An approach using cancer registry data to address cancer burden in an NCI cancer center catchment area:

The Greater Bay Area Cancer Registry and San Francisco Cancer Initiative (SF CAN)

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NCI has begun expanding research efforts aimed at defining and describing cancer burden within cancer center catchment areas and the populations within them, involving significant spatial components.

- Descriptions of “Community Outreach and Engagement” in the catchment area, including population demographics, health disparities, engagement with constituents, and implementation of health policy recommendations.

- NCI recently awarded administrative supplements to 15 NCI-designated cancer centers to support local data collection efforts to better define and describe the catchment areas.

- Population-based cancer registry data can be a useful resource for these efforts.
2016

- GBACR
- UCSF Helen Diller Family Comprehensive Cancer Center, one of the top Cancer Centers in the country and supported by NCI and City/County of San Francisco
- San Francisco Department of Public Health
- + Community organization groups
Cancer burden is not distributed equally in many areas; however, unique characteristics of San Francisco provide an opportunity to test methodologies to evaluate sub-county level incidence and mortality.

* Our analysis looked at 2008-2012 incidence and mortality data
San Francisco Population, 2015

- NH White: 46.1%
- NH Black: 5.3%
- Hispanic: 15.2%
- Asian/Pacific Islander: 33.5%

OUR OBJECTIVE

- Identify and quantify possible disparities in cancer occurrence
  - Female breast
  - Male prostate
  - Lung
  - Colorectal
  - Liver
  - Melanoma in non-Hispanic whites
  - All cancers combined

- Describe the burden using incidence rates for all cancers and four racial/ethnic groups at county-level and specific neighborhoods

- Describe the burden in categories of selected neighborhood characteristics
METHODS

- Used GBACR data enhanced with …
  - sub-county population information from the 2010 Census and American Community Survey, and…
  - information from the California Neighborhoods Data System (CNDS) on neighborhood social and built environment characteristics
    - Such as ethnic composition and ethnic enclave, socioeconomic status, and walkability
CHALLENGES: EVALUATION OF GEOGRAPHIC AGGREGATIONS

- Aggregate proximate census tracts based on similar attributes (i.e., SES and Hispanic and Asian ethnic enclave)

<table>
<thead>
<tr>
<th>Bayview Hunters Point</th>
<th>Inner Richmond</th>
<th>Nob Hill</th>
<th>Russian Hill</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bernal Heights</td>
<td>Inner Sunset</td>
<td>Noe Valley</td>
<td>Seacliff</td>
</tr>
<tr>
<td>Castro/Upper Market</td>
<td>Japantown</td>
<td>North Beach</td>
<td>South of Market</td>
</tr>
<tr>
<td>Chinatown</td>
<td>Lakeshore</td>
<td>Oceanview/Merced/Ingleside</td>
<td>Sunset/Parkside</td>
</tr>
<tr>
<td>Excelsior</td>
<td>Lincoln Park</td>
<td>Outer Mission</td>
<td>Tenderloin</td>
</tr>
<tr>
<td>Financial District/South Beach</td>
<td>Lone Mountain/USF</td>
<td>Outer Richmond</td>
<td>Treasure Island</td>
</tr>
<tr>
<td>Glen Park</td>
<td>Marina</td>
<td>Pacific Heights</td>
<td>Twin Peaks</td>
</tr>
<tr>
<td>Golden gate park</td>
<td>McLaren Park</td>
<td>Portola</td>
<td>Visitacion Valley</td>
</tr>
<tr>
<td>Haight Ashbury</td>
<td>Mission</td>
<td>Potrero Hill</td>
<td>West of Twin Peaks</td>
</tr>
<tr>
<td>Hayes Valley</td>
<td>Mission Bay</td>
<td>Presidio Heights</td>
<td>Western Addition</td>
</tr>
</tbody>
</table>

- “San Francisco neighborhoods are as diverse as they are exciting…”

http://www.sanfrancisco.com/neighborhoods/
Green – Lower SES, More ethnic (Hisp and AAPI)

Light green – High SES, Least ethnic

Light blue – Mid-SES, More ethnic

Brown – Mid-SES, Ethnic

Yellow – High SES, Least ethnic

Royal blue – Mid-SES, Mid-Ethnic

Lavender – Mid-SES, Mid-Ethnic

Purple – High SES, Mid-Ethnic

Red – Lower SES, More ethnic

Orange – High SES, Mid-Ethnic
MSSAs are sub-city/county geographical units used to organize and display population, demographic and physician data.

