

Surveillance of Leading Chronic Diseases in Allston-Brighton

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Surveillance of Leading Chronic Diseases in Allston-Brighton

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Abstract

70 percent of all deaths in the United States are attributed to chronic disease¹. In Massachusetts, three of the top four leading causes of death are cancer, heart disease, and chronic lower respiratory disease⁴. In addition to increasing mortality, non-communicable diseases also burden the overall livelihood and economic productivity of communities². Despite the morbidity they cause, these diseases are preventable and their current dominance in American public health can be reversed³. In 2012, the Massachusetts Department of Public Health (DPH) established a plan to increase health promotion and disease prevention efforts in order to reduce common chronic diseases³. **My project investigates the prevalence of three chronic diseases from the years 2014 to 2015.** My research question is: How did the Massachusetts DPH efforts impact the crude prevalence of cancer, coronary heart disease (CHD), and chronic obstructive pulmonary disease (COPD) from 2014 to 2015? My findings reinforce the idea that although the Massachusetts DPH's efforts have contributed to reductions of CHD and COPD in some census tracts, the prevalence of cancer remains fairly unchanged.

Data & Methods

Data was obtained from the Centers for Disease Control and Prevention's 500 Cities Data Portal. The 2016 and 2017 dataset releases were used to collect crude prevalence values, expressed as percentages of the population, for the measures of cancer, CHD, and COPD within the 17 census tracts of the Allston-Brighton neighbourhood. CHD and COPD were chosen as indicators of heart disease and chronic lower respiratory disease in this study. The datasets were then imported to ArcMap and visualized.

References

1. Chronic Disease. (2018). Retrieved April 04, 2018, from <http://www.mass.gov/eohhs/gov/departments/dph/programs/community-health/chronic-disease/chronic-disease.html>.
2. Massachusetts Department of Public Health. (2017). *Massachusetts State Health Assessment*. Boston, MA.
3. Massachusetts Partnership for Health Promotion and Chronic Disease Prevention. (2012). *Massachusetts Coordinated Health Promotion and Chronic Disease Prevention Plan*.
4. Stats of the State of Massachusetts. (2016). Retrieved April 04, 2018, from <https://www.cdc.gov/nchs/pressroom/states/massachusetts.htm>.

