

# Count-based vs Concentration-based indexes.

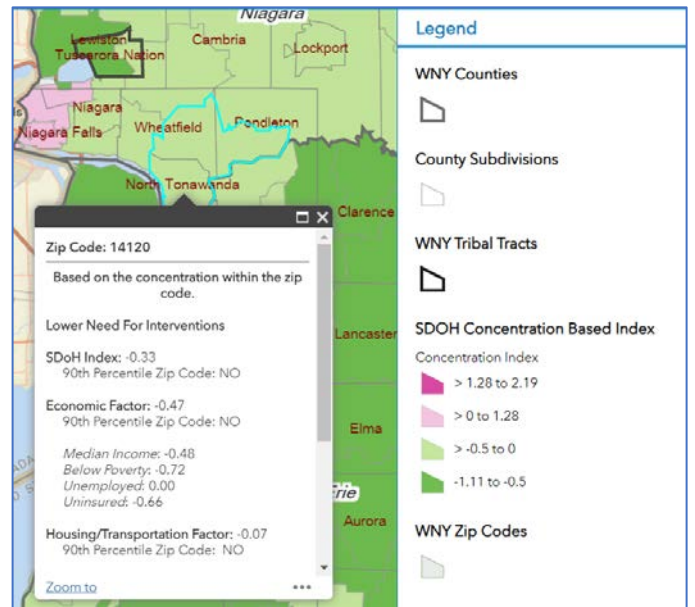
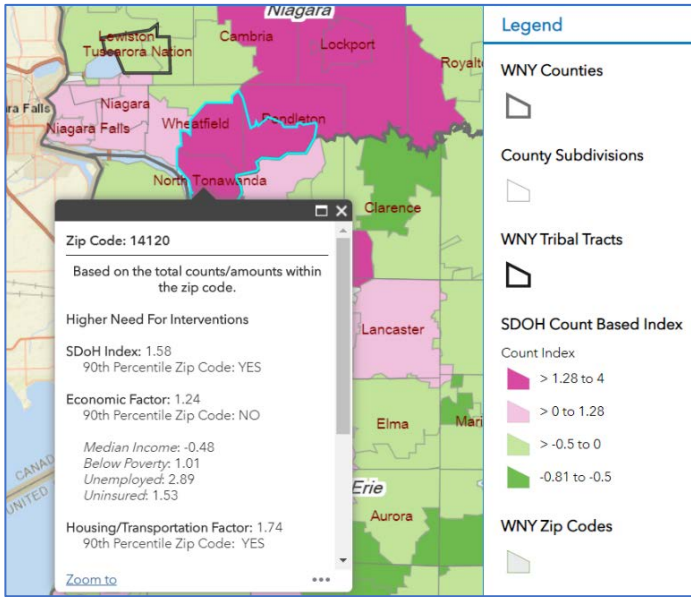
Please refer to [this poster](#) for a general description of the model for the Social Determinants of Health in western New York. The two apps created using the 2017 ACS 5 yr. estimates demonstrate the count-based index. A third app created using the 2018 ACS 5 yr. estimates demonstrates the count-based and concentration-based indexes. All apps have links to the others and may be found [here](#).

The count-based index is derived by comparing total counts within a zip code to the regional average. Suppose there are three areas with 300, 200, and 1,000 persons below the poverty level. The average value for the region is  $(1500/3 =) 500$ . On average, for this region there are 500 persons below poverty level in a zip code in this region. The first two areas have fewer persons below the poverty level than the regional average but the third zip code has more persons below the poverty level than the regional average.

The concentration-based index is derived by comparing concentration within a zip code to the average regional concentration. Using the same example as above, including the total population within each area, we can derive concentration within each area:  $300/1800 = 16.7\%$ ,  $200/650 = 30.8\%$  and  $1000/3600 = 27.8\%$ . The average regional concentration is  $[(16.7\%+30.8\%+27.8\%)/3 = ] 25.1\%$ . The first area has a lower concentration of people below the poverty level than the regional average concentration and the 2<sup>nd</sup> and 3<sup>rd</sup> areas have a higher concentration of people below the poverty level than the regional average concentration.

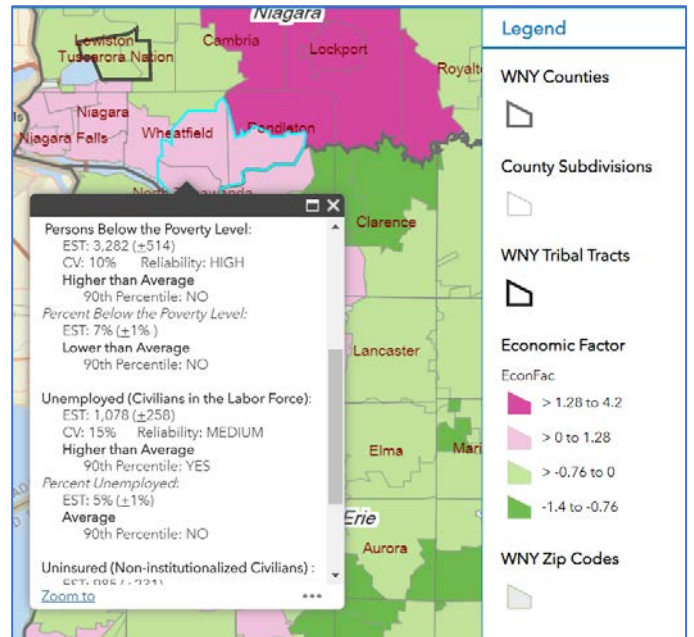
The example below for the western New York region demonstrates how a count-based index can suggest different conclusions than a concentration-based index.

The first image (left) shows the count-based results for zip code 14120. The index indicates that there is a **higher** need for interventions in this zip code. In fact, the overall index value for this zip code equals or exceeds the value for 90% of the zip codes in the region.



The second image (right) shows the concentration-based results for zip code 14120. The index indicates that there is a **lower** need for interventions in this zip code.

A closer look at the economic factor for this zip code shows that this zip code has a higher number of persons below the poverty level than the regional average BUT the concentration of persons below the poverty level (7%  $\pm$ 1%) is lower than the regional concentration. Additionally, the total number of unemployed civilians in the labor force in this zip code exceeds the average regional number of unemployed civilians in the labor force BUT the concentration of unemployed civilians in the labor force (5%  $\pm$ 1%) is not statistically significantly different from the regional concentration of unemployed civilians in the labor force.



Additional layers have been added to the web mapping application. One shows all zip codes where there is a higher need for intervention according to both indexes. The other shows all the zip codes where there is a lower need for intervention according to both indexes.