Tract-Level Geocoding Analysis: Identifying Communities With Low CalFresh Access

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Presentation Outline

- CalFresh Access: Big picture overview
- CalFresh Access: As it is measured
- Geocoding: Looking below county levels at neighborhoods
- New proposed methodology for identifying “true hot spots” for targeted outreach efforts
- Highlight measurement issues uncovered
- Application of adjusted access measure
CalFresh Basics

Eligible to Receive CalFresh

**Income Below Certain Thresholds**

- **Gross income** – 130% of federal poverty guidelines/level (FPL). Example: $2,008 per month for a household of three (2012).

- **Net income** - income of less than 100% of FPL after certain deductions are applied. Example: $1,545 per month for a household of three (2012).

**Additional Eligibility Criteria for College Students**

Ineligible to Receive CalFresh

- Citizenship/Immigration Status – the largest group
- Drug Felony Convictions (with certain exceptions)
- Supplemental Security Income/State Supplementary Payment (SSI/SSP) Recipients - Due to “Cash-Out”

Source: LAO March 2014
Income Distribution of SNAP Households

- Households with gross countable income at 50% or less of FPL
- Households with gross countable income at 51% to 100% of FPL
- Households with gross countable income greater than 101% of FPL

Source: LAO
Measuring Program Access

The Program Access Index (PAI): USDA/Food and Nutrition Service (FNS)

\[
PAI = \frac{\text{CalFresh Participants} - \text{Disaster CalFresh Program Participants}}{(\text{Individuals with Income} < 125\% \text{ of FPL}) - \text{FDPIR participants} - \text{SSI Recipients}}
\]

By this measure:

- California’s PAI was 2\textsuperscript{nd} lowest in the country at 51\% in 2012
- 3.9 million eligible Californians are not receiving CalFresh

FDPIR: Food Distribution Program on Indian Reservations

Measuring Program Access (continued)

Questions about the PAI

• Why is participation so low in California?

• How does program access vary among counties?

• Does variation among counties relate to local unemployment rates? Local poverty rates? A rural/urban divide?

• Is the PAI the best way to measure program access?
  o In particular, does the PAI’s denominator accurately capture the eligible population? (income below 125% of FPL – FDPIR – SSI)

FDPIR: Food Distribution Program on Indian Reservations
What sub-county-level geographies should be used to identify areas of low participation?

- Counties’ unemployment rates and poverty levels are not good predictors of CalFresh access.

Source: Poverty rates, American Community Survey; percent receiving CalFresh, CDSS
The distribution of proportions of non-English speakers points to:

- Language as an important factor
- The possible role of immigration status
- The need to develop a program access measure that takes citizenship status into account

Source: Unemployment rates, EDD; percent receiving CalFresh, CDSS
The Context for Our Research

• Socio-economic indicators at the county level rarely explain differences in CalFresh access.

• Explanations for county-level variation exist at below-county levels – neighborhoods and communities.

• Need local-level data and tools to understand neighborhood- and community-level effects.
Geocoding Helps Us Gain a Holistic View of the Environments Surrounding Each CalFresh Recipient Address

- Service delivery
- Social/environmental activism
- Neighborhood organizations
- Environmental characteristics
- Demographic characteristics
- Languages spoken
- Outreach activities
- Poverty level of tract
- Neighborhood characteristics

CalFresh recipient household
Geocoding Mapping Analytics

Geocoding allows us to:

• Map recipient-level data and local poverty rates.

• Examine differences in CalFresh access at below-county levels, such as zip codes and census tracts.

• Identify where potential CalFresh eligibles live.

• Highlight population subgroups with lower-than-expected CalFresh access based on poverty levels.

• Identify local areas where targeted outreach may be effective.
Examples of Geo-Mapping Applications
Over two hundred tract-level data elements are linked to each dot.

- Total tract population
- % below poverty level
- % non-native
- Number of Latinos
- Number of families with children under 18
- Number of female-headed households
- % speaking languages other than English
- EBT access
Mapping Census Tract Poverty Levels Against CalFresh Recipient Addresses (Fresno County, July 2013)
Identifying Data Problems
LA County: Number of CalFresh Recipients in Tracts with Reported Zero Poverty Levels (American Community Survey)
Comparing the Distance Between CalFresh Recipients and EBT Locations in Adjacent Zip Codes (Monterey County)

Legend
- CF recipient addresses
- Within 0.1m of EBT
- Within 0.2m of EBT
- EBT locations

286 EBT locations
- 7168 / 39167 locations (18 percent) within 0.1 mile
- 18624 / 39167 locations (47 percent) within 0.2 mile

Monterey County: North

Map showing the distribution of EBT locations and CalFresh recipients in adjacent zip codes.
Developing a Better Measure of Program Access

