Title: Use of Spatial Epidemiology and Hot Spot Analysis to Target Women Eligible for Prenatal Women, Infants, and Children Services

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Abstract:

Objectives: We used a geographic information system and cluster analyses to determine locations in need of enhanced Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Program services.

Methods: We linked documented births in the 2010 California Birth Statistical Master File with the 2010 data from the WIC Integrated Statewide Information System. Analyses focused on the density of pregnant women who were eligible for but not receiving WIC services in California's 7049 census tracts. We used incremental spatial autocorrelation and hot spot analyses to identify clusters of WIC-eligible nonparticipants.

Results: We detected clusters of census tracts with higher-than-expected densities, compared with the state mean density of WIC-eligible nonparticipants, in 21 of 58 (36.2%) California counties ($P < .05$). In subsequent county-level analyses, we located neighborhood-level clusters of higher-than-expected densities of eligible nonparticipants in Sacramento, San Francisco, Fresno, and Los Angeles Counties ($P < .05$).

Conclusions: Hot spot analyses provided a rigorous and objective approach to determine the locations of statistically significant clusters of WIC-eligible nonparticipants.

Results helped inform WIC program and funding decisions, including the opening of new WIC centers, and offered a novel approach for targeting public health services.

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