons.

The buffer used to assess proximity of areas of high poverty density spans a 1 hectare radius. This data would possibly address whether prisons are placed in highly impoverished areas, rather than affluent ones. However, it doesn't consider whether prisons are placed in places with high crime rates, or simply in areas with a greater population. Although there may be a correlation between poverty density and prison sites, there are definitely other factors that could contribute to this pattern. It is possible that data may not express an immigrant population living unregistered below poverty levels, or those who do not have a household, since poverty data is subcategorized based on living arrangement.



## Results

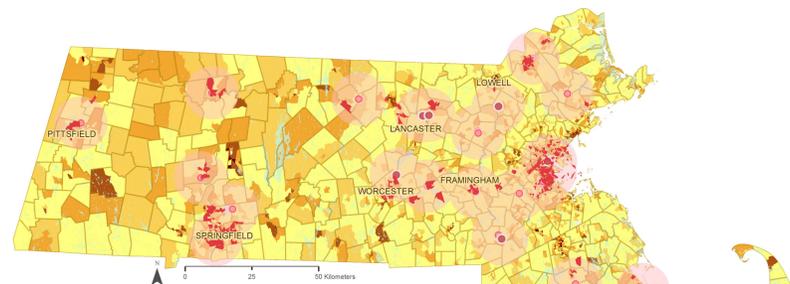


This data study concludes that, while 8.02% of people not near prisons are below poverty, 12.43% of people near prisons are below poverty. This difference in the percentage of people below poverty for each area is statistically significant, because this indicates that approximately 150% more people are below poverty in areas near prisons than outside of areas near prisons.

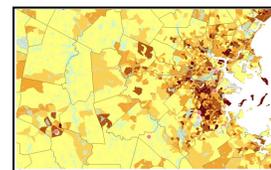
One of the most critical parts of this data and the procedures used to assess it that could use further investigation is the pattern of both prisons and poverty generally coalescing around cities. There may be some critical factor triggering the correlation between poverty areas and prison sites having to do with each's situation in the city, but this factor is unrecognized in the rendering of the poverty and prison datasets used. At the same time that the data may over insinuate a connection between the two entities, it may also underestimate the population in poverty, since the ACS survey is not a comprehensive survey of every person living within the state.

## Areas of Poverty

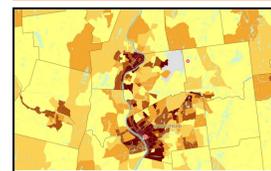
Buffer areas spanning 1 hectare radius from prisons. Contains highlighted poverty areas (≥ 20% people below poverty)



The highlighted poverty areas (above) indicate areas of poverty throughout Massachusetts, that are within a 1 hectare radius from prisons. These poverty areas appear to



Boston Inset



Springfield Inset

be concentrated around major towns and cities; most predominantly, Boston and Springfield.

Blockgroups considered poverty areas are more concentrated within buffers rather than outside of these areas. These buffers were also used to compare the percent of people below poverty within the buffer and outside of the buffer, to gauge whether areas nearer to prisons have more residents that are low-income compared to areas not near prisons.

Boston and Springfield insets (left) show more detailed poverty percentages for blockgroup data, and prison locations nearby.

## Limitations

Because the data used to assess the percentages of the population in poverty throughout the state is ACS data, it is possible if not certain that the data is incomplete. Most likely, not every person living in Massachusetts was surveyed, and although patterns are still determinable from the data, there are some block groups containing no population data. Furthermore, more rural areas may have been under-surveyed.

Data on the entire United States would be useful to see further how the densest poverty levels in Massachusetts compare to levels of poverty across the country. This could help give poverty data a relative meaning in terms of assessing whether poverty is actually a severe problem in high density places, or whether people living below poverty are relatively uncommon in Massachusetts as compared to the country as a whole.

## Attribution

Mallory Abreu  
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Coordinate System: Massachusetts State Plain Mainland Zone  
ACS 5 year Blockgroup survey; 2007-2011; published by US Census Bureau via TIGER; accessed April 10, 2015.  
[Hydrography](#), [Roads](#), [Open Space](#), [Town Boundaries](#), [Prisons](#) data; 2007–2014; published by MassGIS, accessed April 12, 2015.