Results

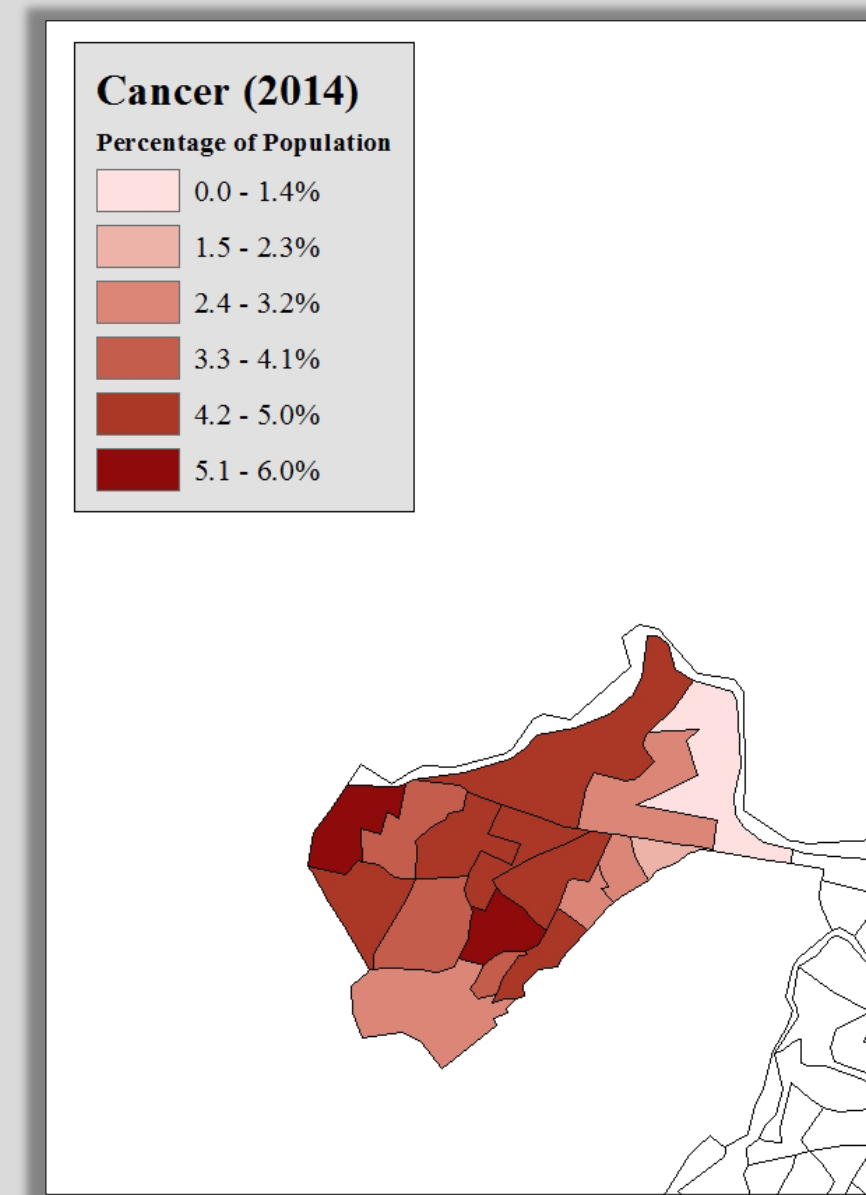


Figure 1. Crude Prevalence of Cancer in Allston-Brighton in 2014

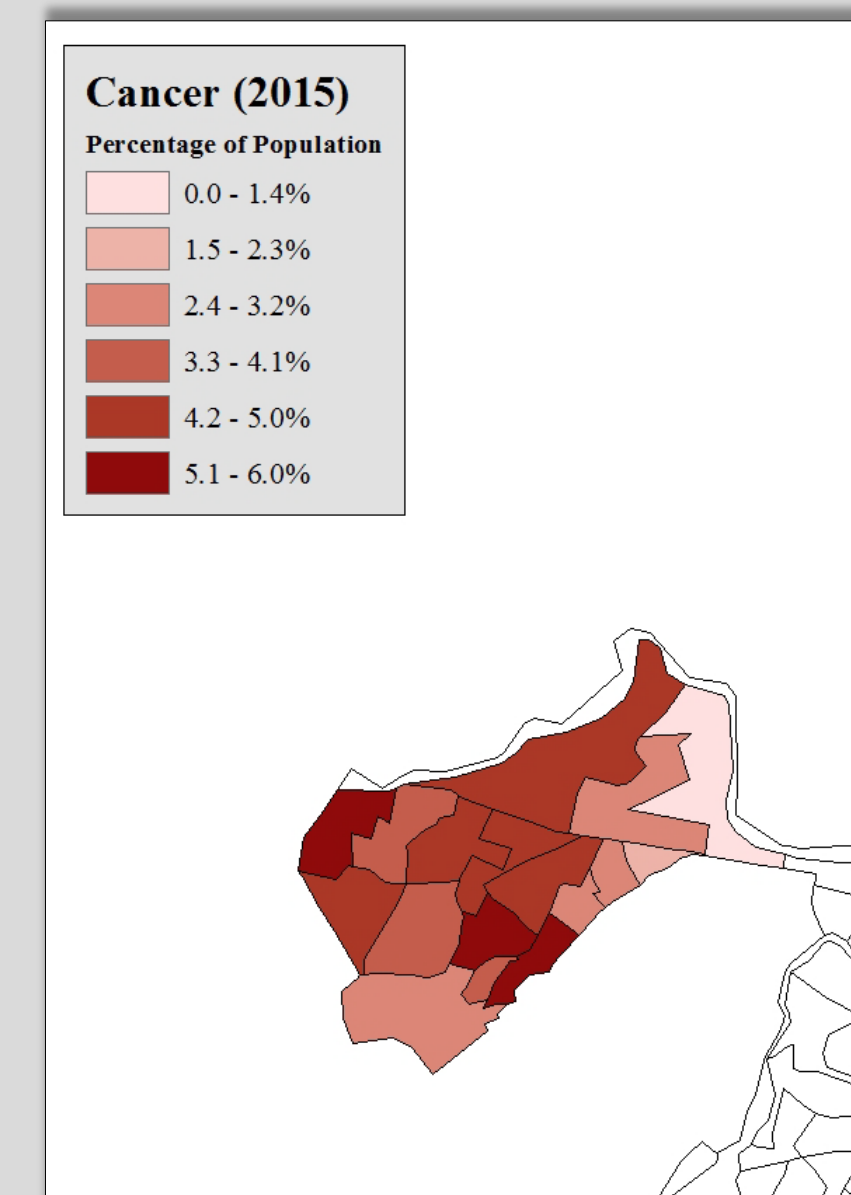


Figure 2. Crude Prevalence of Cancer in Allston-Brighton in 2015

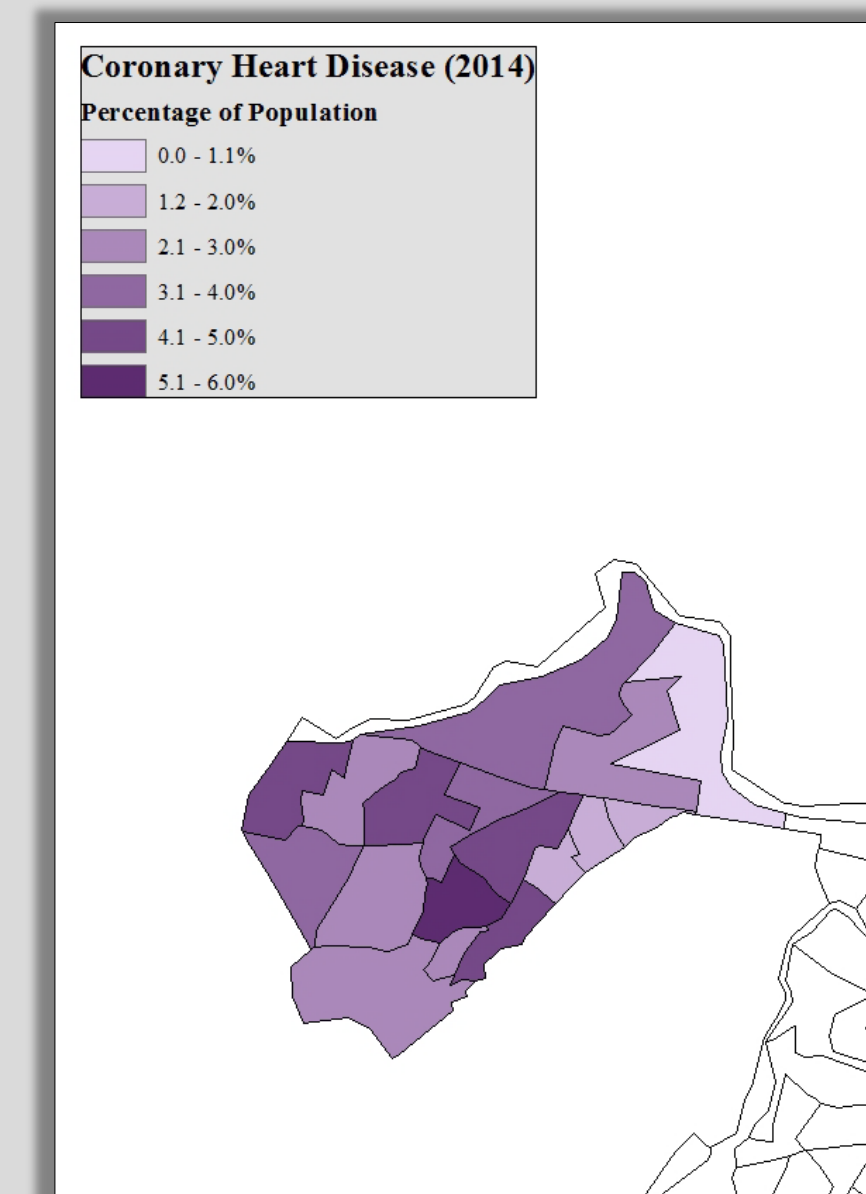


Figure 3. Crude Prevalence of CHD in Allston-Brighton in 2014

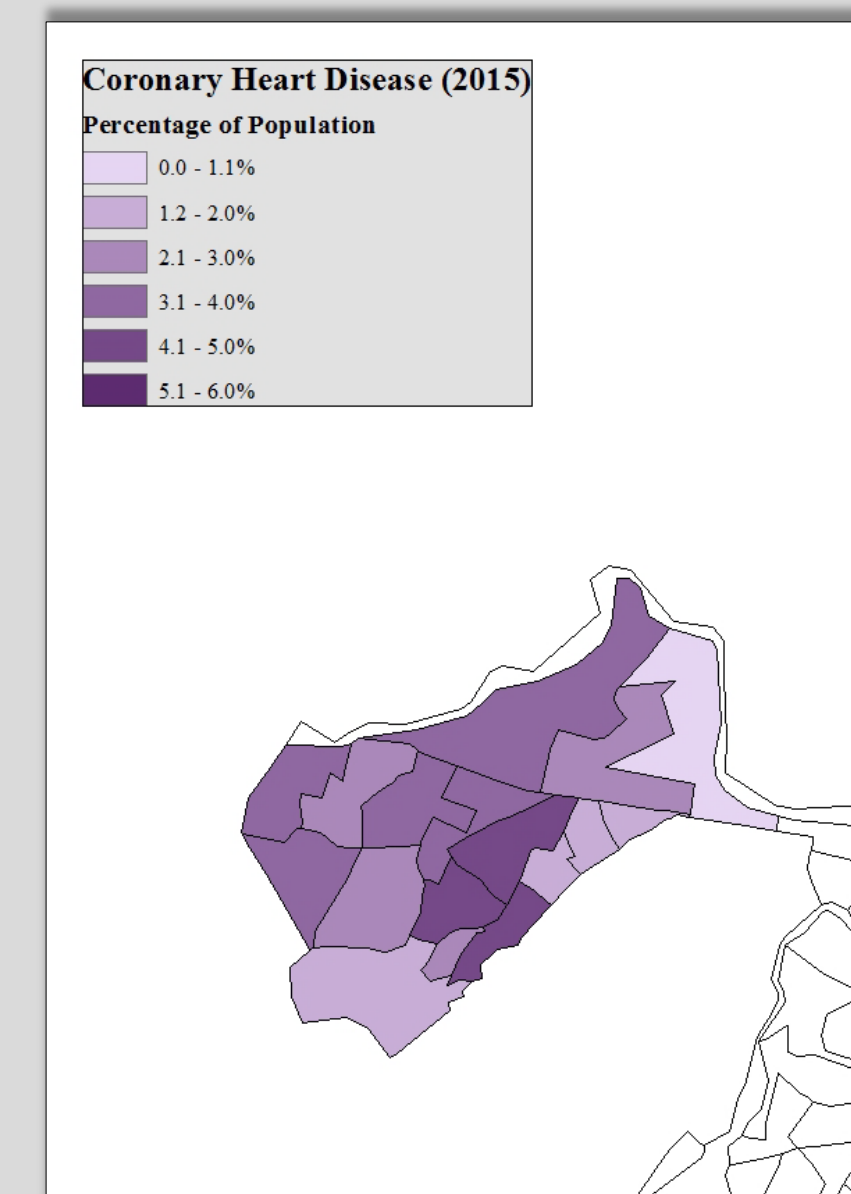


Figure 4. Crude Prevalence of CHD in Allston-Brighton in 2015

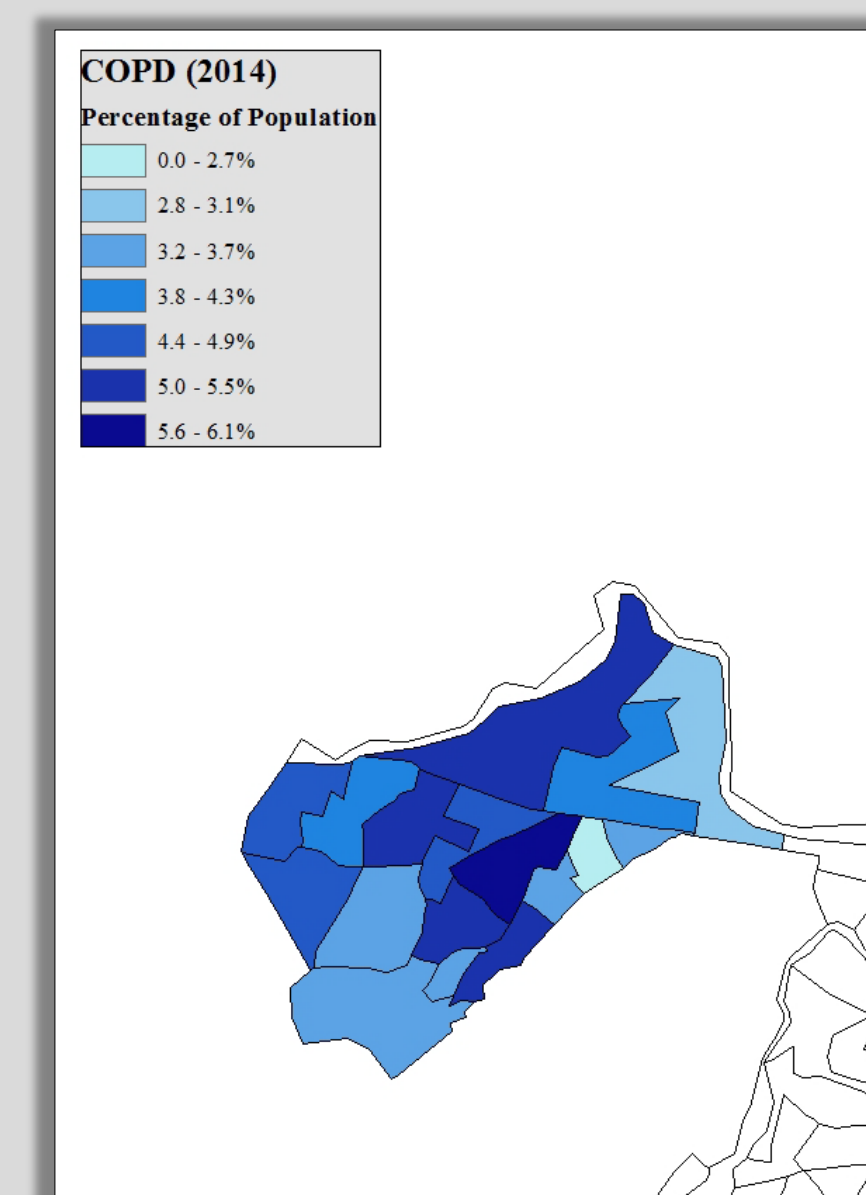


Figure 5. Crude Prevalence of COPD in Allston-Brighton in 2014

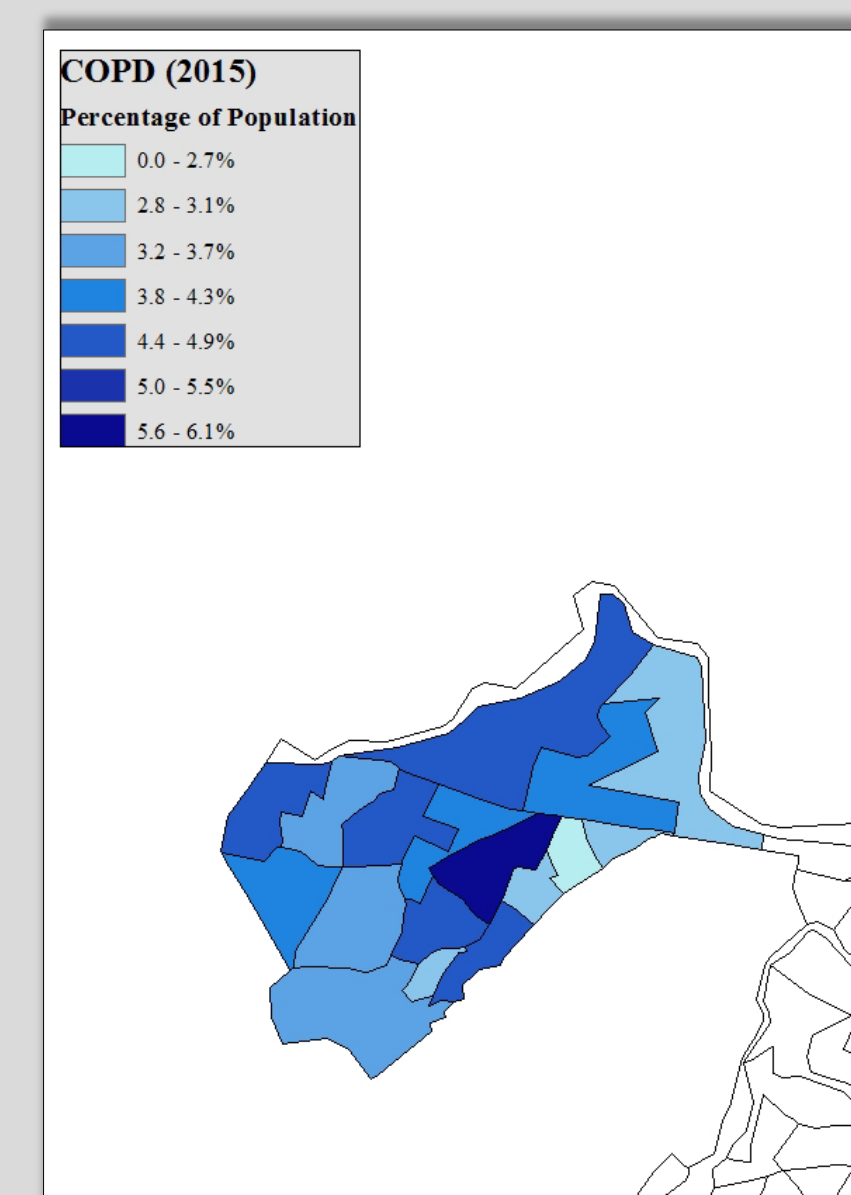


Figure 6. Crude Prevalence of COPD in Allston-Brighton in 2015

