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## Abstract

Despite the availability of reliable screening methods and statewide programs providing free breast cancer screening, invasive breast cancer incidence rates remain highest among all invasive cancer rates in **Los Angeles County (LAC)**. Community-based cancer control coalitions can target areas by using population-based cancer registry data presented in a way that finds and identifies high-risk population subgroups that would most benefit from targeted screening. A new movement in LAC to introduce such evidence-based (EB)/informed cancer control has helped integrate cancer surveillance data into mainstream cancer control efforts.

In this study, we describe the use of cancer control data tools and processes to aid community outreach efforts targeting high-risk areas and populations. Previous analyses using kernel density estimation found spatial variations in the distribution of invasive cancer by Service Planning Area in LAC. **SPA4 (Service Planning Area 4 or Metro)** is one of the areas with densest concentration of invasive breast cancer among Spanish-surnamed white (SSW) and Asian/Pacific Islander (API).

The **USC Norris Patient Education and Outreach Center's (PEOC)** coordinated efforts have helped translate scientific advances to surrounding communities through capacity building of cancer coalitions. The PEOC has integrated registry data into a coalition to identify and target high-risk areas in SPA4. The PEOC and **Cancer Surveillance Program's (CSP)** involvement in community coalitions have shown to contribute in focusing the coalition's efforts towards EB cancer control.

The **C4-SPA4 (Comprehensive Breast Cancer Control Coalition in Service Planning Area 4)** task force will develop a tailored cancer control plan with expert help from USC PEOC and CSP. PEOC and CSP plans to replicate this process in other areas with high rates of invasive breast cancer, and provide a model of translational cancer control effort for other registries to follow.

## Methods

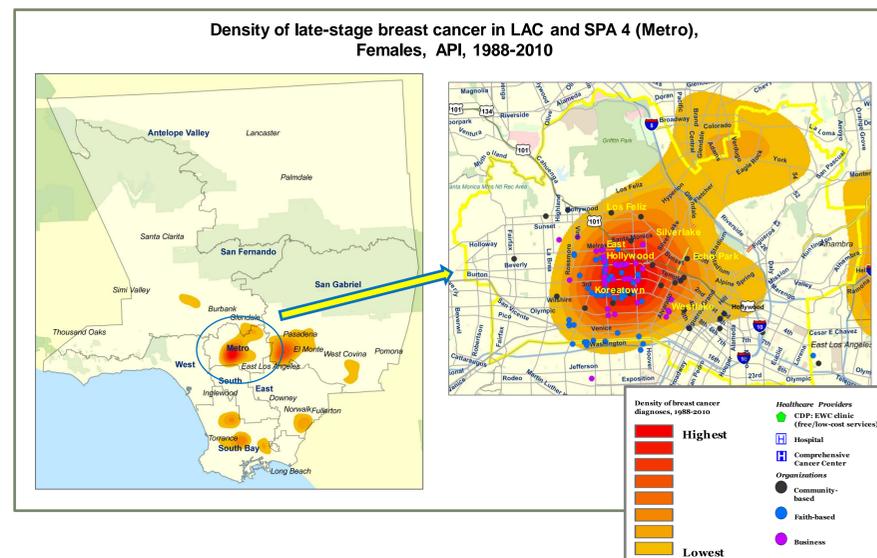
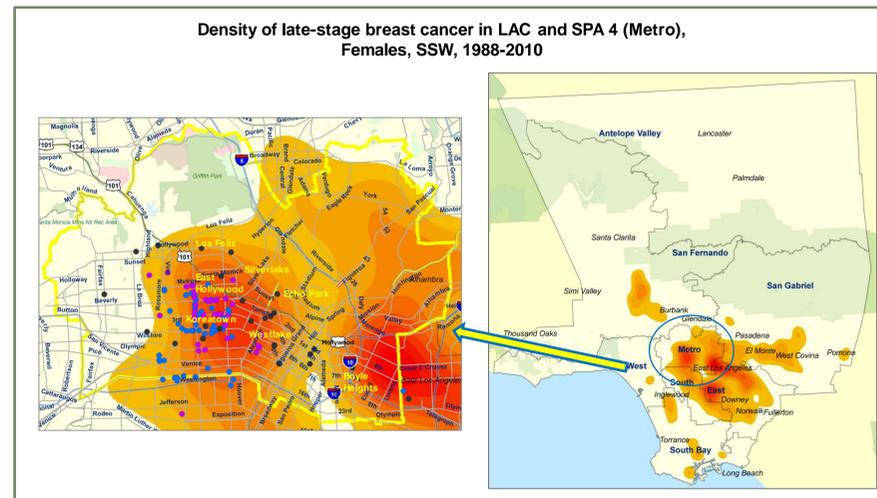
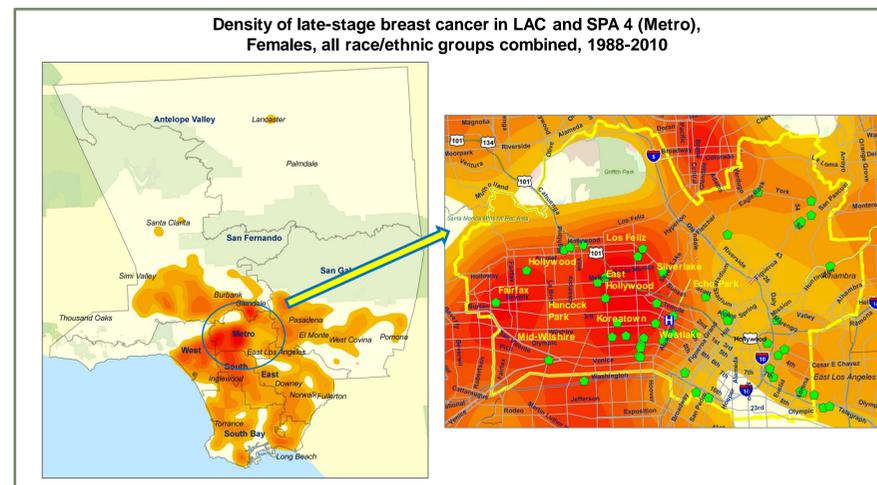
➤ Breast cancer cases were obtained from CSP (n=138,965) and were limited to women diagnosed between 1988 and 2010. Among these women, 82.3% (n=114,421) were diagnosed with invasive breast cancer (local, regional and distant stages). Among invasive breast cancer cases, 38.4% (n=43,937) were diagnosed at later stages (regional and distant stages).