- Incorporate the census total population, socioeconomic and demographic data and are updated with each decadal census.

- 1976: California Healthcare Workforce Policy Commission response to mandates requiring it to determine urban and rural unmet priority needs for medical services.

- Each MSSA is composed of one or more complete census tracts, and do not cross county lines.
MEDICAL SERVICE STUDY AREAS:
SAN FRANCISCO

- 162a: Chinatown/Civic Center/Inner Mission/North Beach/South of Market/Tenderloin/Western Addition
- 162b: Cow Hollow/Financial District/Marina/Nob Hill/Pacific Heights/Russian Hill
- 162c: Bernal Heights/Mission District/Potrero Hill
- 162d: Excelsior/Glen Park/Ingleside/Lake Merced/Merced Heights/Ocean Beach
- 162e: Golden Gate Park/Parkside/Sunset/West Portal
- 162f: Bayview/Candlestick/Hunters Point/Portola/Visitacion Valley
- 162g: Buena Vista/Castro/Eureka Valley/Forest Hill/Haight-Ashbury/Noe Valley
- 162h: Laurel Heights/Ocean Beach North/Richmond/Sutro Heights
San Francisco County

For details about the MSSAs, go to gis.oshpd.ca.gov/atlas/places/mssa

162a Chinatown/Civic Center/Inner Mission/North Beach/South of Market/Tenderloin/Western Addition
162b Cow Hollow/Financial District/Marina/Nob Hill/Pacific Heights/Russian Hill/Seacliff
162c Bernal Heights/Mission District/Potrero Hill
162d Excelsior/Glen Park/Ingleside/Lake Merced/Merced Heights/Ocean Beach South/Park Merced/Saint Francis Wood/Westwood Park
162e Golden Gate Park/Parkside/Sunset/West Portal
162f Bayview/Candlestick/Hunters Point/Portola/Vistaclon Valley
162g Buena Vista/Castro/Eureka Valley/Forest Hill/Haight-Ashbury/Noe Valley/West of Twin Peaks
162h Laurel Heights/Ocean Beach North/Richmond/Sutro Heights

Rational Service Area (2010 Boundaries)

MSSA Defined Areas

County

Source: OSHPD, U.S. Census 2010

September 2014

METHODS, CONT’D

- All county-level analyses were conducted using SEER*Stat, version 8.3.2
  - IRs and IRRs for cancer sites and racial/ethnic groups
  - IR and IRRs for quartiles of nSES, Hispanic enclave and Asian enclave

- At the neighborhood level, we evaluated N of cancer cases for each of 41 neighborhoods
  - The grouped neighborhood level incidence rate analyses are still in the works. We moved forward with analyses at the MSSA-level.

- All MSSA-level analyses were conducted using SAS version 9.4.
  - IRs for cancer sites and racial/ethnic groups
RESULTS

Eligibility:
- n=19,504 invasive cancers diagnosed 2008-2012 in SF County
- Excluding unknown census tract or other/unknown race

