SMALL-AREA LIFE EXPECTANCY: A COMPARISON OF METHODS, RELATIONSHIP TO NEIGHBORHOOD SOCIODEMOGRAPHIC FACTORS, & OUTLIER ANALYSIS

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Presenter disclosures

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• The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

   No relationships to disclose.
**Previous quantitative analysis**

**Step 1:** Use linear regression to model CT-specific life expectancy against basic demographic variables: poverty, age distribution, % female, marital status, education.

**Step 2:** Obtain residuals. Categorize CTs based on residual size. If studentized residual is above 2.5, CT is classified as a “high outlier”.

**Step 3:** Use logistic regression to model high outlier status against a series of socioeconomic, demographic, environmental, and health variables.
Previous quantitative analysis: Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Odds ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inpatient mental health either present (vs. absent)</td>
<td>2.55 (0.62, 10.50)</td>
</tr>
<tr>
<td>Area is predominantly open space (vs. not)</td>
<td>2.55 (1.39, 4.66)</td>
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<td>Beds for acute care hospitals either present (vs. absent)</td>
<td>2.11 (1.08, 4.12)</td>
</tr>
<tr>
<td>Specialty clinics either present (vs. absent)</td>
<td>2.06 (1.07, 3.96)</td>
</tr>
<tr>
<td>Gini coefficient (units of 0.1)</td>
<td>1.67 (1.12, 2.49)</td>
</tr>
<tr>
<td>Two-parent families</td>
<td>1.32 (1.16, 1.51)</td>
</tr>
<tr>
<td>College dormitories including college quarters off campus</td>
<td>1.03 (0.95, 1.10)</td>
</tr>
<tr>
<td>Percent Asian and Pacific Islander</td>
<td>1.03 (1.01, 1.06)</td>
</tr>
<tr>
<td>Pounds of selected active pesticide ingredients used in agriculture</td>
<td>1.00 (1.00, 1.00)</td>
</tr>
<tr>
<td>Percent of pop within 1/2 mile of park, beach, open space, coast</td>
<td>1.00 (0.99, 1.00)</td>
</tr>
<tr>
<td>Diesel PM emissions from on-road and non-road sources</td>
<td>0.99 (0.97, 1.01)</td>
</tr>
<tr>
<td>Percent of household receiving SNAP</td>
<td>0.99 (0.93, 1.05)</td>
</tr>
<tr>
<td>Percent Black</td>
<td>0.95 (0.90, 1.00)</td>
</tr>
<tr>
<td>Annual mean PM 2.5 concentrations</td>
<td>0.88 (0.80, 0.97)</td>
</tr>
<tr>
<td>Percent of under age 18 insured</td>
<td>0.84 (0.74, 0.96)</td>
</tr>
<tr>
<td>Single father or two-parent families</td>
<td>0.83 (0.75, 0.92)</td>
</tr>
<tr>
<td>Area is cultivated (vs. not)</td>
<td>0.30 (0.09, 1.02)</td>
</tr>
</tbody>
</table>

Odds ratio of being a high outlier
Why used mixed methods?

- Quantitative datasets contain a limited range of variables that measure community “assets”
- Quantitative analysis provides limited insight as to how community assets affect residents and how they interact with other features of the local environment
- This analysis aims to identify community assets in ‘outlier’ communities by listening to the perspectives of people living and working in the community
How the communities were selected

• Controlling for a wide range of variables, the selected communities had an observed life expectancy 4 to 11 years longer than the value predicted by multiple regression

• We provided additional selection criteria:
  – 40% of the population had household income below the federal poverty threshold
  – Eliminated communities with unique characteristics that may affect observed life expectancy, such as a high proportion of college students, prisoners, or others living in group quarters
  – Preference for communities that were outliers in both 2000 and 2010
  – Preference for clusters of contiguous (or near contiguous) census tracts
Key Informant Interviews

• Interviewing is still ongoing (so far about 3 key informant interviews per community)

• Selected key informants such as:
  – Community leaders
  – Service providers
  – Business owners

• Other caveats
  – Looked at potential assets that cut across communities
  – The unit of analysis for the life expectancy/outlier variable is at the census tract level. Unit of analysis for the qualitative analysis focused on communities.
Stability/Rootedness

• Residential Stability
  – There’s – I mean, there are apartments and rentals, but I think the majority of the people in this neighborhood are home owners and a lot of them have been here for a very, very long time.

• Organizational Stability
  – The Y’s been part of this community for as long as I can remember. And we’re talking probably 50 years.

• Community Stability
  – In terms of the influx of certain types of commercial enterprises and schools or anything along those – nothing much has really changed.
Access to Resources

• Transportation
  – ... they’ve definitely made an effort to kind of encourage more bicycle and pedestrian traffic along there.

• Green Spaces and places to exercise
  – We have a YMCA... our school district has always made their athletic fields available to the public on the weekends when it doesn’t compete with what’s going on with school.

• Food access
  – We’ve got... one, we have two big grocery stores in town, which is a lot more than some communities have. No, we’ve got three big ones... and [store] has really inexpensive food... big Latino supermarket. So the prices seem to be a lot more affordable. So we’re pretty lucky that we have a lot of options

• Jobs
  – There’s a tremendous amount of employment here. I mean, there’s a lot of small independently operated retail establishments. A lot of specialty businesses.
Community Improvement Efforts

• Revitalization/clean up efforts
  – The other kind of significant social factor in this neighborhood when we first moved in was crime. It was known to be a pretty high crime neighborhood. There was a really active street gang here... The L.A.P.D. for whatever reason sort of made it a stated priority to kind of clean up [the area]... And they pretty successfully did that.
Civic Engagement

• Representation/lobbying
  – So the last few years, we’ve had a pretty strong lobbying presence, I think, from our elected officials kind of just demanding more services and more resources come into [the area].

• Grassroots efforts
  – You know, I have been blessed to work with, I don’t know what it is, but I am working really close with the mayor, with the city manager, with the city council, mostly all of them, with the district, with the superintendent. And they invite me to participate.
Social Cohesion

– It’s a – it feels like a pretty close-knit community... despite some of the obvious sort of economic and racial divides, I sort of feel like there’s a sense that everybody here sort of takes pride in the neighborhood that I think is somewhat unique to L.A., and along with that, I do sort of feel like there’s just kind of a general sense of well-being in the neighborhood.
Seniors

• Seniors integrated into the family and community
  – Adult day healthcare... Now this is where they are taken care of. They are fed. They are seen by the physical therapist. Their blood pressure is checked every day. This is more like a favorite place that they want to go to. And this is also the place that they go to for information and for updates about what’s going on in the community. And also for certain social activities.
  – But, you know, there’s probably a significant larger number of seniors more than those that go to the senior centers that don’t go to senior centers, but they have a lot to do because they’re with their extended family.
Community assets promoting healthy behaviors

• Parks, green space, and places to exercise
• Access to healthy foods
• Health promotion workshops
• Safe, walkable streets
• Bike lanes
• Senior centers and activities
• Social services to facilitate access to health care and other services
Strengths and limitations of interview data

- We do not have interview data on comparison communities.
- We cannot causally link potential assets to health outcomes.
- Assets are described or inferred based on key informant accounts only, not verified or measured systematically.
- Life expectancy may be influenced by social and environmental factors that occurred long ago or much more recently – but interviews tend to focus on how communities are today and in the recent past.
Thank you

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  – Derek Chapman, PhD, Associate Director for Research, VCU Center on Society and Health
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