Discussion

From 2014 to 2015, the prevalence of COPD decreased in all but one census tract and reductions ranged from 0.1 to 0.8%. Unlike other census tracts, Census Tract 4.02 experienced a 0.1% increase in both CHD and COPD prevalence. Prevalence of CHD decreased in all census tracts except for Census Tract 4.02 and two additional census tracts that did not experience a change in prevalence. Ten census tracts did not experience a change in cancer prevalence from 2014 to 2015, however, four experienced an increase while three experienced a decrease. Monitoring these diseases in Allston-Brighton is critical for developing new methods for improvement.

Census Tract	Cancer (%)			CHD (%)			COPD (%)		
	2014	2015	Change	2014	2015	Change	2014	2015	Change
1.00	4.2	4.2	0	3.8	3.7	-0.1	5	4.8	-0.2
2.01	3.9	3.9	0	3	2.7	-0.3	4	3.4	-0.6
2.02	4.5	4.5	0	4.1	3.9	-0.2	5.1	4.7	-0.4
3.01	5.1	5.1	0	4.2	3.9	-0.3	4.6	4.4	-0.2
3.02	4.8	4.8	0	3.9	3.5	-0.4	4.7	3.9	-0.8
4.01	5.8	6	0.2	5.4	5	-0.4	5.5	4.8	-0.7
4.02	3.5	3.5	0	2.6	2.7	0.1	3.4	3.5	0.1
5.02	2.5	2.4	-0.1	2.1	1.8	-0.3	3.6	3.2	-0.4
5.03	3.5	3.4	-0.1	2.4	2.3	-0.1	3.3	3	-0.3
5.04	5	5.1	0.1	4.6	4.3	-0.3	5.1	4.5	-0.6
6.01	4.7	4.8	0.1	4	3.6	-0.4	4.7	4.2	-0.5
6.02	4.5	4.6	0.1	4.7	4.7	0	5.9	5.8	-0.1