Population data by age, race, sex from 2010 US Census data

Due to the use of statewide census tract distributions, nSES distributions were heavily skewed towards the highest quartile of nSES, particularly among whites and AAPIs.
<table>
<thead>
<tr>
<th>All Races, Female Breast</th>
<th>Count</th>
<th>Rate (95% CI)</th>
<th>IRR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartile 4 (high), Ref</td>
<td>1,466</td>
<td>132 (125.1, 139.1)</td>
<td>reference</td>
</tr>
<tr>
<td>Quartile 3</td>
<td>858</td>
<td>122.4 (114.2, 131.1)</td>
<td>0.9 (0.8, 1.0)</td>
</tr>
<tr>
<td>Quartile 2</td>
<td>293</td>
<td>104.7 (92.8, 117.8)</td>
<td>0.8 (0.7, 0.9)</td>
</tr>
<tr>
<td>Quartile 1 (low)</td>
<td>135</td>
<td>87.5 (72.8, 104.4)</td>
<td>0.7 (0.5, 0.8)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>All Races, Male Liver</th>
<th>Count</th>
<th>Rate (95% CI)</th>
<th>IRR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quartile 4 (high), Ref</td>
<td>199</td>
<td>18.4 (15.9, 21.2)</td>
<td>reference</td>
</tr>
<tr>
<td>Quartile 3</td>
<td>187</td>
<td>27.6 (23.7, 31.9)</td>
<td>1.5 (1.2, 1.8)</td>
</tr>
<tr>
<td>Quartile 2</td>
<td>106</td>
<td>35.8 (29.2, 43.5)</td>
<td>1.9 (1.5, 2.5)</td>
</tr>
<tr>
<td>Quartile 1 (low)</td>
<td>76</td>
<td>42.5 (33.3, 53.6)</td>
<td>2.3 (1.7, 3.1)</td>
</tr>
</tbody>
</table>
## COUNTY-LEVEL: nSES AND ETHNIC ENCLAVE (BREAST CANCER)

<table>
<thead>
<tr>
<th>Hispanics</th>
<th>Count</th>
<th>Rate (95% CI)</th>
<th>IRR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SES (1,2,3), More Ethnic (3,4), Ref</td>
<td>101</td>
<td>68.2 (55.5, 82.9)</td>
<td>reference</td>
</tr>
<tr>
<td>Low SES (1,2,3), Less Ethnic (1,2)</td>
<td>26</td>
<td>120.1 (77.7, 176.2)</td>
<td>1.8 (1.1, 2.7)</td>
</tr>
<tr>
<td>High SES (4), More Ethnic (3,4)</td>
<td>21</td>
<td>81.1 (49.9, 125.6)</td>
<td>1.2 (0.7, 1.9)</td>
</tr>
<tr>
<td>High SES (4), Less Ethnic (1,2)</td>
<td>56</td>
<td>91.7 (68.9, 119.8)</td>
<td>1.3 (0.9, 1.9)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Asian American/Pacific-Islander</th>
<th>Count</th>
<th>Rate (95% CI)</th>
<th>IRR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SES (1,2,3), More Ethnic (4), Ref</td>
<td>571</td>
<td>102.7 (94.1, 111.9)</td>
<td>reference</td>
</tr>
<tr>
<td>Low SES (1,2,3), Less Ethnic (1,2,3)</td>
<td>22</td>
<td>189.4 (117.5, 290.8)</td>
<td>1.8 (1.1, 2.9)</td>
</tr>
<tr>
<td>High SES (4), More Ethnic (4)</td>
<td>347</td>
<td>117.8 (105.4, 131.3)</td>
<td>1.1 (1.0, 1.3)</td>
</tr>
<tr>
<td>High SES (4), Less Ethnic (1,2,3)</td>
<td>76</td>
<td>129.9 (101.8, 164.7)</td>
<td>1.3 (1.0, 1.6)</td>
</tr>
</tbody>
</table>
### COUNTY-LEVEL: nSES AND ETHNIC ENCLAVE (PROSTATE CANCER)