FNS: Program Access Index (PAI)

\[
PAI = \frac{\text{(CalFresh Participants)} - \text{(Disaster CalFresh Program Participants)}}{\text{(Individuals with Income < 125% Poverty Threshold)} - \text{(FDPIR Participants)} - \text{(SSI Recipients)}}
\]

CDSS: Program Reach Index (PRI) *

\[
PRI = \frac{\text{Census Tract CalFresh Participants}}{\text{(Tract pop size x Tract poverty proportion x 1.3)} - \left(\text{SSI} \times \frac{1}{2}\right)}
\]

* Geography-based or population-based
Advantages of Using PRI

- Reflect true CalFresh poverty threshold (130%)
- Correct share of SSI/SSP recipients to subtract from denominator
- Measure CalFresh access below county levels
- Measure differences in access among population subgroups
- Use results to devise targeted CalFresh outreach activities
- Help uncover the limitations of PAI as a measurement methodology.
Application Example: LA County Census Tracts

Potential Eligibles (Below 130% of Poverty) vs. CalFresh Access – PRI
Number of Individuals Below 130% of Poverty by Census Tract
The PRI Highlights Different Census Tracts
Application Example:
LA County Census Tracts

The Connection Between Poverty and Language
Percent Speaking Languages Other Than English by Position Above or Below Median

(Median = 58.3)

L.A. County

Legend
- Light green: Tracts with non-English below median
- Dark brown: Tracts with non-English above median
Percent Below Poverty by Position Above or Below Median

(Median = 11.2)

L.A. County

Legend
- Light green: Tracts with poverty level below median
- Dark brown: Tracts with poverty level above median
Population Subgroups: LA County Language

<table>
<thead>
<tr>
<th>Decile</th>
<th>Width/Interval (Percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st</td>
<td>99.4-88.3</td>
</tr>
<tr>
<td>2nd</td>
<td>88.2-80.9</td>
</tr>
<tr>
<td>3rd</td>
<td>80.8-73.8</td>
</tr>
<tr>
<td>4th</td>
<td>73.7-66.3</td>
</tr>
<tr>
<td>5th</td>
<td>62.2-58.6</td>
</tr>
<tr>
<td>6th</td>
<td>58.5-50.5</td>
</tr>
<tr>
<td>7th</td>
<td>50.4-40.8</td>
</tr>
<tr>
<td>8th</td>
<td>40.7-31.6</td>
</tr>
<tr>
<td>9th</td>
<td>31.5-23.4</td>
</tr>
<tr>
<td>10th</td>
<td>23.3-0.0*</td>
</tr>
</tbody>
</table>

* Deciles width/interval (percent)
L.A. County: Average Poverty Level Tract by Language (Other than English) Deciles

Average poverty

Language deciles

D1  D2  D3  D4  D5  D6  D7  D8  D9  D10

5.1  5.5  7.4  10.6  12.8  13.0  16.0  18.8  22.4  27.0
Some observations so far

- The Program Reach Index (PRI) is as useful an indicator of CalFresh access at the county level as the Program Access Index (PAI).

- The ability to apply PRI at below-county levels makes it much more valuable in assessing CalFresh reach at community and neighborhood levels.

- The PRI can help target outreach activities through mapping techniques that highlight areas needing benefits the most.

- HOWEVER, does it help us in identifying “true hot spots” where outreach efforts should be targeted?
Additional Adjustments are Needed to Account for CalFresh Ineligibles

Number of persons receiving CalFresh

Poverty level of tracts

Languages other than English

Federal law

Visualphotos.com
Estimating the Number of Undocumented Ineligibles: Child-Only Methodology (Adjusted PRI or APRI)
The child-only method is an indirect method of accounting for persons who are ineligible to receive CalFresh due to their citizenship status.

**Child-Only CalFresh households** are households in which all CalFresh participants are minors and all adults:

- receive SSI/SSP;
- are convicted of certain drug-related felonies; or
- are undocumented immigrants

These adults should be deducted from the program access denominator.
The Child-Only Method (continued)

Three data points to estimate:

1. What proportion of child-only households are headed by parents/adults who are ineligible to receive CalFresh due to their citizenship status?

2. How many undocumented adults live in these child-only households?

3. How many undocumented adults live in households where there are no children?

\[
\text{APRI} = \frac{\text{CalFresh Recipients} - \text{Disaster CalFresh Program Participants}}{(\text{pop} < 130\% \text{ FPL}) - \left(\text{SSI} \times \frac{1}{2}\right) - \text{(ineligible undocumented adults)}}
\]
The Child-Only Method (continued)

Assume Northern/Mountain California has the smallest share of undocumented immigrants

PRI by Region, 2011

North and Mountain: 0.7269
Bay Area: 0.5452
Farm Belt: 0.7075
L.A.: 0.590
Southern (w/o L.A.): 0.6237

The Child-Only Method

According to administrative data on CalFresh recipients, of all Child-Only CalFresh households in the Northern and Mountain counties:

- An average (median) of 6% are child-only due to non-immigration causes
- An average (median) of 94% are due to adults’ immigration status
The Child-Only Method (continued)

State-level data shows that the average household with undocumented adults and at least one child has 1.77 adults.