7.01	2.5	2.5	0	1.9	1.9	0	3.2	2.9	-0.3
7.03	1.6	1.6	0	1.6	1.5	-0.1	3.6	3.1	-0.5
7.04	2.5	2.5	0	1.9	1.8	-0.1	2.7	2.5	-0.2
8.02	2.6	2.6	0	2.6	2.5	-0.1	4.3	3.8	-0.5
8.03	1.4	1.3	-0.1	1.1	1	-0.1	3.1	2.8	-0.3

Figure 7. Crude Prevalence of Cancer, CHD, and COPD in 2014 and 2015 and the corresponding differences from 2014 to 2015 on the Census Tract level. Changes in prevalence in red boxes indicate an increase in prevalence whereas those in green boxes indicate a decrease in prevalence.

Conclusions

One consistent finding among many of the Allston-Brighton census tracts is a declining trend in CHD and COPD prevalence. These findings indicate that health promotion and disease prevention methods effectively impacted these two diseases from 2014 to 2015. In contrast to this progress, the prevalence of cancer did not change in many of the census tracts. This finding may hint that genetic and biologic factors may play a larger role than risky behaviours in cancer incidence. These findings are essential in order to target and better develop prevention strategies on a local level. Based on these findings, the Massachusetts DPH and local Allston-Brighton initiatives should strive to continue efforts to reduce CHD and COPD rates and focus closely on cancer prevention.