➤ **Geographic Information System (GIS), Kernel Density:** Incident cases were plotted based on the latitude and longitude of their diagnosis address and were smoothed over a radius of a predetermined size. Density values were calculated and color-coded. To account for age differences, increasing weight was assigned for every 10-year age increment.

➤ Addresses of C4-SPA4 members and other community resources were geocoded using the USC WebGIS Geocoder to obtain latitude and longitude.

➤ ArcGIS 9.3.1 was used to produce the maps.

## Results: Spatial distribution of late-stage breast cancer and community resources



## Capacity-Building: C4-SPA4

- Previous analyses of geographic distribution of invasive breast cancer found that SPA4 (Metro) had the densest concentration of invasive breast cancer among SSW and API.
- SPA4, compared with other SPAs, also had the lowest percentage of women who have had a mammogram in the past 2 years (68.5%), had the highest percentage of uninsured women (32.7%) and women who reported no access to regular screening (22%).
- This health disparity necessitated the formation of **C4-SPA4** with assistance from the PEOC that assists community coalitions in capacity building to develop evidence-based cancer prevention and control programs.
- C4-SPA4 is a unique collaboration of community/faith organizations, government officials, businesses, foundations, healthcare providers, and universities pooling resources to reduce the burden of breast cancer by focusing on early detection, better treatment, and enhanced survivorship.
- C4-SPA4 has organized the first-ever Breast Cancer Awareness Forum in the SPA4 area to bring together community partners and other SPA4 stakeholders in a dialogue around breast cancer and the threat that late-stage diagnosis presents to women in the communities.
- This event was the first step in C4-SPA4's joint efforts with the broader community to address breast cancer through a local, community-focused strategy. Data on late-stage breast cancer rates were disseminated to community partners. We also conducted a preliminary assessment of the priorities and resources in the community. This sharing of information will contribute to the development and implementation of a strategic plan that is community-focused and community-driven.

## Discussion and Conclusions

- The kernel density estimation method improves upon the choropleth map approach because it removes arbitrary boundaries (i.e. census tract boundaries).
- In LAC, we found the densest concentration of invasive breast cancer for all racial/ethnic groups combined in SPAs Metro (4), South (6) and West (5).
- In SPA4, high density areas were in close proximity to local resources such as healthcare providers and community/faith-based organizations.
- This supports the need for interventions specifically targeting these areas with high density of late-stage breast cancer rather than interventions simply focusing on making mammography services more accessible and affordable to patients (i.e. providing free transportation to clinics, offering free/low-cost services, providing free parking, shortening wait time, etc).
- These local resources would be recruited to join C4-SPA4 to effectively target these high-risk areas.
- The Susan G. Komen for the Cure, LAC Affiliate has established policies to focus grant-making efforts in areas prioritized by these maps.
- The study illustrates the potential use of GIS to illustrate health problems and gaps in healthcare service in a user-friendly format such as spatial distribution maps.
- C4-SPA4 plans to expand its efforts to address other cancers in the future.
- PEOC and CSP plans to replicate this process in other areas with high rates of invasive breast cancer, and provide a model of translational cancer control effort for other registries to follow.

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