<table>
<thead>
<tr>
<th>Undocumented Households with Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of households (000s)</td>
</tr>
<tr>
<td>-------------------------------</td>
</tr>
<tr>
<td>2-parent</td>
</tr>
<tr>
<td>1-parent</td>
</tr>
<tr>
<td>Other</td>
</tr>
<tr>
<td>Total</td>
</tr>
<tr>
<td><strong>Average</strong></td>
</tr>
</tbody>
</table>

The same data show that for every 177 undocumented adults residing in household with children, there are 124 undocumented persons residing in households without children.

<table>
<thead>
<tr>
<th>Undocumented Households without Children</th>
<th>Number of households (000s)</th>
<th>Persons per household</th>
<th>Total persons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married couple</td>
<td>118</td>
<td>2</td>
<td>236</td>
</tr>
<tr>
<td>Other families</td>
<td>29</td>
<td>3</td>
<td>87</td>
</tr>
<tr>
<td>Solo adult men</td>
<td>435</td>
<td>1</td>
<td>435</td>
</tr>
<tr>
<td>Solo adult women</td>
<td>137</td>
<td>1</td>
<td>137</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>719</strong></td>
<td><strong>1.24</strong></td>
<td><strong>895</strong></td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td></td>
<td><strong>1.24</strong></td>
</tr>
</tbody>
</table>
The Child-Only Method (continued)

\[
APRI = \frac{CalFresh \text{ Recipients} - \text{Disaster CalFresh Program Participants}}{(\text{pop} < 130\% \text{ FPL}) - (\text{SSI} \times \frac{1}{2}) - (0.94 \text{ child–only households} \times 1.77 \times 1.7)}
\]
## Example of the Child-Only Method

### Number of Ineligible Undocumented Adults

<table>
<thead>
<tr>
<th>Objective</th>
<th>Calculation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of child-only CalFresh households, Fresno County, 2011</td>
<td></td>
<td>15,136</td>
</tr>
<tr>
<td>Number of households that are child-only due to the parents’ citizenship status</td>
<td>15,136 x 0.94</td>
<td>14,228</td>
</tr>
<tr>
<td>Number of poor undocumented adults residing in child-only households</td>
<td>14,228 x 1.77</td>
<td>25,184</td>
</tr>
<tr>
<td>Total number of poor undocumented adults (in households with children and households without children)</td>
<td>25,184 x (1 + (124/177))</td>
<td>42,827</td>
</tr>
</tbody>
</table>
### Validation of the Total Number of Undocumented Persons

<table>
<thead>
<tr>
<th>Objective</th>
<th>Calculation</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresno’s poverty rate relative to the statewide average</td>
<td>23.4 ÷ 15.07</td>
<td>1.55</td>
</tr>
<tr>
<td>Estimate the number of undocumented persons in Fresno that are CalFresh-poor (130% FPL or below) for every 100 undocumented persons in the county</td>
<td>1.55 x 32.5*</td>
<td>50.5</td>
</tr>
<tr>
<td>Estimate the total number of undocumented persons in Fresno County</td>
<td>42,827 x (100/50.5)</td>
<td>84,806</td>
</tr>
</tbody>
</table>
### Comparison: Child-Only Method and PPIC Method

#### Total Number of Undocumented Persons, 2011

<table>
<thead>
<tr>
<th>County</th>
<th>Child-Only Households</th>
<th>Undocumented (130% FPL)</th>
<th>Child-Only</th>
<th>PPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Los Angeles</td>
<td>119,837</td>
<td>338,954</td>
<td>964,501</td>
<td>916,000</td>
</tr>
<tr>
<td>Orange</td>
<td>29,734</td>
<td>84,101</td>
<td>258,774</td>
<td>289,000</td>
</tr>
<tr>
<td>San Bernardino</td>
<td>21,870</td>
<td>61,858</td>
<td>179,320</td>
<td>150,000</td>
</tr>
<tr>
<td>San Diego</td>
<td>17,967</td>
<td>50,819</td>
<td>156,366</td>
<td>198,000</td>
</tr>
<tr>
<td>Riverside</td>
<td>17,706</td>
<td>50,081</td>
<td>154,095</td>
<td>146,000</td>
</tr>
<tr>
<td>Fresno</td>
<td>15,136</td>
<td>42,812</td>
<td>84,858</td>
<td>49,000</td>
</tr>
<tr>
<td>Santa Clara</td>
<td>13,468</td>
<td>38,094</td>
<td>117,211</td>
<td>180,000</td>
</tr>
<tr>
<td>Kern</td>
<td>11,845</td>
<td>33,503</td>
<td>72,614</td>
<td>46,000</td>
</tr>
<tr>
<td>Sacramento</td>
<td>11,260</td>
<td>31,848</td>
<td>97,995</td>
<td>65,000</td>
</tr>
<tr>
<td>Alameda</td>
<td>10,808</td>
<td>30,570</td>
<td>94,062</td>
<td>124,000</td>
</tr>
<tr>
<td>Statewide</td>
<td>356,627</td>
<td>1,008,705</td>
<td>2,864,504</td>
<td>2,874,500</td>
</tr>
</tbody>
</table>