<table>
<thead>
<tr>
<th><strong>Hispanics</strong></th>
<th><strong>Count</strong></th>
<th><strong>Rate (95% CI)</strong></th>
<th><strong>IRR (95% CI)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SES (1,2,3), More Ethnic (3,4), Ref</td>
<td>108</td>
<td>96.8 (78.7, 117.5)</td>
<td>reference</td>
</tr>
<tr>
<td>Low SES (1,2,3), Less Ethnic (1,2)</td>
<td>23</td>
<td>134.2 (83, 203)</td>
<td>1.4 (0.8, 2.2)</td>
</tr>
<tr>
<td>High SES (4), More Ethnic (3,4)</td>
<td>21</td>
<td>122.8 (75.3, 187.5)</td>
<td>1.3 (0.7, 2)</td>
</tr>
<tr>
<td>High SES (4), Less Ethnic (1,2)</td>
<td>44</td>
<td>115.8 (83.3, 155.8)</td>
<td>1.2 (0.8, 1.7)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Asian American/Pacific-Islander</strong></th>
<th><strong>Count</strong></th>
<th><strong>Rate (95% CI)</strong></th>
<th><strong>IRR (95% CI)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Low SES (1,2,3), More Ethnic (4), Ref</td>
<td>423</td>
<td>84 (76.2, 92.6)</td>
<td>reference</td>
</tr>
<tr>
<td>Low SES (1,2,3), Less Ethnic (1,2,3)</td>
<td>7</td>
<td>75.9 (30.2, 158.2)</td>
<td>0.9 (0.4, 1.9)</td>
</tr>
<tr>
<td>High SES (4), More Ethnic (4)</td>
<td>226</td>
<td>90.8 (79.2, 103.8)</td>
<td>1.1 (0.9, 1.3)</td>
</tr>
<tr>
<td>High SES (4), Less Ethnic (1,2,3)</td>
<td>38</td>
<td>94.2 (66.4, 130.8)</td>
<td>1.1 (0.8, 1.6)</td>
</tr>
</tbody>
</table>
IRs varied significantly across MSSAs

Male and Female All Cancer Incidence, All Races, by MSSA, 2008-2012

- Range Males: 441 to 520
- Range Females: 373 to 438

Male Liver Cancer Incidence, All Races and Asian American/Pacific Islander 2008-2012

- Range All Races: 18-39
- Range AAPI: 21-40
IRs varied significantly across MSSAs

Female Breast Cancer Incidence, All Races and Asian American/Pacific Islander 2008-2012

Range All Races: 105 to 142
AAPI: 77 to 158

Prostate Cancer Incidence, All Races and Asian American/Pacific Islander 2008-2012

Range All Races: 89 to 129
AAPI: 47 to 97
Cancer registry data used for calculating local area rates can be a valuable resource for identifying characteristics of the cancer burden, including disparities, within geographically defined cancer center catchment areas.
SF CAN seeks to reduce new liver cancer cases and liver cancer deaths in San Francisco by 50 percent.

We will do this by reducing the impact of viral hepatitis. We will promote vaccination against hepatitis B, safe sex and clean-needle use, earlier detection of hepatitis B and C with screening blood tests, better monitoring and treatment for people infected with those diseases, and access to care for liver cancer patients.

In San Francisco, liver cancer is the 9th most common cancer and the 5th most deadly. Men develop liver cancer at more than double the rate of women. Asian Americans bear the brunt of this disease, but the past 20 years have brought increases in liver cancer in African Americans and Latinos.

Most liver cancers in the U.S. occur in people with cirrhosis (liver scarring),
BUILDING COMMUNITY PARTNERSHIPS

SFCAN Helps the City Take Aim at Reducing Use of Flavored Tobacco Products

By Karen Gehman | cancer.ucsf.edu | April 19, 2017

April 18, 2017 in San Francisco, city Supervisor Malia Cohen proposed legislation to prohibit the sale of flavored tobacco in the city, acknowledging the efforts of UCSF and the San Francisco Cancer Initiative #SFCAN.

THANK YOU

- UCSF Collaborators for SF CAN
  - Robert Hiatt
  - Caroline Tai
  - Ekland Abdiwahab

- GBACR
  - Allison Canchola
  - Scarlett Lin Gomez

- SPECIAL THANK YOU TO OUR CTRs!!!