

Geospatial Direction of Syndromes in the District of Columbia

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OBJECTIVE

To describe the geographical mean as well as the directional trends of syndromes for the District of Columbia using temporal and geospatial analyses.

BACKGROUND

The inception of syndromic surveillance has spawned a great deal of research into emergency department chief complaint data. In addition to its use as an early warning system of a bioterror or outbreak event, many health departments are attempting to maximize the utility of the information to augment chronic and communicable disease surveillance. Hence, it can be used to enhance the traditional methods of surveillance. Using syndromic data to describe what could be the normal for a geographic area may be useful in monitoring a population for disease trends. Prevention efforts could be concentrated during a particular time of year. In addition, geospatial shifts in directional trends may indicate an unusual occurrence related to the utilization of emergency department services.

METHODS

Syndromic data is received at the District of Columbia Department of Health from eight acute care facilities that provide emergency medical services. Geocoding of the residential zip codes by syndrome followed by joining to a finer spatial scale, census tract, allows the estimation of geographical centers and directional trends based upon clustering of syndromes. Use of a standard deviation of 2, confirms that 95% of the syndrome is captured around the mean center. The mean center serves as a pivot point to display the direction of the trend from the lowest to highest concentration of the syndrome.

RESULTS

For January 2006, the respiratory syndrome clustering by zip code was statistically significant. Therefore, the distribution of the syndrome was not by random chance. Higher concentrations of respiratory complaints were in the southeast portion of the District of Columbia. The directional trend shows an increasing northwest to southeast distribution.

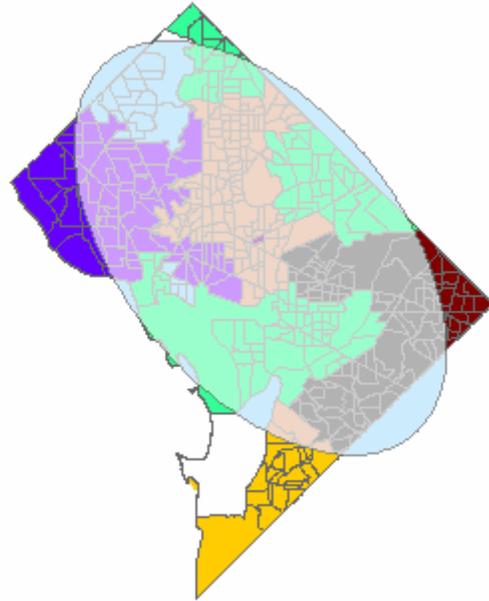


Figure 1—Distribution of respiratory syndrome by zip code, January 2006, District of Columbia.

CONCLUSIONS

It is unknown if the directional distribution is due to characteristics in the utilization of emergency departments by socio-economic status, or other environmental factors in the southeast portion of the District of Columbia. Additional variables need to be subjected to spatial autocorrelations to take into account the extent of the association with other factors.