The Child-Only Method vs. PPIC’s method

- The Child-Only Method (poverty-based) appears to give a better estimate of undocumented persons than PPIC’s:
  - for counties with higher poverty level than the statewide average
  - in general, for counties where agriculture is the predominant economy

- The PPIC method (tax-return-based) appears to give a better estimate of undocumented persons than the Child-Only method:
  - for counties with lower poverty level than the statewide average
  - for counties with predominantly non-agricultural economies
## SUMMARY: Statewide PAI Gain Using Different Estimates

<table>
<thead>
<tr>
<th>Statewide Program Access Under Four Scenarios</th>
<th>Numerator 2011</th>
<th>Denominator 2011</th>
<th>% Receiving</th>
<th>%age Point Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>FNS</td>
<td>FNS (2011)</td>
<td>3,760,866</td>
<td>7,684,310</td>
<td>49</td>
</tr>
<tr>
<td>Adjusted Program Reach Index - APRI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child-Only</td>
<td>0.94 x 356,627</td>
<td>3,760,866</td>
<td>7,349.091</td>
<td>51</td>
</tr>
<tr>
<td>Urban Institute</td>
<td>0.94 x 356,627 x 1.77</td>
<td>3,760,866</td>
<td>7,090,954</td>
<td>53</td>
</tr>
<tr>
<td></td>
<td>0.94 x 356,627 x 1.77 x 1.70</td>
<td>3,760,866</td>
<td>6,675,605</td>
<td>56</td>
</tr>
</tbody>
</table>
Comparing the PRI to the APRI
LA County True + False “Hot Spots” of Low CalFresh Participation (June 2013): PRI
LA County True “Hot Spots” of Low CalFresh Participation (June 2013): APRI

Legend

APRI by Zip code
- No data
- 0.01 - 0.49
- 0.50 - 0.79
- 0.80 - 1.00
- Above 1.00

Miles
LIMITATIONS OF THE CHILD-ONLY METHOD
Numerator and Denominator Data Issues

- The reliability of APRI is affected by percentage of unmatched addresses due to P. O. Box addresses.

- A single address may be used to provide CalFresh benefits to hundreds or thousands of beneficiaries (over 6,100 recipients in one LA County address and 5,100 recipients in one Fresno County address) making it difficult to interpret APRI maps for surrounding areas.

- The denominator becomes negative for tracts with 0 eligibles and where the eligibles based on 130% poverty (formula below) is lower than the SSI component and/or the child-only households component.

- Due to small sample sizes and large margins of error, the ACS shows many tracts with fewer eligible persons than the number of persons receiving CalFresh; this leads to APRI greater than 1.
Summary of Data Limitations

The reliability of the APRI increases with increasing geographic scale

Numerator includes recipients from outside of geographic unit
Denominator margin of error

Tract Zip code CalFresh region County
Additional Applications
Santa Monica: An Example of Very Low CalFresh Access in a Low-Poverty Area
Getting Down to the Tract Level

Monterey County
Adding Data about Population Density
Conclusions

- Geocoding enables us to analyze CalFresh data in the context of the environments in which recipients and potential eligibles live.

- Estimates of undocumented persons from the Child-Only Method are broadly consistent with county-level estimates from PPIC and state-level estimates from Department of Homeland Security and PPIC.
  - Any discrepancies most likely reflect differences in methodological focus - persons receiving public assistance (Child-Only) vs. persons receiving taxable income (PPIC).

- The Child-Only Method can be used with confidence at county levels and for regions within a county.
  - In some instances, zip code or tract-level analysis may be feasible.

- It appears that in places where non-English speakers are a minority (example: LA Southwest) the participation rate is significantly lower than in places where they are a majority.
CalFresh Basics (continued)

Average monthly households
1,890,129

Average monthly individuals
4,124,373

Average household size 2.2

Average monthly benefit per household $333

Average monthly benefit per person $153

Source: Legislative Analyst’s Office (LAO), CalFresh Program Overview, March 11, 2014